



PressAcademia

JMML

Journal of Management,
Marketing & Logistics

PressAcademia publishes journals, books,
case studies, conference proceedings and
organizes international conferences.

jmml@pressacademia.org

ISSN 2148-6670



ABOUT THE JOURNAL

Journal of Management, Marketing and Logistics (JMML) is a scientific, academic, peer-reviewed, semiannually and open-access online journal. The journal publishes two issues a year. The issuing months are June and December. The publication language of the Journal is English. JMML aims to provide a research source for all practitioners, policy makers, professionals and researchers working in the area of management, marketing and logistics. The editor in chief of JMML invites all manuscripts that cover theoretical and/or applied research on topics related to the interest areas of the Journal.

Editor-in-Chief

Prof. Dilek Teker

Editorial Assistant

Inan Tunc

JMML is currently indexed by

Ulrich's Directiroy, Copernicus, ASCI, Open J-Gate, EuroPub, Princeton University Library, International Scientific Indexing (ISI), Directory of Research Journals Indexing (DRJI), International Society for Research Activity (ISRA), InfoBaseIndex, Scientific Indexing Services (SIS), International Institute of Organized Research (I2OR), SOBIAD, Scope.

Ethics Policy

JMML applies the standards of Committee on Publication Ethics (COPE). JMML is committed to the academic community ensuring ethics and quality of manuscripts in publications. Plagiarism is strictly forbidden and the manuscripts found to be plagiarised will not be accepted or if published will be removed from the publication.

Author Guidelines

All manuscripts must use the journal format for submissions.
Visit www.pressacademia.org/journals/jmml/guidelines for details.

CALL FOR PAPERS

The next issue of JMML will be published in June 2025.

Submit manuscripts to

jmml@pressacademia.org or

<http://www.pressacademia.org/submit-manuscript/>

Web: www.pressacademia.org/journals/jmml



EDITORIAL BOARD

Zafer Acar, Piri Reis University, Turkey, ORCID: 0000-0002-7711-2874

Emel Aktas, Cranfield School of Management, England, ORCID: 0000-0003-3509-6703

Christo Ananth, AMA International University of Bahrain, UAE, ORCID: 0000-0001-6979-584X

Mustafa Bekmezci, National Defence Ministry, Turkey, ORCID: 0000-0002-4078-8440

Fahri Erenel, Istinye University, Turkey, ORCID: 0000-0001-8943-7265

Murat Ferman, Beykent University, Turkey, ORCID: 0000-0003-4019-0219

Klaus Haberich, Franklin University, United States, ORCID: 0000-0002-6120-5742

Chieh-Jen Huang, Providence University, United States, ORCID: 0000-0002-4559-0767

Muge Klein, Turkish-German University, Turkey, ORCID: 0000-0003-2341-2975

Gary S. Lynn, Stevens Institute of Technology, United States, ORCID: 0000-0002-9670-5384

Semih Soran, Ozyigin University, Turkey, ORCID: 0000-0002-8731-9860

Husniye Ors, Gazi University, Turkey, ORCID: 0000-0002-8319-3340

Mehmet Tanyas, Maltepe University, Turkey, ORCID: 0000-0001-8934-3787

Tugba Orten Tugrul, Izmir University of Economics, Turkey, ORCID: 0000-0002-1369-8490

Nimet Uray, Kadir Has University, Turkey, ORCID: 0000-0003-2285-1845

Nan-yu Wang, Ta Hwa University of Science and Technology, Taiwan, ORCID: 0000-0002-9189-1798

Fu-Yun Wang, Ta Hwa University of Science and Technology, Taiwan, ORCID: 0000-0003-1932-0293

Ugur Yozgat, Nisantasi University, Turkey, ORCID: 0000-0001-9893-3551

Zbigniew Bentyn, Poznan University, Poland, ORCID: 0000-0002-2061-2616





CONTENT

Title and Author/s	Page
1. A literature study on sustainability in consumption of environmentally friendly products <i>Gizem Zencir, Ayten Nahide Korkmaz</i> 54 - 65 DOI: 10.17261/Pressacademia.2024.1932 JMML-V.11-ISS.2-2024(1)-p.54-65	54 - 65
2. Sustainable consumer behavior: the influence of habit on relational benefits and behavioral intentions in personal service businesses <i>Mohammad Karami, Serife Zihni Eyupoglu, Ahmet Ertugan</i> 66 - 79 DOI: 10.17261/Pressacademia.2024.1933 JMML-V.11-ISS.2-2024(2)-p.66-79	66 - 79
3. Influence of cultural identity on revisit intention: a case study of inlay region in Myanmar <i>Htin Kyaw Lin</i> 80 - 91 DOI: 10.17261/Pressacademia.2024.1934 JMML-V.11-ISS.2-2024(3)-p.80-91	80 - 91
4. A comparative experimental study on artificial intelligence- and human-driven social media marketing campaigns <i>Muge Klein, Mehmet Fatih Kutlar</i> 92 - 100 DOI: 10.17261/Pressacademia.2024.1935 JMML-V.11-ISS.2-2024(4)-p.92-100	92 - 100
5. Workforce agility: a systematic literature review and comparison with domestic studies <i>Sukru Baris Hatunoglu</i> 101 - 121 DOI: 10.17261/Pressacademia.2024.1936 JMML-V.11-ISS.2-2024(5)-p.101-121	101 - 121
6. Metaverse and Chatgpt: innovative learning experiences in education and interactive strategies in marketing <i>Kemal Gokhan Nalbant, Sevgi Aydin</i> 122 - 130 DOI: 10.17261/Pressacademia.2024.1937 JMML-V.11-ISS.2-2024(6)-p.122-130	122 - 130
7. Effects of economic and geopolitical risks on the supply chain: an econometric analysis <i>Rahmi Incekara, Beyhan Incekara</i> 131 - 141 DOI: 10.17261/Pressacademia.2024.1938 JMML-V.11-ISS.2-2024(7)-p.131-141	131 - 141
8. Impact of blockchain technology and its components on tourism outcomes with the mediating role of supply chain management <i>Marzieh Mehrabi, Javad Mehrabi</i> 142 - 152 DOI: 10.17261/Pressacademia.2024.1939 JMML-V.11-ISS.2-2024(8)-p.142-152	142 - 152
9. Determining the productivity and poverty level of queen pineapple farmers in Camarines Norte, Philippines <i>Maria Christina F. Campita, Hiromi Tokuda, Hector M. Sales</i> 153 - 168 DOI: 10.17261/Pressacademia.2024.1946 JMML-V.11-ISS.2-2024(9)-p.153-168	153 - 168

A LITERATURE STUDY ON SUSTAINABILITY IN CONSUMPTION OF ENVIRONMENTALLY FRIENDLY PRODUCTS

DOI: 10.17261/Pressacademia.2024.1932

JMML- V.11-ISS.2-2024(1)-p.54-65

Gizem Zencir¹, Ayten Nahide Korkmaz²

¹Istanbul Aydin University, Department of International Trade and Finance, Istanbul, Turkiye.

zencirgizem12@gmail.com, ORCID: 0009-0008-3450-1854

²Istanbul Aydin University, Department of Foreign Trade, Istanbul, Turkiye.

aytenkorkmaz@aydin.edu.tr, ORCID: 0000-0001-9932-7983

Date Received: September 29, 2024

Date Accepted: November 1, 2024



To cite this document

Zencir, G., Korkmaz, A.N., (2024). A literature study on sustainability in consumption of environmentally friendly products. Journal of Management, Marketing and Logistics (JMML), 11(2),

Permanent link to this document: <http://doi.org/10.17261/Pressacademia.2024.1932>

Copyright: Published by PressAcademia and limited licensed re-use rights only.

ABSTRACT

Purpose– The main purpose of this study to raise environmental awareness, support to producers, and contribute to new additions to sustainability.

Methodology– In this study, environmentally friendly technologies and sustainability projects implemented by companies in Turkey and all over the world are examined, and a literature review is conducted on articles written about sustainability in the consumption of environmentally friendly products.

Findings- With the rapid increase in population and the accelerated depletion of natural resources, significant environmental problems have arisen as a result of effects caused by humanity to meet energy needs. The concept of sustainability has been introduced and mentioned that it is a response to these environmental problems. Sustainability is essentially referred to as the ability to maintain a balance between the consumption of resources and their natural replenishment, ensuring that the needs of the present can be met without compromising the ability of future generations to meet their own needs. However, careful management and awareness are required to achieve sustainability, especially in light of two critical factors currently disrupting this balance: population growth and excessive consumption. To mitigate these issues, greater emphasis is being placed on environmentally friendly practices and products. Research into environmentally friendly product applications is being increased, and consumer attitudes toward green businesses are believed to play a crucial role in raising public awareness and encouraging positive behavior toward sustainable practices. Notable examples and case studies from around the world are showcased to highlight successful innovations in different sectors and the benefits of adopting environmentally friendly technologies.

Conclusion- In this study, we aim to examine environmentally friendly technologies and sustainability projects implemented by companies in Turkey and all over the world. And we have a purpose by underlying these initiatives to raise environmental awareness, inspire producers, and contribute to the sustainability. It is anticipated that environmental awareness will not only be raised through such studies but also that a deeper understanding of the importance of sustainable practices in preserving the environment for future generations will be promoted.

Keywords: Environmentally friendly products, sustainability, green consciousness, environmentally friendly technologies, green Business.

JEL Codes: Q55, Q56, Q57.

1. INTRODUCTION

The rapid urbanization and population growth experienced due to the impact of technological developments and industrialization, along with the increasing damage caused to nature by human activities, are becoming problems. Products characterized by minimum environmental impacts, renewable resource use, energy efficiency, and reduced harmful emissions are recognized as important for promoting sustainable living and reducing negative ecological impacts. Green-friendly products, also known as environmentally friendly or sustainable products, which are defined as those that do not pollute the world, cause the destruction of natural resources, and can be recycled or preserved, are designed to have minimum environmental impact throughout their life cycle. A wide range of industries, including energy, transportation, packaging, and household goods, are covered by green-friendly products. Renewable energy solutions such as solar panels and wind turbines, as well as daily consumer goods like biodegradable packaging and environmentally friendly cleaning agents, are included in this category. Global attention is being attracted by these products due to increasing environmental awareness and the urgent need to address climate change and resource depletion. It is deemed important that the dimensions of environmental awareness in consumers are determined and that marketing activities are shaped within this scope.

Examples of sustainability in various sectors are seen with the legal regulations that must be followed during the production phase and the increase in consumption awareness. It is believed that environmental awareness is being increased every day through the Sustainability Reports that are published annually by companies. Environmentally conscious technology and design applications are known to give producers the opportunity to reduce their waste and make a profit from waste. (Zhang, 1997).

In this study we aimed to emphasize the initiatives underlying the sustainable ecofriendly consumption nexus. Firstly consumption of eco-friendly products are introduced, in the second part we tried to give the meaning of the relationship between sustainability and consumption in these type of products. Then, the concept "green marketing" is underlined and in the fifth and sixth parts, the sustainable projects and of the companies and ecofriendly technologies are highlighted. ecofriendly products. And in the seventh part, articles and chapters about sustainable consumption of environmentally friendly products are represented in detailed.

2. CONSUMPTION OF ECO-FRIENDLY PRODUCTS

As consumers become more aware of the environmental impact of their choices, the consumption of eco-friendly products is becoming increasingly important. Often made from sustainable materials, these products use eco-friendly manufacturing processes and prioritize minimal waste and energy use. By choosing products that are biodegradable, recyclable, or made from renewable resources, consumers can help reduce pollution and conserve natural resources. Additionally, supporting companies that commit to sustainable practices can encourage broader industry changes, encouraging a market shift toward greener alternatives. As more people adopt these habits, the cumulative effect can lead to significant environmental benefits and contribute to a healthier planet for future generations.

Yücel and Ekmekçiler (2008) conducted a survey on the factors determining individuals' purchasing preferences and analyzing their environmental awareness levels in the Salihli district of Manisa province, and as a result of the surveys conducted with 400 individuals, it was observed that 55.75% of the individuals did not have information about green food products, and it was concluded that individuals were sensitive about green food products and environmental awareness in their purchases and consumption, and were willing to protect the environment, nature and health.

According to Tanner and Wölfling Kast (2003), consumers' attitudes towards the environment significantly affect their purchasing decisions. Their research shows that individuals with strong environmental concerns are more likely to purchase green products. Similarly, a study conducted by Vermeir and Verbeke (2006) emphasizes that personal values and beliefs about the environment play an important role in shaping consumer behavior towards sustainable consumption.

Various factors affect the consumption of environmentally friendly products. Paul, Modi, and Patel (2016) determined that perceived consumer effectiveness, environmental knowledge, and social influence are the main determinants. Consumers who believe that their purchasing decisions can positively affect the environment are more likely to purchase environmentally friendly products. In addition, environmental knowledge increases awareness and understanding of the benefits of green products, encouraging their consumption. Social influence, including peer pressure and societal norms, significantly influence consumer choices.

The impact of consuming environmentally friendly products is multifaceted and affects both the environment and the economy. According to a study conducted by Ottman, Stafford, and Hartman (2006), green consumption can lead to reduced environmental degradation by reducing pollution levels and preserving natural resources. In addition, the demand for environmentally friendly products encourages innovation and sustainable practices among businesses, leading to the development of green technologies and products.

From an economic perspective, the green market is considered to be showing significant growth. A study conducted by Nielsen (2015) suggests that sales of sustainable products are increasing, reflecting a change in consumer preferences. This growth not only supports the economy by creating new market opportunities, but also appears to encourage job creation in the green sector.

3. SUSTAINABILITY IN THE CONSUMPTION OF ECO-FRIENDLY PRODUCTS

Sustainability in the consumption of eco-friendly products is increasingly recognized as a vital component of achieving broader environmental goals. This approach emphasizes the need to shift consumer behavior toward products that have minimal impact on the environment throughout their lifecycle. For example, reusable water bottles and coffee cups significantly reduce plastic waste compared to single-use alternatives. These products not only reduce the volume of waste in landfills, but also minimize the demand for resources needed to produce single-use products. Another example is the use of biodegradable cleaning products, which are formulated to break down naturally, preventing harmful chemicals from contaminating water resources and ecosystems. Similarly, clothing made from organic cotton or recycled materials is gaining popularity in the fashion industry. Organic cotton farming protects soil health and reduces water pollution by avoiding the use of synthetic pesticides and fertilisers, while recycled fabrics reduce the need for raw materials and the environmental footprint associated with their production. (Ahmed, M. A et al, 2021) Moreover, the demand for energy-efficient appliances

such as LED bulbs and low-energy household appliances highlights a shift towards reducing energy consumption and greenhouse gas emissions. These examples demonstrate how the consumption of environmentally friendly products supports sustainability by reducing resource use, minimizing pollution, and encouraging responsible manufacturing practices. Supporting such products not only fosters a market that prioritizes environmental health, but also promotes a sustainable lifestyle that benefits individuals, communities, and the planet as a whole (Akdoğan, L., 2023). The impact of these changes is highlighted by research highlighting the economic and environmental benefits of green consumption. For example, Ottman, Stafford, and Hartman (2006) argue that green marketing and the adoption of environmentally preferable products can lead to significant reductions in environmental degradation, while Nielsen (2015) notes the increasing consumer demand for sustainable products, reflecting a shift in societal values toward sustainability. This growing trend is thought to not only push businesses to innovate and adopt more sustainable practices, but also play a significant role in addressing global environmental challenges such as climate change and resource depletion (Söderholm, P., 2020).

Research shows that consumers' motivations for purchasing environmentally friendly products are multifaceted. According to Thøgersen and Ölander (2006), environmental concern and a sense of personal responsibility are crucial in influencing environmentally friendly purchasing behavior. Similarly, Grankvist and Biel (2007) emphasize that consumers who perceive the environmental benefits of a product are more likely to make sustainable choices.

Despite positive motivations, several barriers hinder the widespread adoption of environmentally friendly products. Vermeir and Verbeke (2006) discuss how the higher cost and perceived lower quality of sustainable products compared to conventional alternatives can deter consumers. In addition, Jansson et al. (2010) find that lack of information and the complexity of environmental claims contribute to consumer skepticism and reluctance.

Policy and institutional initiatives play an important role in shaping consumer behavior. Peattie (1999) suggests that companies that adopt transparent and genuinely sustainable practices can build consumer trust and lead to more significant shifts toward environmentally friendly product choices.

The environmental impact of increased consumption of environmentally friendly products is an ongoing topic of research. Kollmuss and Agyeman (2002) reviewed the effectiveness of these products in reducing overall environmental footprints and concluded that, while they can make a positive contribution, their impact is often moderated by factors such as overall consumption levels and product life cycle assessments.

4. GREEN MARKETING

Green marketing appears to have emerged in the late 20th century, particularly after the first Earth Day in 1970, which increased global environmental awareness. It appears to have developed further with the introduction of the term "sustainable development" in the 1987 Brundtland Report, which emphasized the need for economic growth without endangering environmental health. Green marketing has evolved significantly since its inception in the late 20th century. Early efforts focused on addressing environmental concerns through regulatory compliance and pollution control. However, as environmental awareness has increased, businesses have begun to realize the potential of green marketing to differentiate themselves from competitors and attract environmentally conscious consumers (Bozlagan, R., 2005).

Ottman, Stafford, and Hartman (2006) argue that the evolution of green marketing can be divided into three stages: the ecological stage (1975-1985), the environmental stage (1986-1995), and the sustainable stage (1996-present). The ecological stage focuses on reducing pollution and conserving resources. In the environmental stage, companies have incorporated green messages into their marketing strategies. The sustainable stage emphasizes long-term environmental and social sustainability.

Green marketing, also known as environmental marketing, involves promoting environmentally friendly products and practices. It has gained significant momentum as both consumers and businesses become increasingly aware of environmental issues. (Erbaşlar, G., 2012) Green marketing can be defined as the marketing of products that are assumed to be environmentally safe. According to Peattie and Crane (2005), it involves promoting products with lower environmental impacts and adopting practices that increase corporate environmental responsibility.

Successful green marketing strategies often include a combination of product innovation, eco-labeling, and sustainable supply chain management. Product innovation involves developing environmentally friendly products that reduce environmental impact. Companies such as Patagonia and Tesla have been seen to successfully use this strategy to enhance their brand image and attract a loyal customer base.

Eco-labeling is another important strategy that provides consumers with information about the environmental benefits of a product. Labels such as Energy Star, USDA Organic, and Fair Trade Certified help consumers make informed purchasing decisions. According to Thøgersen (2000), eco-labeling can significantly influence consumer behavior, especially when consumers perceive the label as trustworthy and credible.

Sustainable supply chain management involves ensuring that all stages of production and distribution are environmentally friendly. Companies such as IKEA have implemented comprehensive sustainability programs that include sourcing materials from sustainable forests and reducing carbon emissions throughout the supply chain (Gimenez and Sierra, 2013).

Despite its potential benefits, green marketing faces several challenges. One major challenge is greenwashing, where companies falsely claim or exaggerate the environmental benefits of their products. This practice can erode consumer trust and damage the credibility of truly sustainable brands (Delmas and Burbano, 2011). Another challenge is the higher cost of producing environmentally friendly products. Consumers often expect green products to be priced similarly to conventional products, making it difficult for companies to absorb the additional costs of sustainable production (Peattie and Crane, 2005).

Consumer perceptions play a significant role in the success of green marketing. Research shows that while an increasing number of consumers prefer green products, there is often a gap between their attitudes and actual purchasing behavior. This phenomenon, known as the attitude-behavior gap, is influenced by factors such as price, convenience, and skepticism of green claims (Vermeir and Verbeke, 2006).

Laroche, Bergeron, and Barbaro-Forleo, 2001, found that consumers are more likely to purchase green products when they perceive them to be of higher quality or when they feel a personal responsibility to protect the environment. Demographic factors such as age, income, and education level can also influence green purchasing decisions.

5. SUSTAINABILITY PROJECTS OF COMPANIES

Sustainability projects undertaken by companies are comprehensive initiatives that aim to integrate environmental, social and economic considerations into business operations and strategies. These projects typically cover a wide range of activities, such as reducing carbon emissions, increasing energy efficiency, promoting resource conservation and ensuring ethical supply chain practices. Companies engage in sustainability projects not only to comply with regulatory requirements, but also to meet increasing consumer demand for environmentally responsible products and services. By adopting sustainable practices, companies aim to minimize their ecological footprint, positively contribute to the communities in which they operate and ensure long-term economic viability. These projects typically involve a collaborative approach that involves stakeholders such as employees, customers, suppliers and local communities to promote a culture of sustainability. In addition, sustainability projects often include transparent reporting and continuous improvement mechanisms to monitor progress and make necessary adjustments, and reflect a commitment to sustainable development and corporate social responsibility.

Table 1 shows the sustainability projects that companies from around the world and Turkey have undertaken in recent years.

Table 1: Sustainability Projects of Companies

OMO	<ul style="list-style-type: none"> • Our fully recyclable 1690 ml liquid detergent bottles are now made from 25% recycled plastic. • OMO Liquid Detergents claim that by changing the content of their detergents, even the toughest stains are removed in the first wash, contributing to less water consumption in the world.
AKBANK	<ul style="list-style-type: none"> • In line with the Sustainable Development Goals; <u>Sustainable Finance</u> to support a more sustainable economy, <u>Ecosystem Management</u> to improve business and financial health, <u>Climate Change</u> to reduce operational and portfolio emissions, and <u>People and Society</u> to empower our employees and communities. Akbank aims to reduce the impact of its credit portfolio on climate change by 2030.
ÜLKER	<ul style="list-style-type: none"> • 26 thousand tons of carbon emissions have been prevented with renewable energy supply. • Ülker, Turkey's leading food company, which continues its sustainability efforts with the 'waste-free company' model, has been growing without increasing carbon emissions since 2014 in its Sustainability Report, where it shares its economic, social and environmental activities with the public every year.
ABDI IBRAHIM	<ul style="list-style-type: none"> • It supports local entrepreneurs with social innovation programs, improves social responsibility with practices such as volunteer hours per employee, supports women's employment and adopts a fair economic development plan.
ALLIANZ	<ul style="list-style-type: none"> • In order to create a more sustainable life model, Allianz has increased the share of electricity produced from renewable sources in electricity consumption to 1.5% by making renewable energy investments with the use of windmills. • The institution also supports sustainable business models, donates to civil society organizations and prioritizes women's employment.
IKEA	<ul style="list-style-type: none"> • The Swedish furniture maker sources nearly half of its wood and cotton for its textiles from sustainable sources. • All are produced to a standard that minimizes water pollution through organic farming practices.

ECZACIBAŞI VITRA KARO	<ul style="list-style-type: none"> • They contribute to green building practices with our series containing up to 30% recycled material. • In 2022, they provide all of the electrical energy used in our Bozüyük factory from I-REC certified renewable energy sources. • They have produced the world's first and only 100% recycled ceramic sink. Thanks to the sinks that give new life to materials considered waste, the impact of the production process on global warming is reduced by 30% per product.
ARÇELİK	<ul style="list-style-type: none"> • Within the scope of Extended Producer Responsibility, in order to restore products to nature and encourage their evaluation as resources, they established Waste Electrical and Electronic Equipment (WEEE) recycling facilities in Eskişehir and Bolu in 2014. • Recycled PET bottles are used in washing machines, dishwashers and air conditioners. • Eight tons of recycled waste fishing nets and 111.7 tons of industrial yarn waste were transformed into oven, washing machine, dryer and dishwasher parts. • With the water efficiency projects implemented in different operations, a reduction of 18% in water withdrawal in Turkey, 13% in Romania, 9% in Russia, 29% in Thailand and 13% in South African operations compared to 2019 was achieved.
SAMSUNG	<ul style="list-style-type: none"> • Samsung, one of the leading brands in home appliance production in Asia, has announced that it will now use more recycled plastic in its products and plans to increase the recycled plastic rate to 30% by 2024, while also supporting plastic recycling scientifically with a new type of polypropylene they developed for use in washing machine drums.
MICROSOFT	<ul style="list-style-type: none"> • Microsoft has taken some big steps in sustainability in recent years, including diverting more than 60,000 metric tons of waste from landfills and funding 20 different water renewal projects in 2020.
APPLE	<ul style="list-style-type: none"> • All energy spent at their headquarters called Apple Park is provided by renewable energy sources. • With Apple Park, the company achieved carbon neutrality in 2020 and managed to emit 75% less carbon emissions in 2021 despite increasing its production lines and products compared to 2015. • They use 75% less plastic in their product packaging compared to 2015.

Source: <https://www.jamesdysonaward.org/en-US/2024/project/ergo-mow>.

6. ENVIRONMENTALLY FRIENDLY TECHNOLOGIES

Eco-friendly technologies, often referred to as green or clean technologies, encompass a range of innovations designed to minimize environmental impact and promote sustainability. These technologies aim to reduce pollution, conserve resources, and increase energy efficiency across a variety of sectors, including energy, transportation, manufacturing, and agriculture. They leverage advances in science and engineering to create solutions that mitigate the negative impacts of human activities on the environment. By focusing on renewable energy sources, waste reduction, and sustainable materials, environmentally friendly technologies help reduce greenhouse gas emissions and preserve natural ecosystems. Furthermore, they play a significant role in stimulating economic growth by creating new industries and business opportunities centered around sustainability. As societies around the world recognize the urgency of addressing climate change and environmental degradation, the development and adoption of these technologies is increasingly important to achieve a more sustainable and resilient future.

Table 2 lists environmentally friendly technologies. There are also awards that have been deemed worthy of the James Dyson Award and technologies that are eligible for application for 2024 are also included.

Table 2: Environmentally Friendly Technologies

LifeStraw	A social responsibility project developed by the Vestergaard Frandsen Group of Danish origin. It is designed to eliminate epidemics caused by drinking water shortages. It can be defined as a portable water purification filter.
TonerPave	A new asphalt with high recycled content and reduced carbon footprint. It is made using toner powder obtained from recycled toner cartridges.
eWood	Produced in Australia using 100% recycled materials. It is a unique plastic wood produced from mixed plastics of previously landfilled products such as collected computers, televisions, white goods, commercial equipment, car parts and printer cartridges.
Homebiogas	It produces biogas by anaerobically fermenting organic matter. Acceptable types of organic matter include meat, dairy products and animal manure. Anaerobic digestion is carried out by bacteria living inside the system. As a result, HomeBiogas operates without electricity.

Orbisk	Orbi, a startup, is offering a fully automatic food waste monitor to help professional kitchens reduce food waste.
Seabin	Once positioned, the device passes sea/ocean water through it, collecting all the dirt and helping to create a cleaner environment. It is designed to be especially useful in port areas where pollution is most noticeable and accumulates.
B-Fresh	A vegan and gluten-free gum that does not use salt or sugar. With four flavors to choose from, B-Fresh is a gum that both patients and dentists can agree to chew.
Ergo-Mow	A bicycle modification designed to provide efficient and ergonomic improvements in agricultural tasks such as weeding and harvesting, in response to labor shortages in tropical regions.
Green Steps	A vertical garden made from non-recycled, reused shoes, plastic products and furniture. It is a sustainable design that focuses on shoes and plastics with complex fabrics.
EcoPod	A biodegradable compost basket that produces slow-release fertilizer for plants.
Zero Brush	A biodegradable toothbrush with toothpaste as a base material, designed to solve the global plastic pollution problem caused by traditional plastic toothbrushes and toothpaste tubes.
(Sub)Ambient	An easy-to-produce, biodegradable passive cooling material derived from food waste. Provides electricity-free cooling of over 5°C even in direct sunlight, without the harmful side effects of urban heat islands, high electricity bills or ozone-destroying refrigerants.
AquaReSmart	Efficient storage and distribution of greywater from washing machines, re-using it for irrigation, toilet flushing and cleaning. Facilitating greywater reuse, reducing drinking water usage and promoting sustainability, the app encourages users to adopt and share tips for sustainable practices.
Aqua Breeze	A sustainable device that condenses and collects fresh water from humid air above the seas and polluted water bodies using wind and solar energy. Thus, it offers an economical and environmentally friendly solution to global water scarcity.

Source: <https://www.amesdysonaward.org/tr-TR/2024/project/green-steps>.

7. LITERATURE REVIEW OF SUSTAINABILITY IN CONSUMPTION OF ENVIRONMENTALLY FRIENDLY PRODUCTS

In this part, articles and chapters about sustainable consumption of environmentally friendly products are represented in detailed.

Table 3: Literature Review of Sustainability in Consumption of Environmentally Friendly Products

Author(s)	Journal/Book Name	Country	Year
Geissdoerfer, M. et al.	Journal of cleaner production	United Kingdom	2017
Kirchherr, J., Reike, D., & Hekkert, M.	Resources, conservation and recycling	The Netherlands	2017
White, K., Habib, R., & Hardisty, D. J.	Journal of marketing	Canada	2019
Sheth, J	Journal of business research	USA	2020
Camilleri, M. A. et al.	Sustainability	Italy	2023
Maarif, M. R., Syafrudin, M., & Fitriyani, N. L.	Sustainability	South Korea Indonesia	2023
Ahn, I., & Kim, S. H.	Sustainability	USA	2023
Nazrun, T. et al	Sustainability	Australia	2023
Mutanov, G et al.	Sustainability	Kazakhstan Finland	2023
Davidenko et al.	Sustainability	Kazakhstan	2024

Geissdoerfer, M. et al. (2017) analyzed how companies are adopting circular economy principles to create more sustainable products. Their study found that businesses that integrate circular practices into their operations not only reduce environmental impact but also appeal to a growing segment of environmentally conscious consumers.

Kirchherr, J., Reike, D., & Hekkert, M. (2017) provided a comprehensive review of the circular economy concept, emphasizing its potential to reduce waste and promote the reuse of resources. This shift from a linear to a circular model is seen as a crucial development in achieving long-term sustainability in consumption.

White, K., Habib, R., & Hardisty, D. J. (2019) suggested that the pandemic has accelerated the trend towards more conscious consumption, with consumers increasingly prioritizing sustainability in their purchasing decisions.

Sheth, J (2020) studied, the pandemic has heightened awareness of the fragility of global supply chains and the importance of local, sustainable production. Consumers are increasingly prioritizing products that are not only environmentally friendly but also ethically produced and sourced locally. This shift in consumer priorities is expected to have a lasting impact on the market for sustainable products.

Camilleri et al. (2023) conducted a systematic literature review focusing on consumer perceptions of sustainable products. Their research emphasizes the need for companies to adopt a holistic approach to sustainability, addressing all three dimensions of the triple bottom line—economic, environmental, and social. The study found that while consumers are increasingly aware of the importance of sustainability, the market share for sustainable products remains low, partly due to inconsistent messaging and a lack of comprehensive understanding of consumer priorities.

Maarif et al. (2024) investigated consumer reviews of eco-friendly products on Amazon, using natural language processing to uncover insights into sustainability features that resonate with customers. The study highlights the importance of aligning product design with consumer expectations to enhance satisfaction and promote sustainable consumption. The findings suggest that integrating qualitative and quantitative methods can help companies optimize their product designs to meet environmental goals effectively.

Ahn, I., & Kim, S. H. (2023) studied a scale for measuring motivation in pro-environmental behavior. It discusses the development of a new scale, the Positive Consequences Scale (PCS), which measures the perceived positive consequences of pro-environmental behavior. The scale was developed based on the value-belief-norm theory, which posits that people are more likely to engage in pro-environmental behavior if they believe it will have positive consequences for themselves and others. The PCS was found to be a reliable and valid measure of motivation for pro-environmental behavior. They also discussed the results of a study that examined the relationship between the PCS and pro-environmental behavior. The study found that people who scored higher on the PCS were more likely to engage in pro-environmental behaviors, such as recycling and conserving energy. This suggests that the PCS may be a useful tool for predicting and encouraging pro-environmental behavior. Finally, the article discusses the implications of the findings for environmental education and policy. The authors suggest that interventions that focus on the positive consequences of pro-environmental behavior may be more effective in promoting pro-environmental behavior than interventions that focus on negative consequences.

Mutanov, G. et al (2023) studied about sustainability driven green innovation in the aerospace industry. It discusses the use of an intelligent decision support system to make decisions in the aerospace industry. The article details a new method for automatic text summarization, which outperforms traditional methods. The method is based on calculating the importance of sentences through a common statistical measure, TF-IDF. The article explores different algorithmic and visualization approaches in order to determine the optimal method for displaying the results. The article concludes by stating the new GreedySummariser method is the most efficient method for abstracting space text.

Nazrun, T. et al (2023) studied biopolymers as cladding materials. It discusses the sustainability and various types of biopolymers that can be used as cladding. The authors explore the manufacturing methods, properties, and applications of biopolymer materials. They also discuss the challenges and future prospects of using biopolymers as cladding materials. Some of the key points from this article are that biopolymers are more adaptable and environmentally benign than traditional polymers. They are also biodegradable, which makes them a sustainable option for cladding materials. However, the rate of biodegradability varies depending on the type of biopolymer. Overall, this article provides a comprehensive overview of the potential of biopolymers as sustainable cladding materials.

Davidenko et al. (2024) discusses the challenges of changing the economic situation in an industrial region of Kazakhstan through eco-branding. The authors analyze publicly available data sets to assess the feasibility of eco-branding as a development strategy.

8. CONCLUSION AND IMPLICATIONS

The dizzying increase in the world population, along with globalization and unstoppable consumption, has led to the depletion of limited resources. This situation is perceived as a threat to the survival of humanity, making it necessary for new solutions to be found. The strain on natural resources has been intensified by these factors, and as a result, concerns about the sustainability of human activities have been heightened. The search for alternatives that can ensure the longevity of these resources and the well-being of future generations is being increasingly prioritized. This study aims to identify and highlight novel methods for creating new pathways to the future.

This article is presented as a literature study on environmentally friendly marketing, green technologies, and sustainability practices used both globally and in Turkey. Aims are set by the article to guide researchers by presenting projects, examples, and studies conducted in this field. Through this study, it has been observed that awareness of environmentally friendly products is rapidly increasing worldwide, including in Turkey. However, it has also been noted that the sufficient level of

awareness and adoption has not yet been reached, particularly in Turkey. It is recommended that further studies be carried out to increase awareness on this issue. Additionally, ongoing efforts to promote green technologies and sustainable practices are considered vital in addressing the pressing challenges posed by limited resources and environmental degradation. Awareness-raising activities should be conducted to ensure that scarce resources are preserved and renewed for future generations. The need for comprehensive and continuous education on the importance of sustainability and environmentally friendly practices is emphasized, as it is believed that such efforts will contribute to the long-term preservation of natural resources and the protection of the environment for future generations.

REFERENCES

- Ahmed, M. A., Roy, P., Shah, M. H., Argha, D. P., Datta, D., & Riyad, R. H. (2021). Recycling of cotton dust for organic farming is a pivotal replacement of chemical fertilizers by composting and its quality analysis. *Environmental Research and Technology*, 4(2), 108-116.
- Ahn, I., & Kim, S. H. (2023). Measuring the motivation: A scale for positive consequences in pro-environmental behavior. *Sustainability*, 16(1), 250.
- Akdoğan, L. (2023). SÜRDÜRÜLEBİLİR TÜKETİM: KAVRAMSAL BİR ÇALIŞMA. *Oğuzhan Sosyal Bilimler Dergisi*, 5(1), 43-53.
- Bozlağan, R. (2005). Sürdürülebilir gelişme düşüncesinin tarihsel arka planı. In *Journal of Social Policy Conferences* (No. 50, pp. 1011-1028). Istanbul University.
- Camilleri, M. A., Cricelli, L., Mauriello, R., & Strazzullo, S. (2023). Consumer perceptions of sustainable products: A systematic literature review. *Sustainability*, 15(11), 8923.
- Davidenko, L., Sherimova, N., Kunyazova, S., Amirova, M., & Beisembina, A. (2024). Sustainable Economy: The Eco-Branding of an Industrial Region in Kazakhstan. *Sustainability*, 16(1), 413.
- Delmas, M. A., & Burbano, V. C. (2011). The drivers of greenwashing. *California Management Review*, 54(1), 64-87.
- Erbaşlar, G. (2012). Yeşil pazarlama. *Mesleki Bilimler Dergisi (MBD)*, 1(2), 94-101.
- Gimenez, C., & Sierra, V. (2013). Sustainable supply chains: Governance mechanisms to greening suppliers. *Journal of Business Ethics*, 116, 189-203.
- Geissdoerfer, M., Savaget, P., Bocken, N. M., & Hultink, E. J. (2017). The Circular Economy—A new sustainability paradigm?. *Journal of Cleaner Production*, 143, 757-768.
- Grankvist, G., & Biel, A. (2007). The impact of environmental information on professional purchasers' choice of products. *Business Strategy and the Environment*, 16(6), 421-429.
- Jansson, J., Marell, A., & Nordlund, A. (2010). Green consumer behavior: determinants of curtailment and eco-innovation adoption. *Journal of Consumer Marketing*, 27(4), 358-370.
- Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, 221-232.
- Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?. *Environmental Education Research*, 8(3), 239-260.
- Mutanov, G., Omirbekova, Z., Shaikh, A. A., & Issayeva, Z. (2023). Sustainability-Driven Green Innovation: Revolutionising Aerospace Decision-Making with an Intelligent Decision Support System. *Sustainability*, 16(1), 41.
- Laroche, M., Bergeron, J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing*, 18(6), 503-520.
- Nazrun, T., Hassan, M. K., Hossain, M. D., Ahmed, B., Hasnat, M. R., & Saha, S. (2023). Application of Biopolymers as Sustainable Cladding Materials: A Review. *Sustainability*, 16(1), 27.
- Nielsen. (2015). The Sustainability Imperative: New Insights on Consumer Expectations October 2015. Nielsen.
- Maarif, M. R., Syafrudin, M., & Fitriyani, N. L. (2023). Uncovering Sustainability Insights from Amazon's Eco-Friendly Product Reviews for Design Optimization. *Sustainability*, 16(1), 172.
- Ottman, J. A., Stafford, E. R., & Hartman, C. L. (2006). Avoiding green marketing myopia: Ways to improve consumer appeal for environmentally preferable products. *Environment: science and policy for sustainable development*, 48(5), 22-36.
- Paul, J., Modi, A., & Patel, J. (2016). Predicting green product consumption using theory of planned behavior and reasoned action. *Journal of Retailing and Consumer Services*, 29, 123-134.
- Peattie, K. (1999). Trappings versus substance in the greening of marketing planning. *Journal of Strategic Marketing*, 7(2), 131-148.
- Sheth, J. (2020). Impact of Covid-19 on consumer behavior: Will the old habits return or die?. *Journal of Business Research*, 117, 280-283.
- Söderholm, P. (2020). The green economy transition: the challenges of technological change for sustainability. *Sustainable Earth*, 3(1), 6.

Tanner, C., & Wölfling Kast, S. (2003). Promoting sustainable consumption: Determinants of green purchases by Swiss consumers. *Psychology & Marketing, 20*(10), 883-902.

Thøgersen, J., & Ölander, F. (2006). To what degree are environmentally beneficial choices reflective of a general conservation stance?. *Environment and Behavior, 38*(4), 550-569.

Thøgersen, J. (2000). Psychological determinants of paying attention to eco-labels in purchase decisions: Model development and multinational validation. *Journal of Consumer Policy, 23*(3), 285-313.

Vermeir, I., & Verbeke, W. (2006). Sustainable food consumption: Exploring the consumer "attitude-behavioral intention" gap. *Journal of Agricultural and Environmental Ethics, 19*, 169-194.

Yücel, M., & Ekmekçiler, Ü. S. (2008). Çevre dostu ürün kavramına bütünsel yaklaşım; temiz üretim sistemi, eko-etiket, yeşil pazarlama. *Elektronik Sosyal Bilimler Dergisi, 7*(26), 320-333.

White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT consumer behaviors to be more sustainable: A literature review and guiding framework. *Journal of Marketing, 83*(3), 22-49.

<https://www.abdiibrahim.com.tr/surdurulebilirlik>

<https://www.akbank.com/tr-tr/genel/Sayfalar/akbank-surdurulebilir-finansman.aspx>

https://www.allianz.com/tr_TR/faaliyetlerimiz/surdurulebilirlik.html

<https://www.apple.com/tr/environment/>

<https://www.arcelikglobal.com/surdurulebilirlik/genel-bilgi/>

<https://bfreshgum.com/>

<https://www.closetheoopusa.com/tonerpave/>

<https://www.e-woodproducts.com/>

<https://www.homebiogas.com/>

<https://www.jamesdysonaward.org/en-US/2024/project/ergo-mow>

<https://www.jamesdysonaward.org/tr-TR/2024/project/green-steps>

<https://www.jamesdysonaward.org/tr-TR/2024/project/ecopod-fertiliser-dispenser>

<https://www.jamesdysonaward.org/tr-TR/2024/project/zero-brush>

<https://www.jamesdysonaward.org/tr-TR/2024/project/subambient-the-planet-centric-cooling-material>

<https://www.jamesdysonaward.org/tr-TR/2024/project/aquaresmart>

<https://www.jamesdysonaward.org/tr-TR/202>

<https://www.ikea.com.tr/surdurulebilirlik-yeniden-kullanilir>

<https://lifestraw.com/>

<https://www.omo.com/tr/surdurulebilirlik/plastik.html>

<https://orbisk.com/>

<https://www.samsung.com/tr/sustainability/>

<https://seabin.io/home>

<https://www.ulker.com.tr/tr/toplum-icin/surdurulebilirlik>

<https://www.vitra.com.tr/hakimizda/surdurulebilirlik/>

SUSTAINABLE CONSUMER BEHAVIOR: THE INFLUENCE OF HABIT ON RELATIONAL BENEFITS AND BEHAVIORAL INTENTIONS IN PERSONAL SERVICE BUSINESSES

DOI: 10.17261/Pressacademia.2024.1933

JMML- V.11-ISS.2-2024(2)-p.66-79

Mohammad Karami¹, Serife Zihni Eyupoglu², Ahmet Ertugan³

¹Near East University, Department of Business Administration, Nicosia, Cyprus.

mohammad.karami@neu.edu.tr, ORCID: 0000-0003-1903-828X

²Near East University, Department of Business Administration, Nicosia, Cyprus.

serife.eyupoglu@neu.edu.tr, ORCID: 0000-0001-7678-1729

³Near East University, Department of Business Administration, Nicosia, Cyprus.

ahmet.ertugan@neu.edu.tr, ORCID: 0000-0001-6684-7042

Date Received: July 10, 2024

Date Accepted: October 29, 2024



To cite this document

Karami, M., Zihni Eyupoglu, S., Ertugan, A., (2024). Sustainable consumer behavior: the influence of habit on relational benefits and behavioral intentions in personal service businesses. *Journal of Management, Marketing and Logistics (JMML)*, 11(2), 66-79.

Permanent link to this document: <http://doi.org/10.17261/Pressacademia.2024.1933>

Copyright: Published by PressAcademia and limited licensed re-use rights only.

ABSTRACT

Purpose- A crucial element of relationship marketing has always been the behavioral intention. However, in a personal service business, the way that habitual behavior moderates the relationship between relational benefits and intention to revisit has received little to no serious attention. The current study attempts to examine the moderating influence of habitual behaviour in the relationship between the dimensions of relational benefits and customer revisit intention in the beauty sector.

Methodology- Utilizing judgmental sampling technique, data was collected from 482 beauty salon customers in Cyprus. Using multiple regression analysis, moderated regression analysis, and subgroup analysis, the associations between constructs were tested.

Findings- The findings of this study indicate that all dimensions of relational benefits have a positive significant effect on the revisit intention. Furthermore, the outcomes reveal that habit positively influences the effect of relational benefits dimensions on the intention to revisit.

Conclusion- It can be concluded from outcomes of this study that, relational benefits is a source of the continuance intention and habit as a strong factor, sustain a relationship that is built based on satisfactory relational benefits between customers and service providers. Despite several limitations, the findings of this study theoretically and empirically contribute to the literature of relationship marketing and customer behavior. In addition, the managerial implications and recommendations of this paper expand the views of practitioners and researchers in personal service businesses for future focus.

Keywords: relational benefits revisit intention, habitual behaviour, beauty industry, personal service business, business sustainability.

JEL Codes: M30, M12, D83

1. INTRODUCTION

The significance of customer relationship management (CRM) has been increasingly emphasized by industry practitioners and researchers in the current highly competitive environment (Bohling et al., 2006; Khan et al., 2020). The service industry has been identified as a relationship-oriented sector (Brady & Cronin, 2001); therefore, the service provider-customer relationship is the primary basis for building, evaluating, and developing service performance, and vice versa (Liang et al., 2018; Darzi & Bhat, 2018).

Therefore, the "relationship" is a key term in the service business whereby it is possible to achieve business sustainability by focusing on the customer-service provider social exchange during service delivery (Grönroos, 1995; S. W. Chou & Hsu, 2016). Due to the fact that maintaining current loyal customers is less costly and time-consuming in comparison with attracting new ones (Reichheld & Sasser, 1990), maintaining and enhancing the relationship with existing customers as a unique value is highly recommended in the competitive market (Antwi, 2021; Sohaib, 2022). In light of this, relationship continuum strategies have been highlighted for academics as well as marketers (Peterson, 1995; Payne & Frow, 2017). To implement such strategies more effectively, it is recommended that the relationship between the customer and service provider and also the customers' behavioral intentions are thoroughly understood (Liang et al., 2018; Darzi & Bhat, 2018; Janssens et al., 2020).

The failure or success in a relationship between service providers and their clients can largely be explained by two proposed approaches according to relationship marketing studies: "relationship quality" and "relational benefits" (Hennig-Thurau et

al., 2002). Relationship quality refers to an evaluation of customer loyalty based on the degree of relationship appropriateness from the customer perspective (e.g., Crosby et al., 1990; Dorsch et al., 1998). The relational benefits approach has been conceptualized as the loyalty determination of customers given the values that are received or perceived in their relationship with the service provider during service delivery (e.g., Bendapudi & Berry, 1997; Beatty et al., 1996; Gwinner et al., 1998).

Relational benefits are considered a key element of customer behavioral intention in the service business (e.g., Lee et al., 2008; Najjar & Najjar, 2022; Dandis et al., 2022). Although the relational benefits directly affect customer behavioral intention, it has been suggested that there may be a moderator between them (Y. K. Lee et al., 2008). The author argues that no previous study has been conducted to explore the condition that relational benefits may have a greater or lesser influence on behavioral intention in different circumstances (Y. K. Lee et al., 2008). Following this argument, this study suggests that customers' revisit intentions may depend on the degree of habit of the customers in the relationship with their service providers. Support for this assumption is that, habit as an unconscious state of mind has been determined as an important factor predicting/influencing customer behavior intention in customer relationship management studies (Jones et al., 2000; Amoroso & Lim, 2017; Nguyen et al., 2022). Therefore, this study aims to examine whether habit as a moderator will affect the path between relational benefits and customer revisit intention in a personal service business with a particular focus on the hairdresser-client relationship. The beauty salon service is important due to the high level of interaction and the intense frequency of visits between customers and their hairdressers compared with other service businesses (Dagger et al., 2011; Chou & Chen, 2018). The relationships in a proposed model were examined based on valid data collected from 482 customers of beauty salons in Nicosia, Cyprus in January and February of 2023.

The paper is organized as follows: Section 2 presents a review of the previous studies and develops the hypotheses using a conceptual framework. Section 3 includes the methodology encompassing the sample of the study, data collection techniques, questionnaire constructs, and the data analysis methods. The results and interpretation of the analyses are reported in Section 4. Finally, Section 5 discusses the managerial and theoretical implications, limitations of the current study and recommendations for future studies.

2. LITERATURE REVIEW

2.1. Revisit Decision Making (RDM)

Customer loyalty has been viewed from various perspectives. As an example, customer loyalty can be explained by repurchase/revisit intention, which is a behaviour developed by a customer. This intention behaviour is resulted from all the experiences that customers have gained while using a products or receiving services from providers (Fida et al., 2020). The concept of purchase decision-making has been the subject of numerous studies over the years, which have demonstrated the significance of this subject in marketing studies (e.g., Jones et al., 2000; Fang et al., 2011; Anshu et al., 2022). Repurchase intention is summarized as an individual's decision to continue purchasing a product or service from the same seller, store, or service provider in the future after evaluating previous experiences (Chiu et al., 2012; Tian et al., 2022). In the service industry, the optimistic likelihood that a client will decide to use the same service from the same service provider on a subsequent visit is known as the intention to repurchase (Hellier et al., 2003; Chou & Chen, 2018). Revisit intention is a notion that is similar to repurchase intention in that it describes a customer's willingness to return to the same location, person, or institution after a positive experience (Chien, 2017). In the context of services, the revisit intention is assessed based on the extent to which the client is willing to return to the same service provider, like a hairdresser (Chou and Chen, 2018), or service center, like a hotel or restaurant (Luturlean et al., 2018; Rajput & Gahfoor, 2020). To establish a sustainable relationship for retaining loyal customers, serious focus has always been on investigating and examining the determinants of customer revisit intention in the service studies (Abubakar et al., 2017).

2.2. Relational Benefits

When customers buy, use, or consume a specific good or service, they expect desired benefits that can meet their needs. The benefits received by each customer vary since they depend on individual attributes and perceptions of the product or service benefits. It has been suggested there might be some additional benefits apart from consuming a product or using a service itself that are likely to be received from the relationship between exchange parties. The benefits obtained from the relationship between a service provider and customers in a long-lasting relationship are called "Relational Benefits" (Morgan & Hunt, 1994). The relational benefits potentially build and enhance the service provider-customer experiences and relationships (Gwinner et al., 1998; Gremler et al., 2019). In a long-term relationship, the impact of these benefits varies over time depending on how frequently the clients use the specific good or service (Dagger and O'Brien, 2010). Consequently, relational benefits are expected to improve the existing relationship between service encounters and customers, increasing relationship sustainability over time (Dagger et al., 2011). This will lead to the return of high values, including high sales, high revenue, profitability, and sustainability for the business (Gwinner et al., 1998; Lee et al., 2013; Dandis et al., 2023).

To identify the characteristics of relational benefits, numerous studies have been carried out. For instance, it has been suggested that clients may receive a variety of relational benefits from their relationship with a service provider, including

social, psychological, financial, and customized benefits (Gwinner et al., 1998). Over time, the dimensions of relational benefits have been categorized, modified, and renamed to the three main categories of confidence benefits, social benefits, and special treatment benefits (Gwinner et al., 1998). Most of the recent studies in the related area have followed the new categorization due to the satisfactory validity and reliability outcomes (e.g., Hennig-Thurau et al., 2002; Ruiz-Molina et al., 2009; S. Chou & Chen, 2018). The psychological side of the service provider-customer relationship is explained by confidence benefits. These advantages raise customers' sense of comfort and security while lowering their levels of anxiety and uncertainty. As a result, there is a mutual understanding between the client and the service provider in a relationship (Morgan and Hunt, 1994). Social benefits, which are the emotional aspect of a relationship, expand the friendship relationship between customers and the service provider (Ruiz-Molina et al., 2009) by giving clients a greater sense of familiarity, personal recognition, and social support from the service provider (Morgan & Hunt, 1994; Gwinner et al., 1998). Special treatment benefits are the benefits that a customer exclusively receives from a service provider compared to other customers; these special benefits can include discounts, premium prices, free use of service (financial benefits), faster delivery of services or individualized services (customized benefits) (Morgan & Hunt, 1994; Yen & Gwinner, 2003). Customers who receive these kinds of benefits feel unique, superior, and more valuable in comparison to others (Chou and Chen, 2018).

In the literature, the significant relationship between relational benefits' dimensions, satisfaction and behavioral intention has been highlighted (Dimitriadis & Koritos, 2014; Gao et al., 2023). For instance, relational benefits were suggested to be a significant factor influencing customer loyalty and continuance intention in the service industry (Gremler & Gwinner, 2000; Hennig-Thurau et al., 2002). It was highlighted specifically that confidence benefits are the most important type of benefits in face-to-face encounters, which affect loyalty and encourage the customer to stay in the relationship (Chou and Chen, 2018). Unique values that customers receive from service providers in a long-lasting relationship decrease the customers' willingness to switch their service provider/service center and consequently persuade them to continue and maintain the relationship (Berry, 1995; Hennig-Thurau et al., 2002). In the service sector, the results of empirical studies have confirmed the positive relationship between the dimensions of relational benefits, such as confidence benefits and special treatment benefits, and customer loyalty and intention to continue the relationship (Yen & Gwinner, 2003; Najjar & Najjar, 2022; Dandis et al., 2023). With a focus on several personal services business, the three types of relations benefits including confidence benefits, social benefits, and special treatment benefits were found to be predictors of customer intention to revisit the service provider (S. Chou & Chen, 2018). Given the preceding arguments, this study proposes the following hypotheses:

H1: Confidence benefits have significant positive effect on revisit intention.

H2: Social benefits have a significant positive effect on revisit intention.

H3: Special treatment benefits have a significant positive effect on revisit intention.

2.3. Moderating Role of Habitual Behavior

Habit is the unconscious state of mind that has been recognised as a cause of the automatic reaction and responses of an individual towards a certain activity (Triandis, 1980) without any rational pre-evaluation in a specific situation (Khalifa & Liu, 2007). Habit has been discussed as a particular action or response based on the previous experience of a person in similar circumstances to reach a certain goal (Verplanken et al., 1997). In the service context, habit refers to the behavioral tendency that results from the positive experience of customers in their previous purchasing without the conscious thought process, leading to the purchase of the same good or service (Chiu et al., 2012; Limayem et al., 2007). Therefore, customer purchasing habit mirrors the service provider's interaction performance in the relationship with customers, which is built and developed based on the satisfactory experience of customers (Verplanken & Aarts, 1999; Polites & Karahanna, 2013; S. W. Chou & Hsu, 2016). In a formed relationship, the positive experience a customer gains from the service provider's performance is likely to be a source of purchasing/using habits, which consequently results in post-experience behavior (Verplanken & Aarts, 1999; Polites & Karahanna, 2013; S. W. Chou & Hsu, 2016). The literature suggests that there are three possible explanations for the relationship between habit and behavioral intention: the direct impact of habit (Alalwan, 2020; Gunden et al., 2020), moderating role of habit (Hsu et al., 2015; S. W. Chou & Hsu, 2016; Nguyen et al., 2022), and mediating effect of habit (Mouakket, 2015; Amoroso & Lim, 2017). In this study, the moderating role of habit is examined.

The findings of prior research have demonstrated that habit plays a moderating function in the relationship between behavioral intentions such as intention to repurchase and its determinants (e.g. Hsu et al., 2015; S. W. Chou & Hsu, 2016; Nguyen et al., 2022). Significant evidence has been found indicating that, in the context of services, habit plays a moderating role between behavioral intentions and their antecedents, such as trust and commitment (Agag and El-Masry, 2016). Habit was also reported to be a strong factor boosting the relationship between repurchase intention and its antecedents including satisfaction and trust (Hsu et al., 2015). Relational benefits, as the crucial predictors of revisit intention and loyalty (Lee et al., 2008; Dagger & O'Brien, 2010; Dagger et al., 2011; S. Chou & Chen, 2018), are assumed to be influenced by habit in a long-lasting relationship. These considerations lead to the following hypotheses:

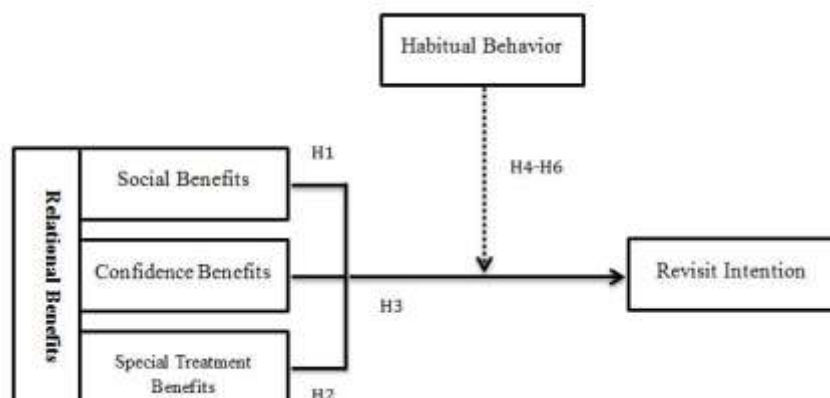
H4: Habit positively moderates the confidence benefits and revisit intention association.

H5: Habit positively moderates the social benefits and revisit intention association.

H6: Habit positively moderates the special treatment benefits and revisit intention association.

Given the findings of the literature review and variables relationships, this study proposes the following research framework (Figure 1).

Figure 1: Conceptual Framework



3. DATA AND METHODOLOGY

3.1. Population and Sample

For this study, the personal service business and target population were determined to be the hairdressing services and their visitors, respectively. Three factors formed the basis of the reasoning for focusing on the hairdressing salons in the chosen population. First, several researches have been conducted recently to study beauty salons' services, and the results have highlighted the importance of this service (e.g. Vázquez-Carrasco & Foxall, 2006; Dagger & O'Brien, 2010; Garzaniti et al., 2011; S. Chou & Chen, 2018; H. W. Lee & Kim, 2019). Secondly, the outcomes of previous studies have revealed that the level of customer-service provider interactions as well as the intensity of frequent visits were highest in hairdressing services compared to personal service businesses (Dagger & O'Brien, 2010; S. Chou & Chen, 2018). Therefore, this service is well-suited for an accurate investigation to examine the role of relational benefits and habit in the service relationship, since interactions and the frequency of visits are the core of the concepts of both relational benefits and habit. Thirdly, the recent statistics reported by the European Union illustrated that Cyprus has witnessed rapid growth in the beauty industry, which consequently increases and continues the demand for investing in this industry (Eurostat, 2023). In terms of the employment share of hairdressers and beauticians, Cyprus is ranked highest among EU members (2.3% share of total employment), followed by Malta and Portugal (both 1.3%), Ireland, Greece, Spain, and Italy (all 1.2%) (Eurostat, 2023). All these facts determine the uniqueness of beauty salon services and the importance of service provider-customer relationship quality and sustainability.

3.2. Data Collection and Questionnaire Construct

This paper's goal was achieved by using a quantitative research analysis approach along with a questionnaire survey to test the suggested model. The data were collected in January and February of 2024 via a self-administered questionnaire. To verify the validity and reliability of the research instruments, a pilot study with a sample of 30 respondents was conducted as the first phase. Consequently, to improve the instrument's reliability and reword and shorten the survey questions, several minor adjustments were made. A total of 500 questionnaires were distributed to the hairdressing salons' visitors using the judgmental sampling technique (non-probability). A total of 482 questionnaires were returned, providing a satisfactory respondent rate (98%). The respondents who had switched hairstylists in the preceding 12 months were extracted and eliminated using a filter question. Therefore, 28 responses were removed and a total of 454 valid questionnaires were considered for data analysis.

The survey was divided into two sections. The first is the demographics part, including age, income, marital status, level of education, frequency of visit and a filter question. The second part is the constructs and items in survey questionnaire. The demographic data of the respondents are presented in Table 1.

Table 1: Respondents' Demographic Profile

Measure	Item	Frequency (N=482)	(%)
Gender	male	226	46.9
	female	256	53.1
Age	below 21	24	24.0
	21 - 30	170	37.3
	31- 40	182	35.7
	41- 50	78	16.2
	51- 60	28	5.8
	61- above	0	0
Education level	less than bachelor's	10	2.1
	bachelor's	173	35.9
	master's and above	299	62.0
Marital status	single	280	58.1
	married	202	41.9
Visit frequency per year	< 3 times	2	0.4
	3-6 times	20	4.1
	6-9 times	110	22.8
	9-12 times	192	39.8
	>12 times	158	32.8
Changed within the last year	yes	28	5.8
	no	454	94.2

According to the results, over 94.2% of the participants did not switch their hairstylists during the year before the data collection period (the last 12 months). In addition, the highest frequency of visits was recorded for 9-12 (39.8%) times per year, which reveals a high level of interaction between clients and hairdressers. Furthermore, the results illustrated that more than half of the participants were female (53.1%), and in terms of age, most of them were between 21 and 30 years old (37.3%). According to the education level, the respondents held at least a master's degree (62 %) indicating a well-educated profile of participants. Most of the participants were single (58.1%)

3.3. Measures

The construct and items of questionnaire were borrowed from the early studies in related literature. The dimensions of relational benefits were measured by 16 items adopted from Vázquez-Carrasco and Foxall (2006). Habit was measured by 4 items adapted from Chiu et al. (2012). Finally, 4 items adapted from Chen et al. (2017) were used to evaluate revisit intention. Constructs and related items in the questionnaire are presented in Table 2. Each item of the constructs was given a minor adjustment to bring them into line with the context of hair salon services. Each construct was assessed using five-point Likert-type questions (1 reflected "strongly disagree" and 5 reflected "strongly agree"). The items, constructs and reference of each source are presented in Appendix A.

3.4. Data Analysis

The data were analyzed and the relationships between the constructs in the suggested model were tested using the legitimate and dependable statistical tool, SPSS (version 24 modified with PROCESS macro v.4.2). Cronbach's α , composite reliability (CR), average variance extracted (AVE) tests were used in order to assess the construct validity and reliability. To check whether the item of each construct should be removed, exploratory factor analysis was run. Multiple regression analysis, moderated regression analysis and sub-group analyses were performed to measure the association between relational benefits and revisit intention.

3.4.1. Multiple Regression Analysis

The linear relationship between relational benefits and revisit intention was tested by performing multiple regression analysis. As prerequisites before regression, the correlation coefficient and indices of Variance Inflation Factor (VIF) to check the multicollinearity have been observed. The result of Pearson's bivariate correlations showed that coefficient values were less than 0.8 ($p < 0.000$), which demonstrated a sufficient correlation among the variables (Schober & Schwarte, 2018). In addition, the outcomes of the VIF test were between 1 and 2, thus indicating that the independent variables are not highly correlated with each other (O'Brien, 2007; Kim, 2019). Therefore, the adequacy of correlation among the independent variables was confirmed to run the regression analysis. The results for these values are presented in Table 2.

Table 2: The VIF and Correlation Coefficient among Variables

Construct	VIF	1	2	3	4	5
1. Confidence benefits	1.315	1.000				
2. Social benefits	1.304	0.482*	1.000			
3. Special treatment benefits	1.010	0.231**	0.582**	1.000		
4. Habit	1.409	0.444*	0.385**	0.409**	1.000	
5. Revisit intention	1.185	0.402*	0.369**	0.525**	0.449**	1.000

Note: (**) $p < 0.05$, (*) $p < 0.1$

3.4.2. Moderate Regression Analysis

The moderating effect of habit on the association between relations benefits and revisit intention was examined using moderated regression analysis (MRA). The procedure of MRA is as follows:

$$Y = a + b_1 * X + b_2 * Z \quad (1)$$

$$Y = a + b_1 * X + b_2 * Z + b_3 * (X*Z) \quad (2)$$

Where Y = revisit intention, X = relational benefits, Z =habit, a, b1, and b2 = constants

Habit will be a significant moderator if the variance (R2) in Equation 2 is increased relatively compared to Equation 1 given to effect of the interaction term of relational benefits and habit (X*Z). (Sharma et al., 1981). According to the results, if habit does not significantly moderate the relationship between relational benefits and revisit intention, it is suggested that sub-group analysis should be conducted to accurately check the moderating role of habit in each sub-group (Y. K. Lee et al., 2008). However, on the other hand, sub-group analysis was also employed in the condition the moderating role was reported significant (Lin et al., 2017).

4. DATA ANALYSIS AND RESULTS

4.1. Exploratory Factor Analysis

The dimensionality of all constructs was evaluated by principal component factor analysis using varimax rotation. The KMO (Kaiser-Meyer-Olkin) and Bartlett's test of sphericity were checked to ensure the appropriateness of items and constructs. The results of the test showed the overall measure of sampling adequacy (MSA) with a value of 0.894 for KMO, which was greater than the acceptable limit of 0.5. In addition, Bartlett's test of sphericity was significant at the level of $p < 0.01$, which indicated that factor analysis compressed the data in a meaningful way with a significant correlation among variables (Hair et al., 2010). Due to the large sample size, the varimax rotation method was used to extract the factors. Furthermore, an Eigenvalue greater than 1 was chosen to extract the five factors given the variables in the model of study. According to the results, the first component explained 39.13% of the total variance of all components. In the EFA analysis in this study, the results of the component rotated matrix significantly confirmed that component COB could be measured by 6 items, component SOB by 5 items, SPTB by 5 items, and HAB and REI by 4 items, respectively. According to the significant results, no item was removed from the constructs. Therefore, five constructs in total containing 24 components (items) were confirmed for the rest of the analysis. The results of the extracted factors are reported in Table 3.

Table 3: The Indicators of Exploratory Factor Analysis, Reliability and Validity

Construct	Item	Mean	EFA	AVE	CR	Cronbach's α
Confidence Benefits (COB)	COB1	4.13	0.93	0.70	0.93	0.95
	COB2	4.29	0.72			
	COB3	4.15	0.92			
	COB4	4.16	0.83			
	COB5	4.23	0.92			
	COB6	4.33	0.74			
Social Benefits (SOB)	SOB1	4.38	0.72	0.60	0.88	0.87
	SOB2	4.49	0.72			
	SOB3	3.43	0.79			
	SOB4	4.83	0.69			
	SOB5	4.37	0.88			
Special Treatment Benefits (STB)	SPTB1	4.08	0.86	0.58	0.87	0.94
	SPTB2	4.04	0.85			
	SPTB3	3.78	0.91			
	SPTB4	3.59	0.87			

	SPTB5	3.83	0.91			
Habit (HAB)	HAB1	4.20	0.84	0.82	0.94	0.97
	HAB2	4.21	0.93			
	HAB3	4.10	0.87			
	HAB4	4.24	0.82			
Revisit Intention (REI)	REI1	4.26	0.69	0.80	0.94	0.91
	REI2	4.26	0.78			
	REI3	4.27	0.64			
	REI4	4.37	0.61			

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

4.2. Reliability and Validity

The values of Cronbach's α and composite reliability (CR) were checked to assess the internal consistency. According to the findings, all values ranged from 0.87-0.97 for Cronbach's alpha and 0.87-0.94 for CR, and exceeded the acceptable threshold of 0.07 (Fornell & Larcker, 1981; Nunnally, 1975). As a result, all constructs' internal consistency was sufficient, confirming the research's desired reliability (Table 3)

According to earlier research, the CR and AVE values should be greater than 0.7 and 0.5, respectively, in order to ensure convergent validity (Bagozzi & Yi, 1988). The test results showed that all of the CR and AVE indices in the measurement model surpassed the acceptable limit, confirming the sufficient convergent validity (Table 3).

Furthermore, discriminant validity was verified using the pairwise construct comparison method proposed by Fornell and Larcker (1981). When the square roots of the AVE for each construct (diagonal indices in the matrix) are greater than the values of a construct's correlation coefficient with other constructs (off-diagonal indices), discriminant validity is verified. To corroborate the discriminant validity of the constructs, the Heterotrait–Monotrait ratio (HTMT) was also examined as support (Cohen, 1988; Tian et al., 2022). The outcome indices demonstrated that there was no discriminant validity due to the HTMT values being lower than the accepted limit of 0.9 (Henseler et al., 2015). As a result, the discriminant and convergent validity were confirmed. Table 4 displays the pairwise construct comparison matrix and HTMT test results.

Table 4: The Discriminant Validity Indicators

Fornell and Larcker test					
Constructs	COB	SOB	SPTB	HAB	REI
COB	0.836				
SOB	0.455	0.774			
SPTB	0.554	0.630	0.761		
HAB	0.582	0.356	0.503	0.905	
REI	0.664	0.420	0.566	0.756	0.894
Heterotrait–Monotrait ratio (HTMT) test					
Constructs	COB	SOB	SPTB	HAB	REI
COB	-				
SOB	0.712	-			
SPTB	0.442	0.624	-		
HAB	0.451	0.511	0.492	-	
REI	0.587	0.468	0.433	0.517	-

Notes: italic-bold indices are the squared root of AVE. Below the diagonal represent correlations' coefficients; level of significance is $p < 0.05$.

4.3. Testing of Hypotheses

The outcomes of the multiple regression analysis showed that the standard regression coefficient for confidence benefits ($\beta = 0.619$ t-value = 16.047, $p < 0.001$), social benefits ($\beta = 0.112$, t-value = 2.912, $p < 0.001$), and special treatment benefits ($\beta = 0.058$, t-value = 2.820, $p < .001$) are significant in explaining the revisit intention (Table 5). The explained variance (R^2) of revisit intention was 0.58 indicating a good effect size of R^2 , since it is higher the acceptable value of 0.50 (Ozili, 2022). Therefore, H1, H2 and H3 are supported.

Table 5: The Outcomes of Multiple Regression Analysis

Construct	Beta (β)	t-value	p-value
COB	.0619***	16.047	0.000
SOB	.0112***	2.912	0.004

SPTB	.0058***	.2820	0.005
R	0.67		
R²	.058		
Adjusted R²	.055		
F-ratio	135.356 ***		

Note: (***) p<0.001, (**) p<0.05; (*) p<0.1

Customer revisit intention was used as the dependent variable in the moderated regression analysis using PROCESS macro, and habit was used as a moderating variable to examine the moderating effect. The results of the regression reported indicated that, given the F-value associated with R² change, a remarkable difference was validated in the variances of the regression equations in model 1(Baseline model) and model 2 (Constrained model), thus confirming a significant effect of the interaction term on revisit intention (Zedeck, 1971). Thus, habit plays a pure moderating role in the relationship (Sharma et al., 1981) between relational benefits and revisit intention. Therefore, H4-H6 are significantly supported. The outcomes of the moderated regression analysis are shown in Table 6.

Table 6: Moderated Regression Analysis of the Effect of Habit

	Model 1 (Baseline model)		Model 2 (Constrained model)	
	β	t-value	β	t-value
COB	0.619***	16.047	.018***	0.648
SOB	0.112***	2.912	0.314**	8.655
SPTB	0.058***	2.820	0.066	2.141
HAB			0.548	16.154
COB * HAB			0.563***	7.392
SOB * HAB			0.455***	2.875
SPTB * HAB			0.402***	-2.886
R²	0.58		0.65	
Adjusted R²	0.55		0.64	
ΔR^2	0.000			
F-value	222.306**			
F-value for Incremental R²	0.000			

Note: (***) p<0.001, (**) p<0.05; (*) p<0.1; β : standardized coefficients

Although the correlations between habit and the independent variables were significant (Table 6) and the pure moderating effect was confirmed, the sub-group analyses were conducted to specify the effect of the low and high habit groups as a moderator between relational benefits and revisit intention (Hsu et al., 2015; Agag & El-Masry, 2016; Lin et al., 2017). As a result, the respondents were divided into two subgroups, "low-habit" (n = 218) and "high-habit" (n = 236), according to their responses to each of the habit items in the questionnaire. The analysis was conducted using these two sets of respondents. The results are displayed in Table 7.

Table 7: Statistical Comparison of Paths for Subgroup Analysis of the Effect of Habit

	Law-habit (n=236)		High-Habit (n=218)		Statistical comparison z
	r	Z	r	Z	
COB	0.352*	0.368	0.425**	0.480	1.755
SOB	0.207*	0.224	0.319**	0.387	1.736
SPTB	0.144*	0.118	0.198**	0.211	1.709

Note: (***) p<0.001, (**) p<0.05; (*) p<0.1; r= correlation coefficient; Z: z-score

The outputs indicated that the values of the correlation coefficient for the high-habit group (COB to REI: r= 0.425, p < 0.05; SOB to REI: r=0.319, p < 0.05; STPB to REI: r= 0.198, p < 0.05) are higher than the low-habit group (COB to REI: r= 0.352, p < 0.1; SOB to REI: r=0.207, p < 0.1; STPB to REI : r= 0.144, p < 0.1). These results demonstrated that habit strongly influenced the relationships between relational benefits' dimensions and revisit intention for the respondents with higher habitual behaviour. The results of hypotheses are presented in Table 8.

Table 8: Results of Hypotheses

H	Hypothesis statement	Level	Result
H1	Confidence benefits have significant positive effect on revisit intention.	Significant	Supported

H2	Social benefits have a significant positive effect on revisit intention.	Significant	Supported
H3	Special treatment benefits have a significant positive effect on revisit intention.	Significant	Supported
H4	Habit positively moderates the confidence benefits and revisit intention association.	Significant	Supported
H5	Habit positively moderates the social benefits and revisit intention association.	Significant	Supported
H6	Habit positively moderates the special treatment benefits and revisit intention association.	Significant	Supported

5. FINDINGS AND DISCUSSIONS

The objective of this study was to examine the relationships between dimensions of relational benefit, habit, and revisit intention in hairdressing services as a personal business service. The empirical findings indicated a significant correlation between all relational benefits dimensions and the customers' intention to revisit. Sequentially, confidence benefits ($\beta = 0.619$, $t\text{-value} = 16.047$, $p < 0.001$), social benefits ($\beta = 0.112$, $t\text{-value} = 2.912$, $p < 0.001$), and special treatment benefits ($\beta = 0.058$, $t\text{-value} = 2.820$, $p < 0.001$) affect the revisit intention. These findings are consistent with previous studies in the service industry (e.g. W. Kim & Ok, 2009; S. Chou & Chen, 2018; Najjar & Najjar, 2022; Dandis et al., 2023). First, the results suggested that greater emphasis should be placed on the confidence benefits in the service delivery, as these are likely to be generated by enhancing security or lowering anxiety to build a sense of trust and increase the likelihood that clients will stay in contact with their service providers. As a result, customers are more likely to repeat the behavioral intention, like revisiting the same hairdresser (Garzaniti et al., 2011). The anxiety of customers can be reduced by providing a proper service according to the customer's expectations. In addition, the customers' feeling of security can be achieved by paying timely attention to their needs and expectations and the employees' (hairdressers) constantly showing them concern regarding customers' rights during the service delivery. Second, hairdressing salons' managers and marketers should pay more attention to social benefits as another important factor influencing the intention of customers to revisit. The likelihood that the service provider will persuade a customer to make a decision by instilling confidence in them increases with increased familiarity, frequent personal recognition, and the development of a cordial relationship. As a result, the customer may feel more committed to the service and service provider, feel more satisfied, and have a higher intention to return. Finally, there should be a rise in the benefits associated with special treatment; for instance, clients can be given special treatment, expedited service or special discounts which give them the sense of being valued in order to boost their sense of distinction in comparison to other clients receiving the same service. Therefore, salon managers/hairdressers should frequently design special services, and offer and deliver them to their customers. The more the special services are personalized for an individual, the higher the possibility a customer will consider the current beauty salon/hairdresser as a priority for future visits during the decision-making process.

Above all, this study demonstrated how habit plays a critical role in sustaining the relationship between clients and service providers over an extended period. The results of this study supported the theory that an unconscious mind may affect the process of decision-making regarding a future visit, particularly when a relationship is established and maintained based on satisfactory relational benefits that customers received during the service delivery from their service providers. These findings support the outcomes of previous studies (e.g. Chiu et al., 2012; Keiningham et al., 2015; Agag & El-Masry, 2016). Therefore, it is suggested that hairdressers encourage clients to frequently visit the hair salon once the relationship has developed and reached a sufficient level based on the relational benefits. For example, beauty salons/hairdressers could motivate customers to return to the salons in the future by providing/offering attractive benefits (socially, specially, and confidently). Habit as a strong factor can support and sustain a relationship that is built based on satisfactory relational benefits. Managers and service providers are recommended to increase relationships/interactions level with their current customers focusing on relational benefits as a factor that influences customers' unconscious mind for future decisions.

6. LIMITATIONS AND FUTURE STUDIES

Despite the study's significant contributions, it has certain limitations that should be addressed in future research. First of all, the present study was carried out using data collected from Cyprus's capital city, which has limited available beauty salons compared to larger cities. As a result, the validity and reliability of the findings are likely to be affected due to clients' lack of a large number of alternatives to switch their hairdressers. Future research should therefore focus on fiercely competitive markets with more readily available and easily accessible comparable service centers. Second, only users of the service for a specified period (12 months) were included in the sample for this study. Subsequent researchers have the option to extend the duration of service usage to conduct a longitudinal analysis of the effect of relationship duration on behavioral intention. Thirdly, it is advised that future efforts adopt more items from various sources while also adjusting and validating the constructs. Finally, future research can concentrate on one or more other personal service businesses, like fast food restaurants, clothing stores, travel agencies, movie theaters, banks, etc. to increase the generalizability of the results.

7. CONCLUSION

The purpose of this study was to determine whether the dimensions of relational benefit affect customer revisit intention and how this effect depends on the moderator variable of habit. A total number of 482 valid data was collected from the visitors of hairdressing salons in Nicosia, Cyprus. Employing multiple regression analysis, moderated regression analysis (MRA), and subgroup analysis, the empirical findings indicated a significant correlation between all relational benefits dimensions and the customers' intention to revisit. Also, the results revealed that habit significantly influenced the relationships between the dimensions of relational benefits and revisit intention. Although few limitations were reported, this study contributes to the literature on relationship marketing and customer behavior in the service industry. Additionally, the findings of this study can be a guidance for future managerial decisions in personal services business particularly beauty salon services in the line of attracting new customers and enhancing relationships with loyal customers.

REFERENCES

- Agag, G., & El-Masry, A. A. (2016). Understanding the determinants of hotel booking intentions and moderating role of habit. *International Journal of Hospitality Management*, 54, 52–67. <https://doi.org/10.1016/j.ijhm.2016.01.007>
- Alalwan, A. A. (2020). Mobile Food Ordering apps: an Empirical Study of the Factors Affecting Customer e-satisfaction and Continued Intention to Reuse. *International Journal of Information Management*, 50(1), 28–44. <https://www.sciencedirect.com/science/article/abs/pii/S0268401219302038>
- Amoroso, D., & Lim, R. (2017). The mediating effects of habit on continuance intention. *International Journal of Information Management*, 37(6), 693–702. <https://doi.org/10.1016/j.ijinfomgt.2017.05.003>
- Anshu, K., Gaur, L., & Singh, G. (2022). Impact of Customer Experience on Attitude and Repurchase Intention in Online Grocery retailing: a Moderation Mechanism of Value Co-creation. *Journal of Retailing and Consumer Services*, 64, 102798. <https://doi.org/10.1016/j.jretconser.2021.102798>
- Antwi, S. (2021). "I just like this e-Retailer": Understanding online consumers repurchase intention from relationship quality perspective. *Journal of Retailing and Consumer Services*, 61, 102568. <https://doi.org/10.1016/j.jretconser.2021.102568>
- Abubakar, A. M., Ilkan, M., Meshall Al-Tal, R., & Eluwole, K. K. (2017). eWOM, revisit intention, destination trust and gender. *Journal of Hospitality and Tourism Management*, 31, 220–227. <https://doi.org/10.1016/j.jhtm.2016.12.005>
- Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74–94. <https://doi.org/10.1007/BF02723327>
- Beatty, S. (1996). Customer-sales associate retail relationships. *Journal of Retailing*, 72(3), 223–247. [https://doi.org/10.1016/s0022-4359\(96\)90028-7](https://doi.org/10.1016/s0022-4359(96)90028-7)
- Bendapudi, N., & Berry, L. L. (1997). Customers' motivations for maintaining relationships with service providers. *Journal of Retailing*, 73(1), 15–37.
- Berry, L. L. (1995). Relationship Marketing of Services--Growing Interest, Emerging Perspectives. *Journal of the Academy of Marketing Science*, 23(4), 236–245. <https://doi.org/10.1177/009207039502300402>
- Bohling, T., Bowman, D., LaValle, S., Mittal, V., Narayandas, D., Ramani, G., & Varadarajan, R. (2006). CRM Implementation: Effectiveness Issues and Insights. *Journal of Service Research*, 9(2), 184–194. <https://doi.org/10.1177/1094670506293573>
- Brady, M. K., & Cronin, J. J. (2001). Some New Thoughts on Conceptualizing Perceived Service Quality: A Hierarchical Approach. *Journal of Marketing*, 65(3), 34–49. <https://doi.org/10.1509/jmkg.65.3.34.18334>
- Chen, J. V., Htaik, S., Hiele, T. M., & Chen, C. (2016). Investigating International Tourists' Intention to Revisit Myanmar Based on Need Gratification, Flow Experience and Perceived Risk. *Journal of Quality Assurance in Hospitality & Tourism*, 18(1), 25–44. <https://doi.org/10.1080/1528008x.2015.1133367>
- Chien, M. C. (2017). An empirical study on the effect of attractiveness of ecotourism destination on experiential value and revisit intention. *Applied Ecology and Environmental Research*, 15(2), 43–53. https://doi.org/10.15666/aeer/1502_043053
- Chiu, C.-M., Hsu, M.-H., Lai, H., & Chang, C.-M. (2012). Re-examining the influence of trust on online repeat purchase intention: The moderating role of habit and its antecedents. *Decision Support Systems*, 53(4), 835–845. <https://doi.org/10.1016/j.dss.2012.05.021>
- Chou, S., & Chen, C.-W. (2018). The influences of relational benefits on repurchase intention in service contexts: the roles of gratitude, trust and commitment. *Journal of Business & Industrial Marketing*, 33(5), 680–692. <https://doi.org/10.1108/jbim-08-2017-0187>
- Chou, S.-W., & Hsu, C.-S. (2015). Understanding online repurchase intention: social exchange theory and shopping habit. *Information Systems and E-Business Management*, 14(1), 19–45. <https://doi.org/10.1007/s10257-015-0272-9>
- Crosby, L. A., Evans, K. R., & Cowles, D. (1990). Relationship Quality in Services Selling: An Interpersonal Influence Perspective. *Journal of Marketing*, 54(3), 68. <https://doi.org/10.2307/1251817>
- Cohen, J. (1988). Statistical power analysis for the behavioural sciences. Hillsdale. In NJ: Lawrence Earlbaum Associates, 250-255.

- Dagger, T. S., David, M. E., & Ng, S. (2011). Do relationship benefits and maintenance drive commitment and loyalty? *Journal of Services Marketing*, 25(4), 273–281. <https://doi.org/10.1108/08876041111143104>
- Dagger, T. S., & O'Brien, T. K. (2010). Does experience matter? *European Journal of Marketing*, 44(9/10), 1528–1552. <https://doi.org/10.1108/03090561011062952>
- Darzi, M. A., & Bhat, S. A. (2018). Personnel capability and customer satisfaction as predictors of customer retention in the banking sector. *International Journal of Bank Marketing*, 36(4), 663–679. <https://doi.org/10.1108/ijbm-04-2017-0074>
- Dandis, A. O., Al Haj Eid, M., Griffin, D., Robin, R., & Ni, A. K. (2023). Customer lifetime value: the effect of relational benefits, brand experiences, quality, satisfaction, trust and commitment in the fast-food restaurants. *TQM Journal*, 35(8), 2527-2546. <https://doi.org/10.1108/TQM-08-2022-0248>
- Dandis, A. O., Wallace-Williams, D. M., Ni, A. K., Wright, L. T., & Abu Siam, Y. I. (2022). The effect of brand experiences and relational benefits on loyalty in the fast-food restaurants. *TQM Journal*, 35(7), 2028-2050. <https://doi.org/10.1108/TQM-03-2022-0091>
- Dimitriadis, S., & Koritos, C. (2014). Core service versus relational benefits: what matters most? *The Service Industries Journal*, 34(13), 1092–1112. <https://doi.org/10.1080/02642069.2014.939642>
- Dorsch, M. J., Swanson, S. R., & Kelley, S. W. (1998). The role of relationship quality in the stratification of vendors as perceived by customers. *Journal of the Academy of Marketing Science*, 26(2), 128–142. <https://doi.org/10.1177/0092070398262004>
- Fang, Y., Chiu, C., & Wang, E. T. G. (2011). Understanding customers' satisfaction and repurchase intentions. *Internet Research*, 21(4), 479–503. <https://doi.org/10.1108/10662241111158335>
- Fida, B. A., Ahmed, U., Al-Balushi, Y., & Singh, D. (2020). Impact of service quality on customer loyalty and customer satisfaction in Islamic Banks in the Sultanate of Oman. *SAGE Open*, 10(2). <https://doi.org/10.1177/2158244020919517>
- Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: algebra and statistics. *Journal of Marketing Research*, 18(3), 382–388. <https://doi.org/10.1177/002224378101800313>
- Gao, C., Li, G., Du, Y., & Wanyan, Y. (2023). Face or relational benefits? Research on the influencing mechanism on repurchase intention for agricultural inputs. *Sustainability (Switzerland)*, 15(20), 15137. <https://doi.org/10.3390/su152015137>
- Garzaniti, I., Pearce, G., & Stanton, J. (2011). Building friendships and relationships. *Managing Service Quality: An International Journal*, 21(6), 667–687. <https://doi.org/10.1108/09604521111185646>
- Gremler, D. D., & Gwinner, K. P. (2000). Customer-employee rapport in service relationships. *Journal of Service Research*, 3(1), 82–104.
- Gremler, D. D., Van Vaerenbergh, Y., Brügggen, E. C., & Gwinner, K. P. (2019). Understanding and managing customer relational benefits in services: a meta-analysis. *Journal of the Academy of Marketing Science*, 48(3), 565–583. <https://doi.org/10.1007/s11747-019-00701-6>
- Gunden, N., Morosan, C., & DeFranco, A. (2020). Consumers' intentions to use online food delivery systems in the USA. *International Journal of Contemporary Hospitality Management*, 32(3), 1325–1345. <https://doi.org/10.1108/ijchm-06-2019-0595>
- Gwinner, K. P., Gremler, D. D., & Bitner, M. J. (1998). Relational benefits in services industries: The customer's perspective. *Journal of the Academy of Marketing Science*, 26(2), 101–114. <https://doi.org/10.1177/0092070398262002>
- Hairdressers and beauticians in the EU - Products Eurostat News - Eurostat. (n.d.). Retrieved 4 June 2023, from <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20200612-1>
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis. Vectors*, 180-187. <https://doi.org/10.1016/j.ijpharm.2011.02.019>
- Hennig-Thurau, T., Gwinner, K. P., & Gremler, D. D. (2002). Understanding relationship marketing outcomes. *Journal of Service Research*, 4(3), 230–247. <https://doi.org/10.1177/1094670502004003006>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Hellier, P. K., Geursen, G. M., Carr, R. A., & Rickard, J. A. (2003). Customer repurchase intention: A general structural equation model. *European Journal of Marketing*, 37(11/12), 1762–1800. <https://doi.org/10.1108/03090560310495456>
- Hsu, M.-H., Chang, C.-M., & Chuang, L.-W. (2015). Understanding the determinants of online repeat purchase intention and moderating role of habit: The case of online group-buying in Taiwan. *International Journal of Information Management*, 35(1), 45–56. <https://doi.org/10.1016/j.ijinfomgt.2014.09.002>
- Janssens, K., Lambrechts, W., Keur, H., & Semeijn, J. (2020). Customer Value Types Predicting Consumer Behavior at Dutch Grocery Retailers. *Behavioral Sciences*, 10(8), 127-141. <https://doi.org/10.3390/bs10080127>
- Jones, M. A., Mothersbaugh, D. L., & Beatty, S. E. (2000). Switching barriers and repurchase intentions in services. *Journal of Retailing*, 76(2), 259–274. [https://doi.org/10.1016/s0022-4359\(00\)00024-5](https://doi.org/10.1016/s0022-4359(00)00024-5)
- Karami, M., Eyüpoğlu, Ş. Z., & Ertuğan, A. (2023). The influence of relational benefits on behavioral intention and the moderating role of habit: a study in a personal service business. *Behavioral Sciences*, 13(7), 565. <https://doi.org/10.3390/bs13070565>

- Keiningham, T. L., Frennea, C. M., Aksoy, L., Buoye, A., & Mittal, V. (2015). A five-component customer commitment model. *Journal of Service Research*, 18(4), 433–450. <https://doi.org/10.1177/1094670515578823>
- Khalifa, M., & Liu, V. (2007). Online consumer retention: contingent effects of online shopping habit and online shopping experience. *European Journal of Information Systems*, 16(6), 780–792. <https://doi.org/10.1057/palgrave.ejis.3000711>
- Khan, R. U., Salamzadeh, Y., Iqbal, Q., & Yang, S. (2020). The impact of customer relationship management and company reputation on customer loyalty: the mediating role of customer satisfaction. *Journal of Relationship Marketing*, 21(1), 1–27. <https://doi.org/10.1080/15332667.2020.1840904>
- Kim, J. H. (2019). Multicollinearity and misleading statistical results. *Korean Journal of Anesthesiology*, 72(6), 558–569. <https://doi.org/10.4097/kja.19087>
- Kim, W., & Ok, C. (2009). The effects of relational benefits on customers' perception of favorable inequity, affective commitment, and repurchase intention in fullservice restaurants. *Journal of Hospitality and Tourism Research*, 33(2), 227–244. <https://doi.org/10.1177/1096348008329874>
- Lee, Y.-K., Ahn, W.-K., & Kim, K. (2008). A study on the moderating role of alternative attractiveness in the relationship between relational benefits and customer loyalty. *International Journal of Hospitality & Tourism Administration*, 9(1), 52–70. <https://doi.org/10.1080/15256480801910517>
- Lee, H. W., & Kim, M. Y. (2019). A study on mediating effect of satisfaction on relational benefits and loyalty in the hairdressing service industry - moderated by period of service use. *Journal of the Korean Society of Costume*, 69(5). <https://doi.org/10.7233/jksc.2019.69.5.050>
- Lee, Y.-K., Choi, B.-H., Kim, D. J., & Hyun, S. S. (2013). Relational benefits, their consequences, and customer membership types. *The Service Industries Journal*, 34(3), 230–250. <https://doi.org/10.1080/02642069.2013.763927>
- Liang, L. J., Choi, H. C., & Joppe, M. (2018). Exploring the relationship between satisfaction, trust and switching intention, repurchase intention in the context of Airbnb. *International Journal of Hospitality Management*, 69, 41–48. <https://doi.org/10.1016/j.ijhm.2017.10.015>
- Limayem, M., Hirt, S. G., & Cheung, C. M. K. (2007). How habit limits the predictive power of intention: The case of information systems continuance. *MIS Quarterly*, 31(4), 705. <https://doi.org/10.2307/25148817>
- Lin, H.-H., & Wang, Y.-S. (2006). An examination of the determinants of customer loyalty in mobile commerce contexts. *Information & Management*, 43(3), 271–282. <https://doi.org/10.1016/j.im.2005.08.001>
- Lin, K.-Y., Wang, Y.-T., & Hsu, H.-Y. S. (2017). Why do people switch mobile platforms? The moderating role of habit. *Internet Research*, 27(5), 1170–1189. <https://doi.org/10.1108/intr-04-2016-0087>
- Luturlean, B. S., Hurriyati, R., Wibowo, L. A., & Anggadwita, G. (2017). Influencing factors in customers' intention to re-visit resort hotels: the roles of customer experience management and customer value. *Contributions to Management Science*, 191–207. https://doi.org/10.1007/978-3-319-59282-4_12
- Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, 58(3), 20–38.
- Mouakket, S. (2015). Factors influencing continuance intention to use social network sites: The Facebook case. *Computers in Human Behavior*, 53. <https://doi.org/10.1016/j.chb.2015.06.045>
- Nunnally, J. C. (1975). Psychometric theory— 25 years ago and now. *Educational Researcher*, 4(10), 7–21. <https://doi.org/10.3102/0013189x004010007>
- Najjar, H., & Najjar, C. (2022). From relational benefits to consumer loyalty across international perspective: a meta-analytic structural equation modeling. *Journal of Marketing Analytics*, 11, 470–489. <https://doi.org/10.1057/s41270-022-00178-3>
- Nguyen, D. M., Chiu, Y. T. H., Vu, H. Q., & Nguyen, T. (2022). Toward a unified theory of technology continuance: Effects of conscious versus unconscious factors. *Journal of Consumer Behaviour*, 21(5), 1219–1235. <https://doi.org/10.1002/cb.2073>
- O'brien, R. M. (2007). A caution regarding rules of thumb for variance inflation factors. *Quality & Quantity*, 41(5), 673–690. <https://link.springer.com/article/10.1007/s11135-006-9018-6>
- Ozili, P. K. (2023). The acceptable r-square in empirical modelling for social science research. *SSRN Electronic Journal*, 115769. <https://doi.org/10.2139/ssrn.4128165>
- Payne, A., & Frow, P. (2017). Relationship marketing: looking backwards towards the future. *Journal of Services Marketing*, 31(1), 11–15. <https://doi.org/10.1108/jsm-11-2016-0380>
- Peterson, R. A. (1995). Relationship marketing and the consumer. *Journal of the Academy of Marketing Science*, 23(4), 278–281. <https://doi.org/10.1177/009207039502300407>
- Polites, G. L., & Karahanna, E. (2013). The embeddedness of information systems habits in organizational and individual level routines: development and disruption. *MIS Quarterly*, 37(1), 221–246. <https://doi.org/10.25300/misq/2013/37.1.10>
- Rajput, A., & Gahfoor, R. Z. (2020). Satisfaction and revisit intentions at fast food restaurants. *Future Business Journal*, 6(1), 1–12. [springeropen. https://doi.org/10.1186/s43093-020-00021-0](https://doi.org/10.1186/s43093-020-00021-0)

- Reichheld, F. F., & Sasser, W. E. (1990). Zero defections: quality comes to services. *Harvard Business Review*, 68(5), 105-166 .
- Ruiz-Molina, M. E., Gil-Saura, I., & Berenguer-Contrí, G. (2009). Relational benefits and loyalty in retailing: An inter-sector comparison. *International Journal of Retail and Distribution Management*, 37(6), 493–509. <https://doi.org/10.1108/09590550910956232>
- Schober, P., Boer, C., & Schwarte, L. A. (2018). Correlation coefficients: Appropriate use and interpretation. *Anesthesia & Analgesia*, 126(5), 1763–1768. <https://doi.org/10.1213/ane.0000000000002864>
- Sohaib, M. (2022). An investigation of repurchase intentions in the banking industry: what reason do they return? *SAGE Open*, 12(1), 1-11. <https://doi.org/10.1177/21582440211067228>
- Sharma, S., Durand, R. M., & Gur-Arie, O. (1981). Identification and analysis of moderator variables. *Journal of Marketing Research*, 18(3), 291–300. <https://doi.org/10.1177/002224378101800303>
- Tian, H., Siddik, A. B., & Masukujjaman, M. (2022). Factors affecting the repurchase intention of organic tea among millennial consumers: an empirical study. *Behavioral Sciences*, 12(2), 50. <https://doi.org/10.3390/bs12020050>
- Triandis, H. C. (1979). Values, attitudes, and interpersonal behavior. *Nebraska Symposium on Motivation*, 27, 195–259.
- Vázquez-Carrasco, R., & Foxall, G. R. (2006). Influence of personality traits on satisfaction, perception of relational benefits, and loyalty in a personal service context. *Journal of Retailing and Consumer Services*, 13(3), 205–219. <https://doi.org/10.1016/j.jretconser.2005.08.006>
- Verplanken, B., & Aarts, H. (1999). Habit, attitude, and planned behaviour: is habit an empty construct or an interesting case of goal-directed automaticity? *European Review of Social Psychology*, 10(1), 101–134. <https://doi.org/10.1080/14792779943000035>
- Verplanken, B., Aarts, H., & Van Knippenberg, A. (1997). Habit, information acquisition, and the process of making travel mode choices. *European Journal of Social Psychology*, 27(5), 539–560. [https://doi.org/10.1002/\(sici\)1099-0992\(199709/10\)27:5%3C539::aid-ejsp831%3E3.0.co;2-a](https://doi.org/10.1002/(sici)1099-0992(199709/10)27:5%3C539::aid-ejsp831%3E3.0.co;2-a)
- Yen, H. J. R., & Gwinner, K. P. (2003). Internet retail customer loyalty: The mediating role of relational benefits. *International Journal of Service Industry Management*, 14(5), 483–500. <https://doi.org/10.1108/09564230310500183>
- Zedeck, S. (1971). Problems with the use of “moderator” variables. *Psychological Bulletin*, 76(4), 295–310. <https://doi.org/10.1037/h0031543>

APPENDIX

Constructs and items of the questionnaire

Construct	Measurement Statements	References
Confidence Benefits	<ol style="list-style-type: none"> 1. I believe there is less risk that something will go wrong in this service provider’s performance. 2. I feel I can trust this service provider(s). 3. I have more confidence that the service will be performed correctly by this service provider(s). 4. When I receive the service from this service provider(s), I have less anxiety. 5. I know what to expect when visiting this service provider(s). 6. I receive the highest level of service from this service provider(s). 	(Vázquez-Carrasco & Foxall, 2006)
Social Benefits	<ol style="list-style-type: none"> 1. This service provider(s) recognizes me well. 2. I know this service provider(s) well. 3. I have developed a friendship with this service provider(s) 4. This service provider(s) remembers my name. 5. I enjoy the social aspects of the relationship with this service provider(s). 	(Vázquez-Carrasco & Foxall, 2006)
Special Treatment Benefits	<ol style="list-style-type: none"> 1. I receive discounts from this service provider(s) that most customers do not receive 2. I am offered services with better prices by this provider(s). 3. I receive special services from this service provider(s) that most customers do not receive. 4. This service provider(s) prioritizes my name in the appointments list. 5. I receive faster service than most customers. 	(Vázquez-Carrasco & Foxall, 2006)
Habit	<ol style="list-style-type: none"> 1. Visiting this service provider(s) has become a routine for me 2. Visiting this service provider(s) is something I do without thinking. 	(Chiu et al., 2012)

	3. It makes me feel weird if I do not visit this service provider(s) in the future.	
	4. I have been visiting this service provider(s) for a long time.	
Revisit Intention	1. I would revisit this hairdresser again in the near future. 2. I am interested in revisiting this hairdresser's again. 3. I will come back again. 4. There is a likelihood that I will revisit in the future.	(Chen et al., 2017)

INFLUENCE OF CULTURAL IDENTITY ON REVISIT INTENTION: A CASE STUDY OF INLAY REGION IN MYANMAR

DOI: 10.17261/Pressacademia.2024.1934

JMML- V.11-ISS.2-2024(3)-p.80-91

Htin Kyaw Lin

Myanmar Imperial College, Department of Management Studies, Yangon, Myanmar.

htinkyawlin48@gmail.com, ORCID: 0009-0004-4033-7879

Date Received: May, 21, 2024

Date Accepted: December 2, 2024



To cite this document

Lin, H.K., (2024). Influence of cultural identity on revisit intention: a case study of inlay region in Myanmar. Journal of Management, Marketing and Logistics (JMML), 11(2), 80-91.

Permanent link to this document: <http://doi.org/10.17261/Pressacademia.2024.1934>

Copyright: Published by PressAcademia and limited licensed re-use rights only.

ABSTRACT

Purpose - Cultural tourism is essential for fostering cultural variety and for forming, and maintaining cultural identities. It gives tourists the chance to discover the traditions, values, and practices of a particular area, which enhances entire experience of tourists and helps to comprehend the local context better. Cultural identity plays a crucial part in the field of cultural tourism. As people and groups engage with various cultural influences, cultural identity changes throughout time, reflecting the fluidity of culture itself. It includes the feeling of being a member of a specific culture or group, which can be influenced by nationality, ethnicity, language, religion, and past experience. This study aimed to analyze the influence of cultural identity on tourist satisfaction and to examine the influence of tourist satisfaction on revisit intention of Inlay region in Myanmar.

Methodology - Quantitative analysis was employed with 385 samples in this study and which was gathered by convenience sampling. Multiple regression, reliability analysis utilizing Cronbach's alpha, and descriptive statistical analysis were employed in this study. There were four parts to the survey. Demographic questions were posed in Part A. The components of this study are located in Parts B through D.

Findings - The findings indicated that all cultural identity dimensions, namely; cognitive, emotional and behavioral, have significant positive effect on tourist satisfaction and the tourist satisfaction also has a significant positive effect on revisit intention of Inlay region.

Conclusion - To support the cognitive cultural identity of the heritage tourists, the authorities should need to conduct more public education and media publicity about cultural evidence such as floating gardens, leg rowing habits, stilt houses, handicrafts and traditional clothing, history of civilization and beliefs of Inlay region. Tourism businesses in that destination should create the opportunities for tourists that include participating in traditional ceremonies, cultural festivals and rituals, hand-on cultural workshops to engage emotionally with the Inlay culture. In order to easily conduct tourism activities, visiting and interaction to Inlay region, the authorities and local community leaders should make the investment to improve the infrastructures of Inlay region and encourage and support businesses that promote cultural tourism, such as heritage hotels, cultural tours, and local craft shops. Additionally, they should make investments in cultural heritage site protection and restoration, guaranteeing that these assets will always be essential components of the destination's identity.

Keywords: Cultural identity, tourist satisfaction, revisit intention, cultural heritage

JEL Codes: Z13, Z32, L83

1. INTRODUCTION

The tourism industry is one of the most significant service sectors that boosts a country's Gross Domestic Product (Yoopetch, 2022). In 2021, the World Tourism Organization stated that the tourism industry is essential to economic development, particularly in developing nations. In 2023, the total contribution of travel and tourism to the global GDP was approximately 4% less than in 2019, the year prior to the COVID-19 pandemic. All things considered, 9.9 trillion US dollars were contributed by travel and tourism to the world economy in 2023 (Statista, 2024). The tourism industry has been evolving and upgrading, which has enhanced tourists' cultural tastes and elevated cultural heritage tourism to a major industrial standing.

Middleton (2015) defines tourism as the activity of an individual who visits a destination outside of their usual environment for leisure. The significance of intangible cultural heritage as a tourist attraction and resource has increased in light of the global travel and tourism industry's recent boom. Throsby (2010) asserted that cultural heritage is a valuable resource that upholds both cultural and economic worth. According to Bortolotto and Skounti (2023), cultural heritage is the legacy of tangible items and intangible characteristics of a civilization that are passed down from previous generations, preserved in the present, and conferred for the benefit of future generations. It contains both intangible heritage, such as customs, languages, rituals, and knowledge and tangible heritage, such as monuments, structures, and landscapes (Smith, 2020). Thus, by exercising the social and cultural worth of cultural heritage, tourism offers a vital avenue for direct communication and

engagement between the people and cultural heritage (Luo & Ren, 2020). In order to support the growth of cultural endeavors and achieve the profitability and sustainability of tourism, a nation must integrate cultural heritage with tourism (Luo, 2022).

Cultural tourism and cultural heritage are closely related since cultural heritage is the cornerstone of cultural tourism (Timothy, 2011). The author defines cultural tourism as travel intended to experience and interact with a destination's cultural legacy, which may include going to historical sites, participating in festivals, and learning about local customs. Furthermore, cultural tourism is defined by the World Tourism Organization (WTO) as a form of travel where the primary goal of the tourist is to learn about, explore, experience, and consume the physical and intangible cultural attractions and goods of the travel destination (WTO, 2018). As a result, cultural tourism, a sizable portion of the larger tourism sector, is centered on tourists who want to interact with and comprehend the local culture.

Furthermore, cultural tourism is essential for fostering cultural variety and for forming, and maintaining cultural identities. It gives tourists the chance to discover the traditions, values, and practices of a particular area, which enhances entire experience of tourists and helps to comprehend the local context better. Therefore, cultural tourism may assist destinations in creating a sustainable tourism strategy by leveraging cultural identities as a primary attraction. Additionally, this type of tourism promotes community pride by guaranteeing the preservation of arts, crafts, and cultural customs (Cohen & Cohen, 2019). Hence, cultural tourism serves as a social as well as an economic instrument, assisting in the preservation of intangible cultural assets.

Cultural identity plays a crucial part in the field of cultural tourism. As people and groups engage with various cultural influences, cultural identity changes throughout time, reflecting the fluidity of culture itself (Erikson, 1998). It includes the feeling of being a member of a specific culture or group, which can be influenced by nationality, ethnicity, language, religion, and past experience (Phinney, 1990). Hall (1993) also asserts that cultural identity is more about becoming than being, emphasizing that social interactions and cultural practices shape identities. A group or nation's common values and features, including its language, customs, religion, and history are referred to as its cultural identity (Hall & Du, 2020). Tourists are frequently drawn to destinations with a unique cultural identity since it makes for a distinctive and genuine experience.

Furthermore, cultural identity influences the satisfaction and behavior of tourists, since tourists look for where that match their values and interests (Cohen, 2019). The quality and genuineness of the cultural experience offered have a direct impact on how satisfied tourists are with cultural tourism (Cohen & Cohen, 2019). Tourists who satisfied with the destinations are more inclined to spread the word about those locations, come back and support the local economy. Research has demonstrated that a number of criteria, including the degree of service offered by tourism businesses, the accessibility of cultural places, and the authenticity of cultural experiences, all have a substantial impact on tourist satisfaction (Richards, 2018).

A country with a strong cultural identity, Myanmar, is distinguished by a wide variety of ethnic groups, languages, and customs. There are more than 135 different ethnic groups in this Southeast Asian country, each of which adds to the rich cultural environment of the country with its own customs, beliefs, and languages (Htin, 2019). Cultural heritage is especially noteworthy in areas like Shan State, Mandalay, and Bagan. Although these distinctive cultural heritages provide great opportunities for the growth of cultural tourism, there is little study on how this sector might optimize tourist satisfaction through better cultural identity and improved tourist experience (Zaw, 2021). Furthermore, while there is a wealth of study on cultural tourism worldwide, there are not many studies that particularly address cultural tourism of Myanmar, and the tourism sector of the country is not as developed as that of its neighbors in Southeast Asia (Tun, 2019). Therefore, additional research is required to determine how Myanmar can use its cultural identity to improve tourist pleasure.

The Inlay region was selected as the research location because it has beautiful mountainous topography and a wealth of intangible and tangible cultural heritage. One of Myanmar's eight ASEAN Heritage Parks is Inlay Lake (Thar, 2022). It is situated close to Nyaung Shwe Township, Taunggyi City, Southern Shan State, Myanmar, in the deepest center section of the Nyaung Shwe Valley. It is tucked between two mountain ranges that run from south to north. Therefore, this study attempts to close the gap by investigating the function of cultural tourism in Inlay region of Myanmar, the influence of cultural identity on satisfaction of tourists, and the ways that can be utilized to increase the satisfaction of tourists.

Objectives of the study are to analyze the influence of cultural identity on tourist satisfaction of Inlay region in Myanmar and examine the influence of tourist satisfaction on revisit intention of Inlay region in Myanmar

2.LITERATURE REVIEW

In this section, the concept of cultural identity including theoretical framework of cultural identity, three dimensions of cultural identity which is used in this study, concept of tourist satisfaction and concept of revisit intention are discussed.

2.1. Concept of Cultural Identity

Cultural identity, which describes a person's feeling of inclusion in certain cultural group, is dynamic and ever-changing. It is formed by common beliefs, customs, language, history, and social customs and is influenced by personal experiences and interactions with others within and outside of that culture. According to cultural identity theory proposed by Hall (1993), cultural identity is a process that is shaped by past and present events rather than a permanent essence. Additionally, Tajfel and Turner's (1979) social identity theory suggests that cultural identity is the result of a cognitive process in which individuals classify self and others according to common cultural markers like religion, nationality or ethnicity. The author claims that this classification fosters a feeling of cultural group membership, which influences how people view one another and themselves. Moreover, cultural capital theory developed by Bourdieu (2011) explains cultural identity is defined as the ways in which people acquire cultural knowledge, abilities and behaviors that are indicative of social standing and cultural identity. In a variety of social and cultural situations, including travel and tourism, these cultural resources can affect how people interact with and express identities.

Since the continuous growth of tourism sector, researchers focused on more tourism related topics in which cultural identity of specific destination is one of the consideration factors as well. González (2008) argues that intangible cultural heritage tourism provides tourists with a variety of ways to identify with places that highlight the value of cultural identity in the context of globalization. Cultural identity is the affirmation of a shared culture between people and groups based on their cultural upbringing and environment. According to Wang and Hu (2014), the concept of cultural identity of intangible cultural heritage is the recognition of one's own identity and cultural worth as a reflection of interactions between individuals and the culture that such heritage symbolizes. Cultural identity has been shown to have a significant influence on purchase decisions of consumers in a number of marketing-related studies (Wang & Hu, 2014). People employ symbols to construct a psychological identity and feeling of self during the consuming process (Belk, 1978; Elliott, 1997). A person's inclination to consume will develop in tandem with the development of their cultural identity.

Cultural representation is predicated on cultural identity, and the degree to which locals identify with their culture affects the representation's shape, substance, and effect (Xingfu & Lin, 2014). Cultural identity then refers to tourists' understanding and recognition of local culture as intangible cultural heritage tourism grows (Chen & Lu, 2011). In the tourism environment, the dimensions into which identity can be distinguished are cognitive identity, emotional identity and behavioral identity (Hsu, Cai, & Li, 2010) and cultural identity in this study refers to tourists' understanding and recognition of the cultural value demonstrated by the destination's intangible cultural assets. Thus, the study's evaluation of cultural identity is predicated on the fundamental structure of its three components: cognitive identity, emotional identity, and behavioral identity.

Cognitive Identity - Cognitive identity is the mental model that a person uses to observe, classify, and understand cultural experiences and heritage (Sam & Berry, 2010). It stands for the awareness, knowledge and understanding that people have about own culture, including beliefs, traditions and conventions. This aspect of cultural identity, according to the author, is formed through socialization, in which people pick up cultural information via families, schools, the media, and contacts with others in the community. As a result, this aids people in knowing cultural heritages and is crucial for comprehending location in society and the group belong to. McKercher and Cros (2002) assert that since tourists are usually motivated by a desire to learn and acquire cultural insights, cognitive cultural identity play a significant role in determining the expectations and preferences of cultural tourists. As a result, tourists can have more fulfilling travel experiences as tourists actively seek out the places' interpretative and educational features.

Emotional Identity - Emotional identity is the term used to describe the sentiments and emotional connections people have with particular cultural group (Phinney, 2007). It includes the feeling of pride, belonging, and emotional ties to one's own cultural history, values, and customs. Furthermore, a strong emotional cultural identity can foster stronger unity within the cultural group, particularly when shared experiences, such as celebrations or historical struggles, evoke strong emotions in the group (Tim-Toomey, 2013). This emotional identity has a big impact on how tourists are motivated and behave when it comes to cultural tourism (Kim & Jamal, 2007). The author also claims that because of emotional relationship to the customs, beliefs, and symbols that define cultural identity, tourists frequently look for cultural experiences that enable to discover other cultures or re-establish a connection with own history. Tourist satisfaction is frequently increased by this emotional connection, which can result in return or referrals to others (Hughes & Allen, 2005). In order to produce experiences that are both emotionally and meaningful for tourists, cultural tourism operators must have a solid grasp of emotional cultural identity.

Behavioral Identity - Behavioral identity is the way people show cultural identity via daily routines, behaviors and rituals (Matsumoto, 2007). It includes the outward expression of cultural identity, such language use, traditional attire, cuisine, religious rituals, and social conduct. According to the author, behavioral identity is shaped through repeated cultural interactions, reinforcing one's connection to cultural heritage. Furthermore, behavioral identity is frequently changed as people negotiate multicultural settings, where people may acquire new behaviors while preserving important facets of own culture (Triandis, 2001). Behavior identity in cultural tourism refers to the consumption of genuine cultural experiences, as tourists watch and occasionally take part in cultural events, festivals, and activities that are based on the host community's

behavioral identity (Richards, 2018). As a result, this identity is crucial as tourists look for behaviors interacting with local's everyday routines, traditions, and customs.

2.2. Concept of Tourist Satisfaction

The idea of customer satisfaction may be used to understand tourist satisfaction. The degree of enjoyment that tourist experience following a trip or other tourism-related activity is known as tourist satisfaction. Since it affects tourists' propensity to return, refer others to a place, or look for a comparable experience elsewhere, tourist satisfaction is important in the tourism industry. Pre-trip expectations of tourists and the extent to which experience fulfill or surpass are frequently linked to the idea of tourist satisfaction (Oliver, 1980). Tourist satisfaction, according to El-Adly (2019), is the level of contentment that tourists experience following their stay. In a similar vein, Luo (2023) defines tourist satisfaction as the actual psychological impression following a variety of travel experiences and tourism-related activities.

Tourist satisfaction, according to Dabphet (2017), is a comprehensive evaluation of how happy tourists are with the surroundings, infrastructure, social services, and landscape of tourism. Given the increasing frequency of tourism-related activities, it is critical to evaluate how satisfied tourists are emotionally within the journey. Additionally, it is linked to perceived authenticity of the travel experience, destination image, and service quality (Parasuraman, Zeithaml, & Berry, 1988). Furthermore, a number of elements, such as the physical surroundings, hospitality, facilities, cultural experience, and cultural identity, affect how satisfied tourists are (Kozak & Rimmington, 2000). The investigation of the connection between cultural identity and enjoyment in the context of tourism follows from this.

2.3. Concept of Revisit Intention

The concept of revisit intention is from behavioral intention, which is the act of repeating a previously enjoyable experience (Pratminingsih et al., 2014). The possibility of going back to the same location after the trip is referred to as a revisit intention (Chan et al., 2022). It is also a crucial element in the loyalty of tourists (Seetanah et al., 2020). Travelers' desire to return to the same location is mostly influenced by their positive experiences traveling there (Chan et al., 2022). In recent years, the management of tourism has grown more and more concerned with keeping customers (Liang et al., 2021). Retaining consumers is often seen to be a more cost-effective business approach than gaining new ones, since it increases a destination's profitability and competitive advantage when customers return after their initial visit (Abbasi et al., 2021). According to Shoukat and Ramkissoon (2022), customers who have a strong sense of location are more likely to come back.

3. RESEARCH HYPOTHESES AND RESEARCH MODEL

The relationship between cultural identity and tourist satisfaction, relationship between tourist satisfaction and revisit intention, the development of research hypotheses and research model are discussed in this section.

3.1. Relationship between Cultural Identity and Tourist Satisfaction

According to Wang and Hu (2014), people's acknowledgement of their own cultural values is a fundamental component of cultural identity, which serves as the primary mechanism for the sustained growth of intangible cultural resources. According to Zhang, Qu and Jin (2018), heritage identity is the term used to describe people's subjective ideas, perceptions, attitudes, and evaluation of their heritage. As mentioned in the above literature, cultural identity can be classified into three dimensions: cognitive identity, emotional identity and behavioral identity in tourism environment (Hsu, Cai, & Li, 2010). Each of these dimensions of identity affects how tourists perceive the experiences and satisfaction of tourists with the trip. When a destination aligns with the tourists' cultural identity across these dimensions, satisfaction is more likely to be high. This statement is proved by the research conducted by Luo (2023). In that research, tourist satisfaction was shown to be favorable correlated with cultural identity among heritage tourists. However, in this study, the author only studied cultural identity as independent variable and any dimensions is used to measured cultural identity. This is the primary research gap for current study. Thus, the following hypotheses were developed.

(H1a): Cognitive identity has a positive influence on tourist satisfaction

(H1b): Emotional identity has a positive influence on tourist satisfaction

(H1c): Behavioral identity has a positive influence on tourist satisfaction

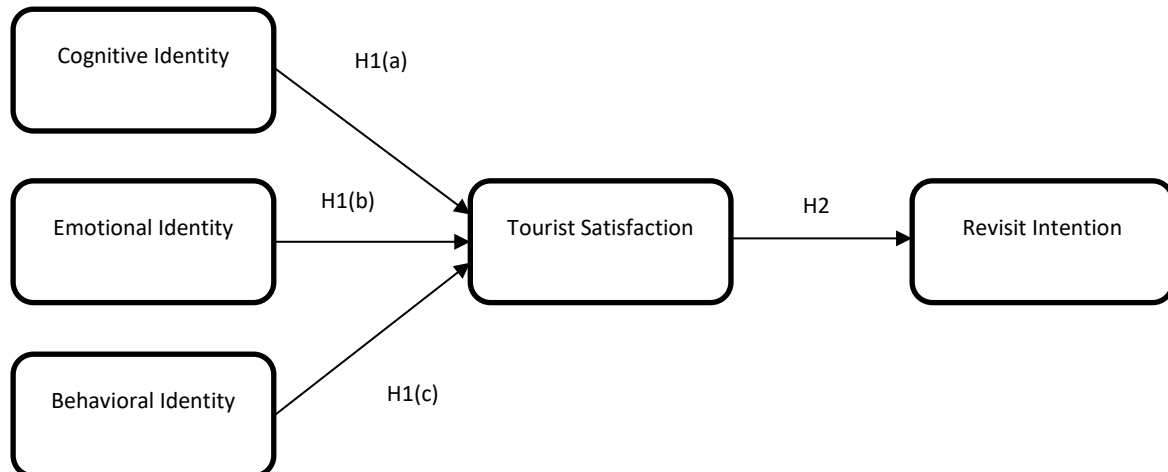
3.2. Relationship between Tourist Satisfaction and Revisit Intention

Satisfaction boosts the intention to visit because it produces a favorable experience that fosters loyalty and trust, enticing people to come back and refer others to the location. When tourists are happy, they are more likely to think that their next visit will live up to or beyond their expectations. Moreover, many academics have proven that revisit intention is correlated with tourist satisfaction, which is why it is commonly employed as an indication of intending to return (Chen & Chen, 2010; He & Luo, 2020). According to Altunel and Erkurt (2015), travelers' desire to return to Istanbul is influenced by their level of happiness, involvement in the event, and the quality of their experience. Tourists' inclination to return to Alishan National

Forest Recreation Area is significantly positively impacted by their level of satisfaction (Sadat & Chang, 2016). As a result, the current study set out the following hypothesis.

H2: Tourist satisfaction has a positive influence on revisit intention

Figure 1: Research Model



Source: Own elaboration based on Luo, Y. F. (2023)

4. EMPIRICAL ANALYSIS OF STUDY AREA

The Shan State of Myanmar is home to the Inlay Lake region, also known as the Inlay region, which is a culturally and ecologically rich area. Its most well-known feature is Inlay Lake, second-largest freshwater lake in Myanmar. It is also a popular tourist attraction for both domestic and foreign travelers and its environs provide a distinctive fusion of ethnic variety, traditional handicrafts, and breathtaking natural beauty. Along with its picturesque scenery, the area has a strong Buddhist cultural legacy, including significant religious landmarks like Phaung Daw Oo Pagoda and a number of historic monasteries.

There are three primary reasons why the Inlay area was chosen. The floating houses in Inlay Lake are among the most breathtaking sights to behold. Their uniqueness led to selection as the initial research area. There are 444 rural communities in all in Inlay, with more than 200 of them on the lake and the remaining ones on land. Bamboo is primarily used in the construction of the floating houses. Some are made entirely of bamboo; they contain no iron.

People rowing boats with their legs is another unusual tradition observed at Inlay Lake. The Inntha people of the Inlay area are known for their unique and well-known leg-rowing style. While some people find it difficult to paddle a boat even with one hand, Inntha, a man, woman, or child, can do it with only one leg. The Inntha continue their custom of leg-rowing every day, even in the face of the increasing popularity of motorized boats.

Another distinctive feature of the Inlay region's culture are its floating gardens and lotus textile weaving enterprises, which manufacture traditional Inlay outfits. Fishing is the most popular source of income in Inlay Lake, although floating garden cultivation is the second most popular. On artificially created floating islands in the water, locals grow vegetables on them. Furthermore, whereas cotton is used to manufacture fabric in other locations, the Inlay region also uses cotton, and lotus textiles are made from the fibers of the lotus plant.

Figure 2: Specific Images of Inlay Region

Leg Rowing Fishermen



Floating House in Inlay Region



Lotus Fabric Weaving and Floating Garden in Inlay Region

5.METHODOLOGY

This study employed a quantitative approach to gather data using questionnaire surveys. The target respondents for this study were domestic visitors to the Inlay area. The survey was carried out in 2024 between May and July. Online data collection method was applied using a Google survey form, and respondents were asked for permission to participate in the study and volunteer. Convenience sampling was used to collect a set of 385 questionnaires for statistical analysis. The collected data was then subjected to a series of analysis utilizing the Statistical Package for Social Science 26.0 (SPSS). Multiple regression, reliability analysis utilizing Cronbach's alpha, and descriptive statistical analysis were employed in this study.

There were four parts to the survey. Demographic questions were posed in Part A. The components of this study are located in Parts B through D. Cultural identity was measured using three variables: cognitive, emotional, and behavioral (Tian, 2020). Twelve measurement items evaluating cultural identity were adapted from previous research, according to the author. The perception of tourist satisfaction and revisit intention were measured by four measurement items (Napaporn Janchai, 2020) and (Nia Budi Puspitasari, 2019). The factors selected were determined by taking into account the location, services offered, and level of community engagement, as well as the suitability of the research locations and context for the current study.

6. MODEL TEST AND RESULTS

For the purposes of this study, 385 valid data were statistically analyzed. Findings showed that women traveling alone made up the majority of tourists. A bachelor's degree was held by the majority of tourists, and the sample's age range was mostly between 21 and 30. "Above 900,000 MMK" was the main source of revenue. Up to three independent visits were made by 70% of tourists to the Inlay area. Approximately 70% of tourists expressed concern for the traditional style of the Inlay region, according to the result.

Table 1: Social-Demographic Characteristics and Travel Information of Tourists

Item	Classification	Number of People	Percentage (%)
Gender	Male	115	29.9
	Female	270	70.1
Marital Status	Single	268	69.6
	Married	117	30.4
Age	Below 21	47	12.2
	21 – 30	145	37.7
	31 – 40	129	33.5
	41 – 50	58	15.1
	Above 50	6	1.5
Education	High School	31	8.0
	Bachelor Degree	226	58.7
	Master Degree	119	31.0
	Ph.D	9	2.3
Monthly Income	300,000 MMK – 500,000 MMK	149	38.7
	500,001 MMK – 700,000 MMK	23	6.0
	700,001 MMK – 900,000 MMK	33	8.6
	Above 900,000 MMK	180	46.7
Visited Time	1 – 3 times	297	77.0
	4 – 6 times	68	17.6
	7 – 9 times	3	1.0
	Above 9 times	17	4.4
Travel Method	Independent trip	253	65.7
	Travel agency	26	6.8
	Corporate organization	35	9.1
	Others	71	18.4
Are You Concerned about Protecting the Traditional Style?	Very concerned	93	24.2
	Care	269	69.9
	Uncertain	12	3.1
	Do not care	7	1.8
	Absolutely indifferent	4	1.0

6.1. Measurement Model Evaluation

Before testing the hypothesized relationships, Cronbach's Alpha reliability coefficient was utilized to examine the consistency of questionnaire variables on each test question in this study. Table (2) shows that all variables had strong reliability, with each variable's Cronbach's Alpha value being more than 0.7. Descriptive analysis result of the variables is also shown in Table 2.

According to Table (2), each variable is measured by four measurement items. The highest mean value of cognitive identity is 4.02 which is from the statement "I believe that the Inlay area has a strong traditional culture". The overall mean value of cognitive identity is 3.87, which shows that the respondents had the good impression about the cultural evidence, history of civilization and belief of Inlay region. "I enjoy the Inlay area's traditional culture" is the statement with the highest mean emotional identity score of 4.10. The overall mean value of emotional identity is 3.99, which shows that the respondents are proud the inheritance and intangible cultural heritage of Inlay region. In behavioral identity, the highest mean value is 3.63 which is from the statement "I am interested in learning about the Inlay area's local customs". The overall mean value of behavioral identity is 3.45, which shows that the respondents have slightly intention the tourism activity and interaction to Inlay region.

The statement "I really enjoyed the visit of Inlay region" has the highest mean score of tourist satisfaction, 4.25. The overall mean score for visitor satisfaction is 4.09, indicating that respondents are in agreement with the satisfaction of the Inlay area.

The statement "In the future, I would like to travel to the Inlay area" has the highest mean score of 4.17 for revisit intention. The overall mean value is 4.00, which shows that the respondents feel that if they satisfy the cultural identity of Inlay region, they will visit again in the future.

Table 2: Results of Measurement Model

Construct	Measurement Items	Mean	Std. Dev.	Overall Mean	Cronbach's Alpha
Cognitive identity	CI 1	3.76	1.0728	3.87	0.894
	CI 2	4.02	1.0023		
	CI 3	3.86	1.0980		
	CI 4	3.84	1.0043		
Emotional identity	EI 1	4.10	1.0570	3.99	0.911
	EI 2	3.85	.91751		
	EI 3	3.99	.95191		
	EI 4	4.04	1.0402		
Behavioral identity	BI 1	3.11	1.1652	3.45	0.821
	BI 2	3.50	1.0683		
	BI 3	3.63	1.0021		
	BI 4	3.57	.97380		
Tourist satisfaction	TS 1	4.25	1.0885	4.09	0.948
	TS 2	4.12	1.0557		
	TS 3	3.91	1.0990		
	TS 4	4.10	1.0731		
Revisit intention	RI 1	3.75	1.0384	4.00	0.923
	RI 2	3.97	.99182		
	RI 3	4.17	1.0720		
	RI 4	4.12	1.1133		

6.2. Hypothesis Verification

A multiple linear regression model was used to evaluate the influence of cultural identity on tourist satisfaction and the influence of tourist satisfaction on return intention in the Inlay area.

Table 3: Multiple Regression Result of Cultural Identity and Tourist Satisfaction

Model	B	t	Sig.
Cognitive Identity	.464***	7.504	.000
Emotional Identity	.440***	6.825	.000
Behavioral Identity	.091*	1.947	.052
R square		.696	
Adj R square		.694	
F value		290.883 (P Value = 0.000)	

Source: *** means 1% significant level, * means 10% significant level

According to Table (3), the F value is 290.883 (sig. = 0.000), and the significance test of the regression equation shows that there is a linear correlation between independent and dependent variables. Two independent variables namely cognitive and emotional identity were significant in the model at a significance level of 0.01 (1%) and the remaining independent variable namely behavioral identity was significant at 0.1 (10%). The adjusted R square value is 0.694, indicating that the closeness of the relationship between independent and dependent variables is 69.4. The result found that all independent variables have a positive relationship with tourist satisfaction. The cognitive identity was $B = 0.464$, $p = 0.000$, emotional identity was $B = 0.440$, $p = 0.000$ and behavioral identity was $B = 0.091$, $p = 0.052$.

Table 4: Linear Regression Result of Tourist Satisfaction and Revisit Intention

Model	B	t	Sig.
Tourist Satisfaction	.826***	34.781	.000
R square		.760	
Adj R square		.759	
F value		1209.717 (P Value = 0.000)	

Source: *** means 1% significant level

According to Table (4), the F value is 1209.717 (sig. = 0.000), and the significance test of the regression equation shows that there is a linear correlation between independent and dependent variables. Tourist satisfaction was significant in the model at a significance level of 0.01 (1%). The adjusted R square value is 0.759, indicating that the closeness of the relationship between independent and dependent variables is 75.9. The finding indicates that there is a strong relationship between tourist satisfaction and intention to revisit. The tourist satisfaction was $B = 0.826$, $p = 0.000$.

6.3. Summary of Hypotheses Test

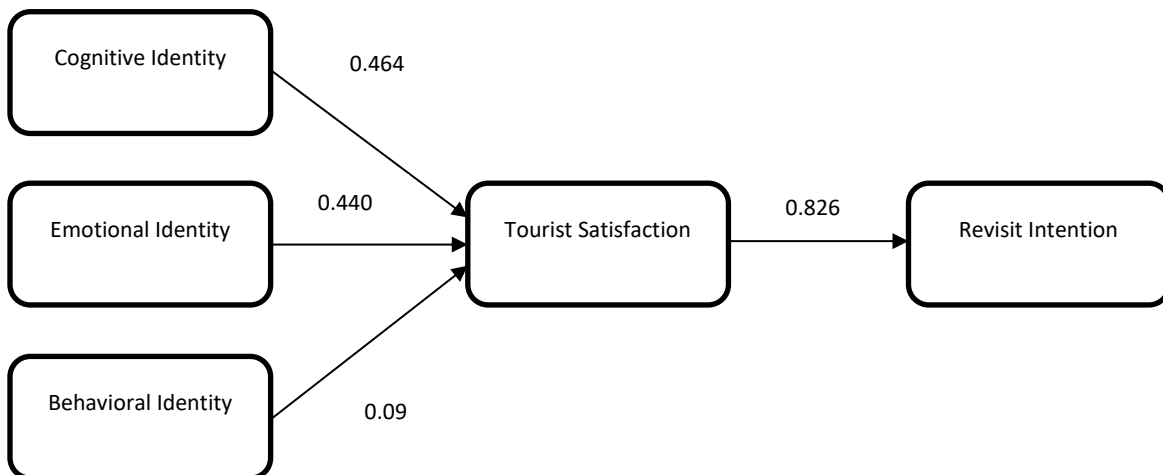
All three dimensions of cultural identity—cognitive, emotional, and behavioral identity—have a considerable positive effect on tourist satisfaction, according to an analysis of the regression results. Additionally, revisit intention is significantly positively effect by tourist satisfaction. Thus, all the results are consistent with the proposed hypotheses.

Table 5: Summary of All Hypotheses

Items	Hypotheses	Result
H1(a)	Cognitive identity has a positive influence on tourist satisfaction	Accepted
H1(b)	Emotional identity has a positive influence on tourist satisfaction	Accepted
H1(c)	Behavioral identity has a positive influence on tourist satisfaction	Accepted
H2	Tourist satisfaction has a positive influence on revisit intention	Accepted

Source: Survey Data (2024)

Figure 3: Result of Variables Value on Framework



7. DISCUSSIONS AND CONCLUSIONS

In this section, theoretical contribution and practical implications that result from findings and limitation and direction for future research are discussed.

7.1. Theoretical Contribution

Based on the theoretical foundations and literature, this study investigated the influence of cultural identity on tourist satisfaction and intention to revisit the Inlay area of Myanmar. The results include the following. According to multiple linear regression analysis, the study model unveiled that the three cultural identities, namely, cognitive, emotional and behavioral identities have a positive effect towards tourist satisfaction in the context of Inlay region, as hypothesized. This finding indicated that a destination with a higher cultural identity could satisfy the tourists who visited that destination. This result is congruent with the previous research conducted by (Su, Li, & Zhang, 2020; Tian, 2020) but is contrast to the outcome of previous study conducted by (Luo, 2023) which reported that the relationship between cultural identity and tourist satisfaction is not statistically significant.

As mentioned above, the cultural identity is comprised three dimensions by reviewing previous studies and literature. Although the aforementioned assessments of earlier research only demonstrated the effect of cultural identity on tourist satisfaction, the current study clearly demonstrates the contribution of three cultural identity aspects to tourist satisfaction. Among these cultural identity dimensions, the significance of cognitive identity was most predictor and emotional and

behavioral identities were second and third predictors towards tourist satisfaction. Thus, this was different fundamental theoretical contribution provided by this study.

Furthermore, this study contributes to the existing literature review on the influence of tourist satisfaction on revisit intention. According to the result of analysis, tourist satisfaction has a direct positive effect on the tourists' willingness to revisit and this outcome is in line with the research conducted by (He & Luo, 2020). This means that the greater level of tourist satisfaction perceived the greater revisit intention. Thus, this implies that if tourists are satisfied with the destination which is rich in cultural identity, or if they felt that they had a great time at that destination, they would want to return there as a tourist destination and would wish to travel again in the future.

7.2. Practical Implications

Based on the above theoretical contribution into the environment of Inlay region in Myanmar, recommendations and implications are suggested for the growth and management of intangible heritage tourism at that destination and it is also anticipated that related sites would profit by reviewing current study.

Firstly, the results showed that all cultural identity components of Inlay area positively significantly influence tourist satisfaction. Thus, it is important to preserve and develop cultural identity in specialized heritage tourism. To support the cognitive cultural identity of the heritage tourists, the authorities should need to conduct more public education and media publicity about cultural evidence such as floating gardens, leg rowing habits, stilt houses, handicrafts and traditional clothing, history of civilization and beliefs of Inlay region.

Tourism businesses in that destination should create the opportunities for tourists that include participating in traditional ceremonies, cultural festivals and rituals, hand-on cultural workshops to engage emotionally with the Inlay culture. In order to easily conduct tourism activities, visiting and interaction to Inlay region, the authorities and local community leaders should make the investment to improve the infrastructures of Inlay region and encourage and support businesses that promote cultural tourism, such as heritage hotels, cultural tours, and local craft shops. Additionally, they should make investments in cultural heritage site protection and restoration, guaranteeing that these assets will always be essential components of the destination's identity.

Secondly, the results showed that tourists' inclination to return to the Inlay region was positively impacted by their level of satisfaction. As a result, internal services at tourist locations have to be tailored to their demands. Increased attention to tourist demands is necessary for the growth of intangible cultural heritage tourism. Furthermore, offering tourists a wealth of knowledge, extra recreational and entertainment options, and artistic value in the variety of celadon things may facilitate their comprehension of intangible cultural heritage and drive return visits.

Finally, as a result of people returning to that place, the local tourist sector will expand more. Therefore, in order to improve the quality of life and financial circumstances for local residents, the government should generate additional economic possibilities. They also need to hang on to the elements of their well-known cultural history in order to maintain a calm and beautiful natural setting and the sustainable development of cultural heritages. This will demonstrate Myanmar's soft power and cultural self-assurance to the rest of the world while also encouraging tourists to return.

7.3. Limitations and Directions for Future Research

Additional research is necessary due to some limitations in this study. The sample for this study only consisted of local tourists which was its initial drawback. Thus, future research can explore the influence of cultural identity on revisit intention of Inlay region on international tourists and additional tests should conduct the influence of tourist satisfaction on tourist loyalty. The study area of current research is also another limitation. Future research might choose to pick cultural identities of additional locations in order to confirm the research model used in this study. Finally, quantitative analysis is the primary foundation of this study. In the future, in-depth in interviews with tourists and relevant individuals can be used as the basis for qualitative analysis, which will produce more useful recommendations.

REFERENCES

- Abbasi, G. A., Kumaravelu, J., Goh, Y. N., & Singh, K. S. D. (2021). Understanding the intention to revisit a destination by expanding the theory of planned behaviour (TPB). *Spanish Journal of Marketing-ESIC*, 25(2), 282-311.
- Altunel, M. C., & Erkurt, B. (2015). Cultural tourism in Istanbul: The mediation effect of tourist experience and satisfaction on the relationship between involvement and recommendation intention. *Journal of Destination Marketing & Management*, 4(4), 213-221.
- Belk, R. W. (1978). Assessing the Effects of Visible Consumption on Impression Formation. *Advances in consumer research*, 5(1), 39-47.
- Bortolotto, C., & Skounti, A. (2023). *Intangible Cultural Heritage and Sustainable Development: Inside a UNESCO Convention in the New York*. USA, ISBN: 978-1-003-24415-8.
- Bourdieu, P. (2011). *Cultural theory: An anthology in the Malden*. USA, ISBN: 978-1-4051-8082-5.

- Chan, W. C., Wan Ibrahim, W. H., Lo, M. C., Mohamad, A. A., Ramayah, T., & Chin, C. H. (2022). Controllable drivers that influence tourists' satisfaction and revisit intention to Semenggoh Nature Reserve: The moderating impact of destination image. *Journal of Ecotourism*, 21(2), 147-165.
- Chen, C. F., & Chen, F. S. (2010). Experience quality, perceived value, satisfaction and behavioral intentions for heritage tourists. *Tourism management*, 31(1), 29-35.
- Chen, C., & Lu, C. (2011). Identity: A new perspective in the study of tourism experience. *Tourism Tribune*, 26(3), 37-42.
- Cohen, E. (2019). Cultural tourism: The rise of tourist engagement with culture. *Journal of Tourism Research*, 34(3), 45-58.
- Cohen, S. A., & Cohen, E. (2019). New directions in the sociology of tourism. *Current Issues in Tourism*, 22(2), 153-172.
- Dabphet, S. (2017). Applying importance-performance analysis to identify competitive travel attributes: An application to regional destination image in Thailand. *Journal of Community Development Research (Humanities and Social Sciences)*, 10(3), 7-21.
- El-Adly, M. I. (2019). Modelling the relationship between hotel perceived value, customer satisfaction, and customer loyalty. *Journal of Retailing and Consumer Services*, 50(c), 322-332.
- Elliott, R. (1997). Existential consumption and irrational desire. *European Journal of Marketing*, 31(3/4), 285-296.
- Erikson, E. H. (1998). *The life cycle completed (extended version)* in the W. W Norton. USA, ISBN: 978-0-393-31772-5.
- González, M. V. (2008). Intangible heritage tourism and identity. *Tourism management*, 29(4), 807-810.
- Hall, C. M., & Du, J. (2020). Cultural identity and tourism development in Asia. *Tourism Geographies*, 22(2), 234-256.
- Hall, S. (1993). Culture, community, nation. *Cultural studies*, 7(3), 349-363.
- He, X., & Luo, J. M. (2020). Relationship among travel motivation, satisfaction and revisit intention of skiers: A case study on the tourists of urumqi silk road ski resort. *Administrative Sciences*, 10(3), 1-13.
- Hsu, S. H., Cai, L. A., & Li, M. (2010). Expectation, motivation, and attitude: A tourist behavioral model. *Journal of Travel Research*, 49(3), 282-296.
- Htin, T. S. (2019). Ethnic diversity and cultural identity in Myanmar: An overview. *Asian Ethnicity*, 20(3), 400-415.
- Hughes, H., & Allen, D. (2005). Cultural tourism in Central and Eastern Europe: the views of 'induced image formation agents. *Tourism Management*, 26(2), 173-183.
- Kim, H., & Jamal, T. (2007). Touristic quest for existential authenticity. *Annals of tourism research*, 34(1), 181-201.
- Kozak, M., & Rimmington, M. (2000). Tourist satisfaction with Mallorca, Spain, as an off-season holiday destination. *Journal of Travel Research*, 38(3), 260-269.
- Liang, A. R. D., Hsiao, T. Y., Chen, D. J., & Lin, J. H. (2021). Agritourism: Experience design, activities, and revisit intention. *Tourism Review*, 76(5), 1181-1196.
- Luo, J. M. (2022). *Cultural Tourism and Cantonese Opera in the UK*. London, ISBN: 978-1-003-15756-4.
- Luo, J. M., & Ren, L. (2020). Qualitative analysis of residents' generativity motivation and behaviour in heritage tourism. *Journal of Hospitality and Tourism Management*, 45, 124-130.
- Luo, Y. F. (2023). An empirical study on cultural identity measurement and its influence mechanism among heritage tourists. *Frontiers in Psychology*, 2, 1-13.
- Matsumoto, D. (2007). Culture, context, and behavior. *Journal of personality*, 75(6), 1285-1320.
- McKercher, B., & Cros, H. D. (2002). Activities-based segmentation of the cultural tourism market. *Journal of Travel & Tourism Marketing*, 12(1), 23-46.
- Middleton, V. (2015). Adopting an agreed common language for tourism and the visitor economy. *Tourism (London)*, (162), 12-13. Retrieved from <https://www.cabdirect.org/cabdirect/abstract/20153210117>
- Napaporn Janchai, G. B. (2020). The effects of destination image on tourist satisfaction: The case of Don-Wai floating market in Nakhon Pathom, Thailand. *Academica Turistica-Tourism and Innovation Journal*, 13(2), 139-151.
- Nia Budi Puspitasari, S. N. (2019). Factors that affect intention to revisit of tourists in Semarang. In *AIP Conference Proceedings (Vol. 2019, No. 1)*. AIP Publishing.
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460-469.
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Servqual: A multiple-item scale for measuring consumer perc. *Journal of retailing*, 64(1), 1-12.
- Phinney, J. S. (1990). Ethnic identity in adolescents and adults: A review of research. *Psychological Bulletin*, 108(3), 499-514.

- Phinney, J. S. (2007). Conceptualization and measurement of ethnic identity: Current status and future directions. *Journal of Counseling Psychology*, 54(3), 271-281.
- Pratminingsih, S. A., Rudatin, C. L., & Rimenta, T. (2014). Roles of motivation and destination image in predicting tourist revisit intention: A case of Bandung-Indonesia. *International Journal of Innovation, Management and Technology*, 5(1), 19-24.
- Richards, G. (2018). Cultural tourism: Global and local perspectives. *Tourism Management*, 40(4), 208-220.
- Sadat, M. M., & Chang, L. H. (2016). The impact of environmental quality of revisiting intention. *Journal of Quality Assurance in Hospitality & Tourism*, 17(2), 209-223.
- Sam, D. L., & Berry, J. W. (2010). Acculturation: When individuals and groups of different cultural backgrounds meet. *Perspectives on Psychological Science*, 5(4), 472-481.
- Seetana, B., Teeroovengadam, V., & Nunkoo, R. (2020). Destination satisfaction and revisit intention of tourists: does the quality of airport services matter? *Journal of Hospitality & Tourism Research*, 44(1), 134-148.
- Shoukat, M. H., & Ramkissoon, H. (2022). Customer delight, engagement, experience, value co-creation, place identity, and revisit intention: A new conceptual framework. *Journal of Hospitality Marketing & Management*, 31(6), 757-775.
- Smith, L. (2020). Uses of heritage. In *Encyclopedia of global archaeology*, Springer International Publishing in USA, ISBN: 978-3-030-30016-6.
- Statista. (2024, Jul 15). Total contribution of travel and tourism to gross domestic product (GDP) worldwide in 2019 and 2023, with a forecast for 2024 and 2034. Retrieved from <https://www.statista.com/statistics/233223/travel-and-tourism-total-economic-contribution-worldwide/>: <https://www.statista.com>
- Su, X., Li, W., & Zhang, Q. (2020). The influence of cultural identity on tourist satisfaction in heritage tourism: Evidence from a World Heritage site in China. *Journal of Heritage Tourism*, 15(3), 293-308.
- Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33-48). Brooks/Cole.
- Thar, A. C. (2022). Life in and around Inlay Lake. Retrieved from <https://artsandculture.google.com/story/life-in-and-around-inlay-lake-by-aung-chan-thar-asean-centre-for-biodiversity/bAXhhgS-l8FwqQ?hl=en>: <https://artsandculture.google.com>.
- Throsby, D. (2010). *The economics of cultural policy*. Cambridge University Press.
- Tian, D. (2020). Influence of cultural identity on tourists' authenticity perception, tourist satisfaction, and traveler loyalty. *Sustainability*, 12(16), 1-18.
- Tim-Toomey, S. (2013). Bicultural identity negotiation, conflicts, and intergroup communication strategies. *Journal of Intercultural Communication Research*, 42(2), 112-134.
- Timothy, D. J. (2011). *Cultural heritage and tourism: An introduction*, Channel View Publications, in the USA. New York, ISBN: 978-1-84541-176-3.
- Triandis, H. C. (2001). Individualism-collectivism and personality. *Journal of Personality*, 69(6), 907-924.
- Tun, K. M. (2019). Challenges and opportunities of tourism development in Myanmar among CLMV countries (Cambodia, Lao Pdr, Myanmar, Vietnam) (Khine Myintzu Tun, 2019) (Doctoral dissertation, MERAL Portal).
- Wang, Y., & Hu, H. (2014). Cultural identity: The core mechanism for the survival and development of intangible cultural heritage. *Fujian Trib*, 10(7), 49-55.
- World Tourism Organization. (2018). UNWTO tourism highlights: 2018 edition. UNWTO. <https://doi.org/10.18111/9789284419876>
- Xingfu, L., & Lin, L. (2014). Cultural identity representation of late Development tourism destination based on the perspective of Tourist gaze. *Human Geography*, 29(6), 117-124.
- Yoopetch, N. A. (2022). The determinants of intention to visit wellness tourism destination of young tourists. *Kasetsart Journal of Social Sciences*, 43(2022), 417-424.
- Zaw, T. M. (2021). The impact of cultural tourism on Myanmar's economic development. *Asian Journal of Tourism*, 10(1), 112-130.
- Zhang, C., Qu, X., & Jin, Y. (2018). Heritage identity: Concept, connotation and research path. *Human Geography*, 33(4), 20-25.

A COMPARATIVE EXPERIMENTAL STUDY ON ARTIFICIAL INTELLIGENCE- AND HUMAN-DRIVEN SOCIAL MEDIA MARKETING CAMPAIGNS

DOI: 10.17261/Pressacademia.2024.1935

JMML- V.11-ISS.2-2024(4)-p.92-100

Muge Klein¹, Mehmet Fatih Kutlar²

¹Turkish German University, Business Administration, Istanbul, Turkiye.

klein@tau.edu.tr, ORCID: 0000-0003-2341-2975

²Turkish German University, Business Administration, Istanbul, Turkiye.

fatihkutlar00@gmail.com, ORCID: 0009-0004-2168-8075

Date Received: October 11, 2024

Date Accepted: December 11, 2024



To cite this document

Klein, M., Kutlar, M.F., (2024). A comparative experimental study on artificial intelligence- and human-driven social media marketing campaigns. Journal of Management, Marketing and Logistics (JMML), 11(2), 92-100.

Permanent link to this document: <http://doi.org/10.17261/Pressacademia.2024.1935>

Copyright: Published by PressAcademia and limited licensed re-use rights only.

ABSTRACT

Purpose- The rapid advancement in digital marketing, driven by technologies such as artificial intelligence (AI), forms the backdrop for this research. This study aims to investigate the performance differences between AI-driven and human-managed digital marketing campaigns by means of a true field experiment. Selected Key Performance Indicators (KPIs) are evaluated on the Meta platform to make a statement regarding the performance.

Methodology- The study has an experimental research method. Two concurrent marketing campaigns for the Paul Kenzie brand were conducted over a two-week period: one fully created by ChatGPT-4 and the other by a human expert. Key KPIs measured include Click-Through Rate (CTR), number of conversions, conversion rate, and Return on Advertising Spend (ROAS).

Findings- The results indicate that AI-driven campaigns outperform human-managed campaigns in terms of CTR, conversion rate, and ROAS, suggesting higher efficiency and effectiveness in reaching and engaging the target audience.

Conclusion- The findings highlight the potential of integrating AI technologies with human creativity to optimize digital marketing strategies.

Keywords: Artificial intelligence, social media marketing, digital marketing, field experiment

JEL Codes: M15, M31, Q55

1. INTRODUCTION

The digital revolution and pandemic conditions over the past decade have significantly transformed various aspects of our lives, embedding digital technologies into daily routines and business practices. One of the areas most affected by digital transformation in businesses is marketing. The innovations brought about by digitalisation have led to a significant change in companies' marketing strategies and the way in which they interact with their customers (Chaffey & Ellis-Chadwick, 2019). Traditional marketing methods are increasingly losing importance and market position, while digital marketing platforms are gaining relevance (Chaffey & Ellis-Chadwick, 2019). These enable companies to communicate with their target groups in a more direct, personalised and measurable way. In recent years, digital marketing has developed rapidly on a global scale: According to a study conducted by Statista, global spending on digital advertising is expected to exceed 730 billion US dollars by 2025 (Statista, 2023). In the new digital marketing world effective management of digital marketing campaigns plays a key role in the success of marketing strategies. Precise targeting, effective messaging, performance measurement and continuous optimisation have become key factors in the development and success of campaigns (Al Adwan et al., 2023). The role of data analysis in digital marketing and understanding customer behaviour is often highlighted in the literature (Wedel & Kannan, 2016). Data-driven insights, i.e. insights gained through the analysis and evaluation of data, enable more precise targeting of campaigns, more personalised experiences and an increase in conversion rates and performance. Social media marketing, an essential element of digital marketing, encompasses all promotional activities undertaken by businesses or individuals to showcase their products, services, or messages on social media platforms, engage their target audience, and enhance customer interaction (Alalwan et al., 2017; Tuten & Solomon, 2017). Social media marketing represents a promising opportunity to reach a large target group, to carry out targeted advertising and to ensure a personalised approach. and is conducted via various platforms such as Facebook, Instagram, Twitter and LinkedIn. Companies can use these platforms to communicate directly with their customers, receive direct feedback on their services or products or interact with customers

in person. Social media marketing platforms, which have the ability to monitor and evaluate the performance of digital marketing campaigns in real time, also have the advantage of providing cost-effective advertising solutions (Constantinides, 2014).

On the other hand, advances in machine learning, deep learning models, and natural language processing have accelerated the use of Artificial Intelligence (AI) and paved the way for more sophisticated digital applications in businesses and especially in digital marketing (Kaplan & Haenlein, 2019). AI is now used in various marketing fields, such as customer segmentation, the creation of personalized content, and the automation of digital marketing campaigns (Chaffey & Ellis-Chadwick, 2019). AI-supported tools have the potential to transform campaign management processes, as they are able to analyse extensive data sets, segment target groups and manage content automatically (Chaffey & Ellis-Chadwick, 2019; Kaplan & Haenlein, 2019). This demonstrates the growing relevance and potential of AI in the field of marketing, but also raises significant questions, such as whether it can replace human expertise or how these two approaches can be used together. The effectiveness of using artificial intelligence (AI) in marketing and which steps it should be implemented in to create a more efficient marketing strategy are still unknown. It appears that studies on the performance differences between AI-supported campaigns and human-led campaigns are limited and the existing research generally focuses on specific situations or different sub-areas of AI in digital marketing (Jarek & Mazurek, 2019). A better understanding of these differences is of great importance for the development of more effective campaigns.

This comparative experimental study aims to analyse the performance differences between social media campaigns created by AI and by humans based on a true field experiment. This study looks at a discount campaign belonging to the Paul Kenzie company which is an underwear brand that targets young adults aged 18-35 in the Turkish market with the aim of increasing sales of men's briefs. Two different ads, one managed by artificial intelligence and the other by humans, were placed simultaneously over a two-week period and their performance was monitored for a fortnight. As part of the study, various key performance indicators (KPIs) for both types of campaigns are analysed during the two-week study period.

In the section following the introduction, a literature review will be conducted on the use of artificial intelligence in digital marketing, digital marketing keyperformance indicators, and similar studies. In the next section the research design will be introduced and the experiment conducted for data collection and analysis will be explained in detail. After evaluating the results of the experiment, the final section will interpret these findings.

2. LITERATURE REVIEW

2.1. Digital Marketing and Artificial Intelligence (AI)

This study concentrates on social media marketing as an under category of digital marketing. The term 'digital marketing' refers to the process of advertising, selling or recognising products and services using the internet and digital technologies (Chaffey & Ellis-Chadwick, 2019). In contrast to traditional marketing methods, digital marketing aims to reach customers through the integration of data-driven, measurable and interactive approaches. In contrast to the one-way and rigid communication of traditional marketing, digital marketing strengthens communication between the customer and the brand through interaction-orientated two-way communication (Ryan, 2016). Google, Facebook and other major digital marketing platforms are currently at the centre of digital marketing strategies (Chaffey & Ellis-Chadwick, 2019). Social media marketing enables brands to reach and engage with segmented target audiences through platforms like Facebook, Instagram, Twitter, LinkedIn, and TikTok. Social media strategies encompass a variety of channels, including content production, user interactions, influencer collaborations, and paid advertising (Tuten & Solomon, 2017). Social media platforms are interactive platforms where customers can communicate directly with brands. In this way, brands can analyse feedback promptly and develop strategies to increase customer satisfaction and strengthen loyalty (Chaffey & Ellis-Chadwick, 2019).

Advances in areas such as machine learning, deep learning models and natural language processing, have accelerated the technological developments of AI paving the way for more sophisticated applications in the digital marketing world (Chintalapati & Pandey, 2022; Kaplan & Haenlein, 2019). Hence the design and management of digital marketing campaigns today is increasingly subject to the influence of AI technologies (Davenport et al., 2020). The use of AI technologies in digital marketing significantly enhances the effectiveness and efficiency of marketing strategies and its effects are evident in every element (Product, Price, Promotion and Place) of the marketing mix (Jarek & Mazurek, 2019):

Product: Personalization and automatic recommendations are the most prominent AI-effects on the Product-element. The personalization process aims to provide customers with tailored content and offers based on their past behavior patterns, preferences, and demographic information, formatted according to their device, usage style, and duration (Babatunde et al., 2024). With techniques such as pattern recognition or sentiment analysis are used to extract meaningful insights from large datasets and are frequently used in AI-driven marketing strategies to improve customer understanding (Alqurashi et al., 2023). By analyzing these data, AI can offer customers customized experiences. For instance, digital streaming providers like Amazon and Netflix use AI to recommend products (content) based on users' previous behaviors (Kaplan & Haenlein, 2019). Such personalization practices increase customer satisfaction and loyalty. Many marketplaces offer users special deals or

automatic recommendations based on their past shopping and search behaviors, making it easier for users to find interesting products and simplify their shopping processes. These practices aim to increase users' shopping rates (Smith, 2018).

Price: Price management is also supported by AI technologies (Basal et al., 2024). Machine learning algorithms are used in dynamic pricing strategies to enhance the impact of marketing campaigns. Dynamic pricing adjusts product prices automatically based on demand, competition, and other external factors, allowing companies to maximize revenue and offer more competitive prices to customers (Chaffey & Ellis-Chadwick, 2019).

Promotion: Creating a unique brand experience, targeting automation and personalized customer communication are areas supported by AI technologies mostly (Jarek & Mazurek, 2019). Machine learning enables performing specific tasks by learning from historical data. Large datasets are analyzed to predict customer behavior and optimize marketing strategies. Machine learning algorithms allow for campaign adjustments to achieve high performance (Perlich et al., 2014). For instance, Google Ads uses machine learning algorithms to predict and optimize the performance of advertising campaigns, enabling more efficient use of advertising budgets during peak search volume times of the day. By analyzing past campaign data, these algorithms can identify changes that enhance ad performance and make adjustments to ensure continuous optimization. Additionally, machine learning algorithms are used in customer segmentation and targeting, ensuring a more efficient approach to reaching the target audience (Choi & Lim, 2020). From the user's perspective, AI algorithms analyze all user behaviors and interactions, assign them to a specific segment, and present the most relevant ad (Choi & Lim, 2020). Furthermore AI assists customers in various ways during the shopping process. AI interacts and communicates with customers through chatbots and virtual assistants and provide product recommendations or answer customer queries (Kaplan & Haenlein, 2019). Virtual customer advisors and assistants, offering personalized support on websites in line with brand image, also exemplify successful Natural Language Processing(NLP) technology use (NLP), where NLP enables computers to understand, analyze, and generate human language (Olujimi & Ade-Ibijola, 2023).

Place: AI is expected to have a positive impact on distribution in two key areas: sale channels and sale processes (Nanayakkara, 2020). AI will open up new opportunities for marketing channels like e-commerce and online platforms and it will provide customers with a faster and more convenient purchasing platform, with 24/7 shopping available through tools like chatbots (Jarek & Mazurek, 2019). Another innovation driven by AI is the automation of purchase orders, eliminating the need for manual entry. Purchase order automation software captures orders, enabling faster and more cost-effective processing (Nanayakkara, 2020).

2.2. Key Performance Indicators (KPIs) in Digital Marketing

The analytical tools and data collection methods of digital marketing allow the effectiveness of campaigns to be measured and optimised (Chaffey & Ellis-Chadwick, 2019). Key Performance Indicators (KPIs) are essential metrics used to evaluate the success and effectiveness of digital marketing campaigns. These indicators assess whether marketing strategies are achieving their intended outcomes, enabling necessary adjustments when needed (Kingsnorth, 2019). Consequently, KPIs assist in optimizing marketing activities and making strategic decisions (Chaffey & Smith, 2022). When evaluating digital marketing campaigns using KPIs, it is essential to identify and track a set of critical metrics. Understanding these KPIs is crucial for conducting comparative analyses. The analysis and effective use of these KPIs are crucial for the success of planned strategies and tools in digital marketing. By regularly monitoring these indicators, marketers can adjust their campaigns to enhance performance, optimize budget allocation, and achieve their marketing objectives. Common but not limited KPIs to measure the performance of digital marketing are listed below:

- **Impressions:** Impressions refer to the total number of times an ad is viewed (Chaffey & Smith, 2017). This KPI helps gauge the visibility of an advertisement.
- **Reach:** Reach indicates how many unique users have seen the ad at least once. This metric is important for measuring the size of the audience that received the message (Ryan, 2016).
- **Frequency:** Frequency measures how often a single user sees the ad. A high frequency can increase brand awareness if maintained at a reasonable level but can also lead to user annoyance if too high (Chaffey & Ellis-Chadwick, 2019).
- **Cost Per Click (CPC):** CPC indicates the cost for each click on an ad. This metric allows for evaluating the efficiency of the advertising budget and assessing user interest in the ad (Kotler et al., 2016).
- **Click-Through Rate (CTR):** CTR provides insight into the ad's click rate relative to the number of impressions. A high CTR suggests significant interest from the target audience in the ad (Chaffey & Smith, 2022).
- **Number of Conversions and Conversion Rate:** These metrics refer to the number of users who perform a specific action, such as making a purchase or clicking on an ad. The conversion rate indicates the proportion of users who see the ad and complete the desired action (Kotler et al., 2016).

- **Number of Additions to Cart:** This KPI shows how often users add a product to their cart. Adding an item to the cart is a crucial step in the purchasing process and indicates user interest in the product (Chaffey & Smith, 2022).
- **Cost Per Purchase (CPP):** CPP represents the total expenditure required for a single purchase. This KPI is a vital indicator for evaluating the cost-efficiency of a campaign (Ryan, 2016).
- **Return on Advertising Spend (ROAS):** ROAS measures the revenue generated from the advertising spend. This metric provides insight into the profitability of an ad campaign by indicating the proportion of ad spend that returns as revenue (Kotler et al., 2016).

2.3. Similar Work

In general the literature indicates that AI plays a crucial role in optimizing digital marketing campaigns and the effectiveness of marketing campaigns has been significantly transformed by the integration of artificial intelligence (AI) technologies. AI's capabilities in data analysis, predictive modeling, and automation have enabled marketers to achieve unprecedented levels of targeting precision and personalization, which are crucial for engaging consumers effectively. AI developments such as machine learning and natural language processing (NLP) enable more effective and targeted campaign creation through the analysis of large datasets (Berman, 2019). There are several studies collectively highlight the transformative role of AI in digital marketing and its growing influence on consumer behavior and engagement. According to Jarek and Mazurek (2019) AI-supported advertising campaigns seem to offer significant advantages and they may more accurately reach target audiences, achieve higher KPI rates, and better optimize advertising expenditures. Chaffey and Ellis-Chadwick (2019) explore how AI tools, through personalized content and automation, can enhance digital marketing strategies by effectively reaching target audiences and increasing customer engagement. Kaplan and Haenlein (2019) expand on this by examining AI-driven solutions like chatbots and virtual assistants in social media marketing, emphasizing their potential to improve customer service and user experience. Malthouse et al. (2013) delve into the role of social media, showing how AI-facilitated user-generated content can shape brand perception and build loyalty. Gao and Liu (2023) highlight AI's ability to predict consumer preferences through the analysis of large datasets, making marketing campaigns more targeted and efficient. Davenport et al. (2020) take this further by demonstrating how AI can strategically improve personalization, leading to better consumer decision-making and higher satisfaction. Finally, Bharadwaj et al. (2013) discuss the broader implications of AI in digital business strategy, stressing the need for companies to embrace technological advancements to remain competitive in the evolving digital landscape.

Studies that compares the effectiveness of AI-generated and human-managed marketing strategies are generally fewer than those that discuss the overall impact of AI on marketing, whereby the comparison shows different performance results: Hartmann et al. (2024) demonstrate that AI-generated marketing content can be produced not only faster and at lower costs but also with "superhuman" effectiveness. This suggests that companies must integrate AI into their daily operations to stay competitive. Saputra et al. (2023) confirm this in a case study on Instagram, showing that content created with Chat GPT significantly boosts user engagement and attention, leading to higher sales. Ananthakrishnan and Arunachalam (2022) examine consumer perceptions of AI-assisted versus human-generated advertisements, finding that AI content is perceived as more sincere and competent. Interestingly, 69% of respondents preferred AI-generated ads. Despite AI's outstanding performance in data analysis and automation, some studies highlight the importance of the human factor in creativity, intuition, and innovation. According to Kotler et al. (2016) human creativity and intuition cannot be fully replicated by AI, and therefore, in certain situations, human-managed campaigns may be more effective. Bohndel et al. (2023), along with Looi and Kahlor (2024), explore the role of virtual AI-driven influencers compared to traditional human influencers. While there are few differences in terms of credibility and competence, human influencers score higher in likability and engagement. However there are many studies emphasizing AI's vast potential to transform how marketing content is created and delivered and to enhance marketing efficiency and effectiveness, there remains still a gap in understanding its comparative performance against human expertise.

3. DATA AND METHODOLOGY

3.1. Research Design

The experimental method was favoured in this study since it is ideal for analyzing the relationships between sets of variables: a set of independent variables, which is hypothesized to exert an influence, and a set of dependent variables, which is assumed to be affected by the independent variables (Malhotra et al., 2017). Typically, the independent variables consist of levels that are manipulated by the researcher, while the dependent variables are measured. The research method used in this study is field experiment with a between-subjects design. Experiments are a fundamental methodological approach in marketing and the social sciences (Viglia et al., 2021). Field experiments, in particular, examine real-world populations within their actual contexts, integrating seamlessly into ongoing activities (Viglia et al., 2021). Conducted in natural settings, these experiments offer a high degree of external validity, as they are representative of the target population and allow for the



measurement of actual behavior (Spilski et al., 2018). A between-subjects experimental design, in particular, involves comparing differences between groups of participants, each exposed to different stimuli (Viglia et al., 2021).

The study consists of an experimental between-subjects design including two digital marketing campaigns for the Paul Kenzie brand conducted simultaneously on the Meta platform. One of the campaigns was entirely set up by the ChatGPT-4 model, where all optimization settings, campaign targeting, text, and even imagery were determined by the ChatGPT-4 model. The other campaign was created and conducted by Paul Kenzie, a digital marketing expert from the company. The experiment has a between-subjects design, since participants are exposed to these two different campaigns as stimuli. The aim of the study is to compare the effectiveness of these two campaigns. Thus the research question is: *Do AI-supported digital marketing campaigns outperform those managed by humans in terms of their key performance indicators (KPIs)?*

Both campaigns were designed and conducted with the same goal focusing on the brand-created offer to increase sales of men's briefs and with the same budget. This implies that the objective, purpose, and offer of the campaign are identical, leading to a high degree of comparability in the comparisons and analyses conducted in this study. Both social media advertising campaigns were managed via the Meta Ads Manager panel. The Meta platform is a powerful platform for ad management in social media, enabling the analysis and monitoring of KPIs and data (Lammenett, 2024). Meta Ads Manager is a powerful tool for creating, planning, managing and optimising ads on popular platforms such as Facebook and Instagram (Lammenett, 2024). These platforms offer companies and individuals comprehensive solutions in a variety of areas including target group segmentation through the analysis of user data, the optimisation and adjustment of ad impressions, performance tracking and analysis (Chaffey & Ellis-Chadwick, 2019).

Independent variables of the experiment were target audience, ad visual characteristics and targeting strategy while dependent variables are selected KPIs to measure the effectiveness of social media marketing campaigns. Table 1 illustrates the varying characteristics of the two different campaigns used as experimental objects.

Table 1: Independent Variables - Experimental Design

	AI-Campaign	Human-Campaign
Target audience	men aged 18 to 40 living in Istanbul, Ankara, and Izmir	men aged 18 to 35 living across Turkey
Targeting strategy	interested in men's fashion and fitness	interested in skincare and fashion accessories
Visuals		

Regarding the target audiences and targeting strategy, it should be noted that in one campaign, they were determined by the digital marketing expert of Paul Kenzie, and in the other campaign by AI. The target audience of the human-campaign consisted of men aged 18 to 35 living across Turkey who are interested in both skincare and fashion accessories. AI preferred a broader target audience, namely men aged 18 to 40 living in Istanbul, Ankara, and Izmir, who are simultaneously interested in men's fashion and fitness. The advertisement image created by the AI campaign had a complex and chaotic structure that could attract user attention, featuring a gamified appearance. The advertisement message was presented in an elegant and comfortable manner. The human-managed campaign was characterized by a readable and flat creative structure with softer colors. The use of images and text in accordance with the brand's communication language drew attention. The preferred ad text in this campaign was "Now waiting for you: a 10% discount opportunity on your first purchase at Paul Kenzie." Compared to the AI campaign, the human-managed campaign conveyed a more implicit message, as the product was not obviously displayed in the image or explicitly mentioned in the text.

To evaluate the effectiveness and success of the social media marketing campaigns, specific Key Performance Indicators (KPIs) crucial for measuring and comparing the performance of digital campaigns (Saura et al., 2017) serve as dependent variables in the experiment (Table 2).

Table 2: Dependent Variables - Experimental Design

KPIs
Click-Through Rate (CTR)
Number of Conversions
Conversion Rate
The Return on Ad Spend (ROAS)

The Click-Through Rate (CTR) is a KPI that indicates how often an ad is clicked in relation to the number of impressions. The CTR provides insights into the attractiveness of a campaign. This KPI is crucial for understanding the click rate and user engagement (Chaffey & Ellis-Chadwick, 2019). The number of conversions refers to the number of users who perform a specific target action. In this investigation, purchases were considered as conversions. Since the goal of the campaign is to increase sales, the conversion activity of the initiated campaigns can be described as purchase transactions. The number of purchases provides insights into the conversion rate of the campaign into direct sales and can be used as a financial success criterion (Kotler et al., 2016). The conversion rate refers to the percentage of visitors to an ad who perform a specific target action. In our study, the target action is a purchase. This KPI measures the campaign's success in prompting users to act. A high conversion rate indicates that the campaign effectively reaches and mobilizes its target audience (Ryan, 2016). The Return on Ad Spend (ROAS) is a measure of the revenue generated relative to the advertising expenses. The ROAS is used to evaluate the cost efficiency and return on investment of the campaign. A high ROAS indicates that the advertising expenses are profitable and the investment pays off. ROAS is an important KPI for determining the financial success and overall effectiveness of the campaign (Chaffey & Ellis-Chadwick, 2019).

3.2. Data Collection and Data Analysis

The experiment was conducted over a two-week period from May 13, 2024, to May 29, 2024. The time interval of two weeks is considered sufficient to evaluate the short-term impact of the digital marketing activities (Wedel & Kannan, 2016). The data sources collected in this study are based on the results of ads simultaneously run on the Meta platform. The data collection is based on the systematic process of capturing and analyzing data obtained from the campaigns conducted on the Meta platform. The collected data were securely stored and made available for analysis by Meta. Necessary measures were taken to ensure the integrity and confidentiality of the data. Data retention protocols and advertiser transparency were adhered to in accordance with data security guidelines and the rules of the Meta platform. Statistical analysis methods are employed to regularly and systematically examine the data and draw meaningful conclusions. Descriptive statistics are used to summarize the general characteristics of the dataset and are calculated for the KPIs of the two marketing activities as needed. The statistical analysis and data organization system mentioned here takes place directly on the advertising platform, leaving advertisers with no ability to influence it. However, they have the opportunity to double-check the accuracy of the data through their own website. Meta completes the statistical analysis, the calculation of KPIs, and their verification.

4. FINDINGS AND DISCUSSIONS

A comparative KPI analysis is crucial to demonstrate the efficiency of the two campaigns. AI-driven campaign demonstrated superior performance in all KPIs (CTR, number of conversions, conversion rate, and ROAS).

Table 3: KPI Results

	AI-Campaign	Human-Campaign
Click-Through Rate (CTR)	0.32%	0.30%
Number of Conversions	22	16
Conversion Rate	6.61%	3.89%
Total Spend	4899.28 TRY	4887.08 TRY
Revenue	17697.40 TRY	11193.00 TRY
The Return on Ad Spend (ROAS)	3.61	2.29

By AI-Campaign the Click-Through Rate (CTR) was 0.32%. The campaign received 0.32% clicks relative to the number of impressions, resulting in 22 purchase actions and achieving a conversion rate of 6.61%. The Return on Ad Spend (ROAS) was determined to be 3.61. This ratio indicates that every 1 TRY invested generated a return of 3.61 TRY. The KPI results of the human-led campaign show a Click-Through Rate (CTR) about 0.30%. The campaign received 0.30% clicks relative to the number of impressions, resulting in 16 purchase actions and achieving a conversion rate of 3.89%. The Return on Ad Spend (ROAS) was determined to be 2.29. This ratio indicates that every 1 TRY invested generated a return of 2.29 TRY. It can be observed that the CTR (Click-Through Rate) of the AI-supported campaign is higher than that of the human-managed

campaign. This could indicate that the AI-generated ad texts or images capture the target audience's attention more effectively. The higher CTR for the AI campaign suggests that the visuals or text used were more engaging for the audience. The AI campaign led to more conversions and a higher conversion rate, indicating better performance in turning clicks into purchases. The AI campaign achieved a higher ROAS, meaning it was more cost-effective and generated more revenue per unit of currency spent.

This performance advantage can be explained by two reasons: One reason could be using different visual characteristics. AI-Supported Campaign utilized complex and chaotic visuals with a gamified appearance, which, while attention-grabbing, contradicted the brand image and visual integrity. The descriptive text was also more detailed, which diverged from the brand's typical communication style. Human-Managed Campaign featured a more readable and flat creative structure with softer colors, aligning better with the brand's communication style. The ad text was "Now waiting for you: a 10% discount opportunity on your first purchase at Paul Kenzie," which was more implicit, with the product not being obviously displayed in the image or text. The AI-generated content clearly indicates what users can expect after clicking the ad, which could explain the higher click rate and conversion rate. Users who click on the ad are more likely to start their shopping journey, knowing what to expect on the website. Another reason could be target audience preferences and targeting strategy. AI-Supported Campaign focused on men aged 18 to 40 living in Istanbul, Ankara, and Izmir, interested in men's fashion and fitness. Human-Managed Campaign: Targeted men aged 18 to 35 across Turkey interested in skincare and fashion accessories. AI targeted the three most populous cities in Turkey and employed broader interest-based targeting. Human-managed campaign targeted a specific demographic across the entire country.

5. CONCLUSION AND IMPLICATIONS

The design and management of digital marketing campaigns today is increasingly subject to the influence of artificial intelligence (AI) technologies. In this study, an experiment is conducted to compare the performance of AI- and human-driven social media marketing campaigns. Both campaigns were executed on the Meta platform simultaneously within the same time frame, with identical budgets and for the same purposes. The goal of both campaigns was to increase sales of the brand's men's briefs with a focus on "10% off your first purchase". The optimization settings of each campaign and the way the ads were presented to users were different in both campaigns. The performance was evaluated by means of selected KPIs. The data collected over a two-week period on these KPIs was used in a comparative analysis of AI-supported and human-led campaigns. The data has been gathered and analyzed via the Meta platform. According to the results of the conducted experiment it can be concluded that the AI-supported campaign outperformed the human-managed campaign in terms of key metrics such as CTR, conversion rate, and ROAS. The better performance of AI-supported campaigns can be attributed to the AI's ability to generate more engaging images and texts, directly showcasing the offer and what is being offered or to the targeting strategy developed by AI.

The comparative effectiveness of AI-supported versus human-managed marketing campaigns reveals that while AI can automate and optimize many aspects of marketing, the human element remains essential for creativity and strategic oversight. Research indicates that AI can perform comparably to experienced human marketers in certain contexts, such as closing sales calls, but it often lacks the nuanced understanding and emotional intelligence that human marketers bring to the table (Ullal et al., 2020; Davenport et al., 2020). The balance between AI capabilities and human ingenuity is critical; effective marketing strategies require a synergy that leverages the strengths of both (Mani, 2024; Tauheed et al., 2024). In terms of costs AI-supported campaigns often have lower operational costs due to automation of tasks. AI technologies can reduce costs by analyzing large datasets and optimizing campaigns. However, initial investments in AI technologies can be high. Human-managed campaigns involve higher personnel costs due to the time and expertise required for creative processes, analyses, and strategy development. Despite higher costs, the use of human creativity and emotional elements can justify the expenses. In conclusion, the integration of AI into marketing strategies presents a transformative opportunity for businesses to enhance campaign effectiveness through improved targeting, personalization, and operational efficiency. The integration of AI and human expertise holds great potential for optimizing digital marketing strategies. Content that is quickly generated and dynamically organized by artificial intelligence, significantly reducing both personnel costs and campaign processing time, can be enriched by humans with the emotional and creative elements necessary for effective brand communication. The most successful marketing campaigns will likely be the hybrid ones that effectively combine AI's strengths with the irreplaceable insights and creativity of human marketers. A balanced approach that combines the strengths of both AI and human capabilities can lead to the most effective and compelling marketing strategies. This study will help to manage digital marketing campaigns more efficiently and sustainably. They will enable companies to make the best use of AI technologies and maximise overall performance by combining human expertise and AI capabilities.

REFERENCES

Al Adwan, A., Kokash, H., Al Adwan, R., & Khattak, A. (2023). Data analytics in digital marketing for tracking the effectiveness of campaigns and inform strategy. *International Journal of Data and Network Science*, 7, 563-573.

- Alalwan, A. A., Rana, N. P., Dwivedi, Y. K., & Algharabat, R. (2017). Social media in marketing: A review and analysis of the existing literature. *Telematics and Informatics*, 34(7), 1177-1190.
- Alqurashi, D. R., Alkhaffaf, M., Daoud, M. K., Al-Gasawneh, J. A., & Alghizzawi, M. (2023). Exploring the impact of artificial intelligence in personalized content marketing: a contemporary digital marketing. *Migration Letters*, 20(S8), 548-560.
- Ananthakrishnan, R., & Arunachalam, T. (2022). Comparison of consumers perception between human generated and AI aided brand content. *Webology (ISSN: 1735-188X)*, 19(2).
- Babatunde, S. O., Odejide, O. A., Edunjobi, T. E., & Ogundipe, D. O. (2024). The role of AI in marketing personalization: A theoretical exploration of consumer engagement strategies. *International Journal of Management & Entrepreneurship Research*, 6(3), 936-949.
- Basal, M., Saraç, E., & Kadir, Ö. (2024). Dynamic pricing strategies using artificial intelligence algorithm. *Open Journal of Applied Sciences*, 14(8), 1963-1978.
- Berman, R. (2019). Machine learning applications in digital marketing. *International Journal of Marketing*, 47(2), 210-225.
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. V. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, 471-482.
- Bohndel, M., Jastorff, M., & Rudeloff, C. (2023). AI-driven influencer marketing: Comparing the effects of virtual and human influencers on consumer perceptions. *Journal of AI, Robotics & Workplace Automation*, 2(2), 165-174.
- Chaffey, D., & Ellis-Chadwick, F. (2019). *Digital marketing: Strategy, implementation and practice*. Pearson.
- Chaffey, D., & Smith, P. R. (2022). *Digital marketing excellence: planning, optimizing and integrating online marketing*. Routledge.
- Chintalapati, S., & Pandey, S. K. (2022). Artificial intelligence in marketing: A systematic literature review. *International Journal of Market Research*, 64(1), 38-68.
- Choi, J. A., & Lim, K. (2020). Identifying machine learning techniques for classification of target advertising. *ICT Express*, 6(3), 175-180.
- Constantinides, E. (2014). Foundations of social media marketing. *Procedia-Social and Behavioral Sciences*, 148, 40-57.
- Davenport, T., Guha, A., Grewal, D., & Bressgott, T. (2020). How artificial intelligence will change the future of marketing. *Journal of the Academy of Marketing Science*, 48, 24-42.
- Gao, Y., & Liu, H. (2023). Artificial intelligence-enabled personalization in interactive marketing: a customer journey perspective. *Journal of Research in Interactive Marketing*, 17(5), 663-680.
- Hartmann, J., Exner, Y., & Domdey, S. (2024). The power of generative marketing: Can generative AI create superhuman visual marketing content? *SSRN Electronic Journal*, 1-43.
- Jarek, K., & Mazurek, G. (2019). Marketing and artificial intelligence. *Central European Business Review*, 8(2), 46-55.
- Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), 15-25.
- Kotler, P., Kartajaya, H., & Setiawan, I. (2016). *Marketing 4.0: Moving from traditional to digital*. Wiley.
- Lammenett, E. (2024). Meta: Facebook und Instagram: Werbung in Facebook und Instagram, Werbung mit Facebook, Custom Audience, Facebook Business Manager. In *Praxiswissen Online-Marketing*. Wiesbaden: Springer Fachmedien Wiesbaden, 433-453.
- Looi, J., & Kahlor, L. A. (2024). Artificial intelligence in influencer marketing: A mixed-method comparison of human and virtual influencers on Instagram. *Journal of Interactive Advertising*, 24(2), 107-126.
- Malhotra, N. K., Nunan, D., & Birks, D. F. (2017). *Marketing research: An applied approach*. Pearson.
- Malthouse, E. C., Haenlein, M., Skiera, B., Wege, E., & Zhang, M. (2013). Managing customer relationships in the social media era: Introducing the social CRM house. *Journal of interactive marketing*, 27(4), 270-280.
- Mani, A. (2024). Applying artificial intelligence to the digital marketing: Opportunities and challenges for the marketer. *International Journal of Business and Management Review*, 12(1), 56-74.
- Nanayakkara, N. (2020). Application of artificial intelligence in marketing mix: A conceptual review. In *Proceedings of 11th International Conference on Business & Information ICBI*, University of Kelaniya, Sri Lanka. ISSN 2465-6399, 530-542.
- Olujimi, P. A., & Ade-Ibijola, A. (2023). NLP techniques for automating responses to customer queries: a systematic review. *Discover Artificial Intelligence*, 3(1), 20.
- Perlich, C., Dalessandro, B., Raeder, T., Stitelman, O., & Provost, F. (2014). Machine learning for targeted display advertising: Transfer learning in action. *Machine Learning*, 95(1), 103-127.
- Ryan, D. (2016). *Understanding digital marketing: Marketing strategies for engaging the digital generation*. Kogan Page Publishers.

- Saputra, R., Nasution, M. I. P., & Dharma, B. (2023). The impact of using ai chat gpt on marketing effectiveness: A case study on Instagram marketing. *Indonesian Journal of Economics and Management*, 3(3), 603-617.
- Saura, J. R., Palos-Sánchez, P., & Cerdá Suárez, L. M. (2017). Understanding the digital marketing environment with KPIs and web analytics. *Future Internet*, 9(4), 76.
- Smith, A. (2018). Artificial intelligence and personalization in marketing. *Journal of Marketing Research*, 55(3), 435-450.
- Spilski, A., Gröppel-Klein, A., & Gierl, H. (2018). Avoiding pitfalls in experimental research in marketing. *Marketing: ZFP—Journal of Research and Management*, 40(2), 58-90.
- Statista. (2023). Digital advertising worldwide. <https://www.statista.com/statistics/237974/online-advertising-spending-worldwide/> [Date Accessed: August 29, 2024].
- Tauheed, J., Shabbir, A., & Pervez, M. S. (2024). Exploring the role of artificial intelligence in digital marketing strategies. *Journal of Business, Communication & Technology*, 54-65.
- Tuten, T. L., & Solomon, M. R. (2017). *Social media marketing*. Sage Publications.
- Ullal, M. S., Hawaldar, I. T., Mendon, S., & Nympha, R. J. (2020). The effect of artificial intelligence on the sales graph in Indian market. *Entrepreneurship and Sustainability Issues*, 7(4), 2940.
- Viglia, G., Zaefarian, G., & Ulqinaku, A. (2021). How to design good experiments in marketing: Types, examples, and methods. *Industrial Marketing Management*, 98, 193-206.
- Wedel, M., & Kannan, P. K. (2016). Marketing analytics for data-rich environments. *Journal of Marketing*, 80(6), 97-121.

WORKFORCE AGILITY: A SYSTEMATIC LITERATURE REVIEW AND COMPARISON WITH DOMESTIC STUDIES

DOI: 10.17261/Pressacademia.2024.1936

JMML- V.11-ISS.2-2024(5)-p.101-121

Sukru Baris Hatunoglu

Marmara University, Faculty of Business Administration, Maltepe Campus, Istanbul, Turkiye.

baris.hatunoglu@marmara.edu.tr, ORCID: 0000-0002-4956-518X

Date Received: October 5, 2024

Date Accepted: November 19, 2024



To cite this document

Hatunoglu, S. B. (2024). Workforce agility: a systematic literature review and comparison with domestic studies. *Journal of Management, Marketing and Logistics (JMML)*, 11(2), 101-121.

Permanent link to this document: <http://doi.org/10.17261/Pressacademia.2024.1936>

Copyright: Published by PressAcademia and limited licensed re-use rights only.

ABSTRACT

Purpose- This research has three main scopes and objectives. The first objective is to thoroughly examine the concept of workforce agility, delineate its boundaries, and conduct a systematic literature review. This review will report existing studies based on their objectives, methods, conceptual frameworks, and findings to identify prevailing patterns. The second objective of the research is to review the local literature, identify and analyze articles, and graduate theses focused on workforce agility within Turkey. The final objective is to review the studies from both local and international literature in a comparative manner to identify and discuss research gaps in the local literature.

Methodology- A comprehensive systematic literature review is conducted within the Scopus database. This review identified 36 eligible articles focused on workforce agility, which were reviewed and reported for their objectives, methodologies, and findings. Additionally, theses focused on workforce agility listed in the Council of Higher Education Thesis Center and articles by local authors listed on Google Scholar have been reviewed and discussed for their goals, methodologies, samples, and conclusions in order to enable a comparative view.

Findings- International studies emphasize various dimensions of workforce agility, notably proactivity, adaptability, and resilience. These studies highlight the influence of emotional intelligence, organizational structure, and digital transformation on agility. Conversely, Turkish literature remains limited in scope, mainly focusing on specific sectors like ICT and hospitality. Since the number of studies is still very low, critical gaps are identified, such as longitudinal studies and investigations into cross-cultural and cross-sectoral studies such as healthcare and education, indicating a need for broader research within Turkey.

Conclusion- The study concludes that while workforce agility is increasingly acknowledged as a vital competency, Turkish literature is still developing compared to global studies. Addressing gaps, such as cross-sector analysis and the influence of cultural factors, could enrich the understanding of workforce agility in Turkey. Recommendations for future research include expanding sector-specific studies and exploring workforce agility's impact on organizational capabilities and performance types in diverse Turkish industries.

Keywords: Workforce agility, employee agility, agile workforce, agile employee, agility

JEL Codes: M19, O39, J24

1. INTRODUCTION

The concept of agility has undergone substantial evolution, especially in the contemporary business environment after events like technological developments with Industry 4.0, digital transformation processes, and even the global COVID-19 pandemic, where the need for rapid and effective adaptation is proven to be crucial for all organizations. Initially, agility was associated with the manufacturing sector, denoting a company's capacity to alter production procedures swiftly (Sharifi and Zhang, 1999). On the other hand, as the world keeps getting increasingly complex, the concept has widened to include a more extensive set of capabilities. Currently, agility notion is seen as a vital strategic asset, allowing firms to maneuver through progressively volatile marketplaces. Businesses must exhibit agility to not only survive but also prosper during technology shocks, economic transformations, or global crises (Doz and Kosonen, 2008).

Agility fundamentally implies a company's ability to rapidly transform into environmental changes, such as emerging consumer expectations, innovations in technology, or competitive market dynamics. Agility has evolved beyond just production line versatility; it is now regarded as a comprehensive approach that includes all aspects of operational procedures and strategic decision-making (Teece et al., 2016). Consequently, agility has emerged as an important priority in both business practices and academic studies, with researchers examining how enterprises, teams, and individuals may cultivate and preserve agility (Felipe et al., 2017).

This study comprises several stages. In the initial stage, a general literature review was conducted to delineate the boundaries of the concept of agility within the literature, identifying several widely accepted definitions of the concept. The second stage involved reporting findings from systematic literature reviews found in international sources regarding the number of studies executed and types of agility focused, respectively. Additionally, statistics on the number and types of agility-focused theses completed in master's and doctoral programs at universities in Turkey are presented in order to compare the alignment between domestic and foreign studies. The third stage highlighted similarities between the types of agility studied in international literature and Turkish dissertations and provided general definitions for the most widely accepted agility types. In the fourth stage, a systematic literature review on workforce agility is conducted using the SCOPUS database. In this section, 36 articles are identified, which were subsequently reviewed in terms of their objectives, methodologies, samples, and findings. In the fifth stage, domestic studies and dissertations focused on workforce agility were identified and discussed in detail. The final stage of the research involved a comparative review of foreign and local literature studies, identifying gaps within the local literature and offering recommendations for future research.

This study is conducted to answer the following research questions.

- How has the concept of agility been examined in studies conducted in both international and local literature?
- What types of agility are most frequently focused on and researched in international and local literature?
- How are the conceptual boundaries of workforce agility defined?
- What objectives, methods, samples, and findings have been presented in local and international studies on workforce agility?
- When local and international research on workforce agility is compared, what gaps are observed in the local literature?

To address these research questions, the article sections are structured as follows. Section 2 provides a general examination of the concept of agility under three main subsections. The first part presents general definitions and characteristics of the agility concept, emphasizing the organizational variables it targets inside the companies. In the second part, a review of previous literature studies and an examination of postgraduate theses from the Council of Higher Education Thesis Center is conducted. This two-sided review identifies the types of agility that have been explored both in foreign and domestic literature. Considering this identification, the most used and studied agility types are defined, examined, and reviewed in the third part. Section 3 represents the primary focus of the research and includes information on the methodology and data of the study. Given that the study's main objective is to identify the boundaries of workforce agility in both foreign and domestic literature and to detect research gaps in domestic literature, this section provides details on the systematic literature review process applied to the concept. Section 4 reports the results of a systematic literature review conducted on workforce agility articles listed in the business and management field within the Scopus database. This section highlights the research methods used in the articles, various conceptual frameworks of workforce agility, the most influential authors, and citation counts. Furthermore, regarding the domestic literature, dissertations on workforce agility identified in the Council of Higher Education Thesis Center and articles written by Turkish authors listed on Google Scholar have been examined. These studies' purposes, methods, samples, and findings are outlined and discussed. Moreover, a comparative review is discussed regarding the gap between foreign and domestic studies in literature. In the final section, a conclusion about the gap in the foreign and domestic studies related to the workforce agility concept is presented, and further study implications are proposed.

2. LITERATURE REVIEW

This section will process the literature review in three main subsections. The first subsection focuses on the concept of agility, its emergence, and its main definitions. The second subsection focuses on the types of agility encountered in the literature and their main explanations and relationships. The last subsection focuses on workforce agility and explains the definitions found in the literature to show the boundaries of the concept.

2.1. Concept of Agility

The theoretical frameworks responsible for enhancing the responsiveness of companies and the efficiency level of manufacturing put together a two-volume report in the fall of 1991 called the 21st Century Manufacturing Enterprise Strategy (Sharifi and Zhang, 1999). This report came to be published through The Iacocca Institute at Lehigh University, and the concept of agility entered researchers' agendas.

In literature, numerous definitions emphasize the concept of agility in various studies. Although there is no consensus on any single definition, the definitions are not drastically different from one another. If we highlight a few of the most frequently referenced definitions that emerged close to the time when the concept was introduced, they are going to be as follows:

Sharifi and Zhang (1999) define agility as “...main issue in this new area of manufacturing management is the ability to cope with unexpected changes, to survive unprecedented threats of business environment, and to take advantage of changes as opportunities. This ability is called agility or agile manufacturing.” While Sharifi and Zhang mainly focus on the manufacturing side of the concept, their definition also suits the entire organization.

The definition presented by Goldman et al. (1995) explains organizational agility as the capability possessed by the entire firm to wholly adapt swiftly and resoundingly innovate regarding changeable business environments, which are usually unanticipated, and utilize the change to their advancement.

Lu and Ramamurthy (2011) pointed out speed and innovation as inseparable characteristics of organizational agility. Agility is, however, first identified as an organizational capability to make rapid and innovative responses to sudden and unanticipated changes in the environment in order to utilize the changes.

Zitkiene and Deksnys (2018) define agility as “an organizational ability to recognize unexpected changes in the environment and appropriately respond in a swift and efficient manner, by utilizing and reconfiguring internal resources, thus gaining competitive advantage in the process.”

Although numerous definitions in literature explain the concept of agility, when a general interpretation is made, it can be observed that many of these definitions converge on a similar or shared basis. Agility refers to the capability of firms always to be prepared for changes in the external environment and to respond to these changes as quickly as possible by utilizing their tangible, intangible, and human resources through proactive, responsive, and adaptive behavior.

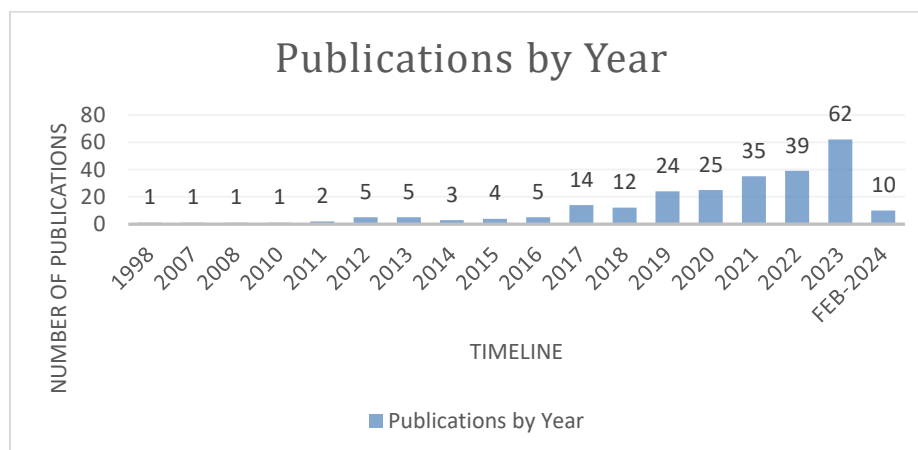
Since the study is not mainly focused on the general agility concept, no additional definitions of the concept are required to be indicated. Thus, in the following part, types of agility encountered in the literature will be mentioned briefly.

2.2. Types of Agility Studied in Literature

When the publications regarding the concept are examined, it can be clearly seen that researchers are studying numerous types of agility. Agility occurs in various forms, each corresponding to distinct facets of organizational responsiveness to change. For a brief introduction, before focusing on workforce agility, the most recognized and studied agility types will be defined and explained. After this part, the focus will be only on workforce agility, and the multiple gaps regarding the subject will be identified in Turkish literature.

Based on one of the most recent systematic literature reviews, which was studied by Nguyen et al. (2024), it can be seen that interest in the concept of agility has increased exponentially over the years. According to their research, which was executed over articles indexed under Web of Science, the distribution between the years can be seen in Figure 1. As shown in the figure, although the concept of agility has been researched in studies listed in the Web of Science database since 1998, there was no significant focus and rise until 2017.

Figure 1: Concept of Agility Publications by Year



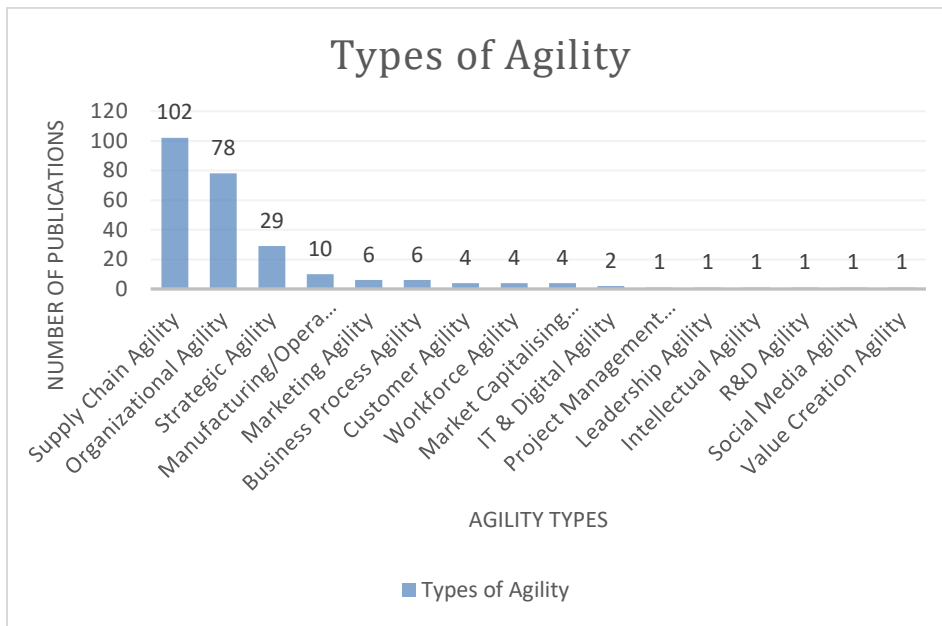
Source: Nguyen et al. (2024)

Since 2018, a continuous and rapid increase has been observed. Although it is impossible to make a definitive comment on 2024 as the data was obtained as early as February, listing 10 studies within just two months suggests that the annual count is unlikely to be low.

Furthermore, Nguyen et al. (2024) classified the types of agility being investigated in 249 empirical studies, shown in Figure 2, according to the quantity of each type of agility.

As shown in Figure 2, the data indicates that a large portion of research on agility focuses on supply chain agility (102 publications), followed closely by organizational agility (78 publications). In addition to these two main types of agility, other notable types—though with fewer publications—include strategic, manufacturing, marketing, and workforce agility (Nguyen et al., 2024).

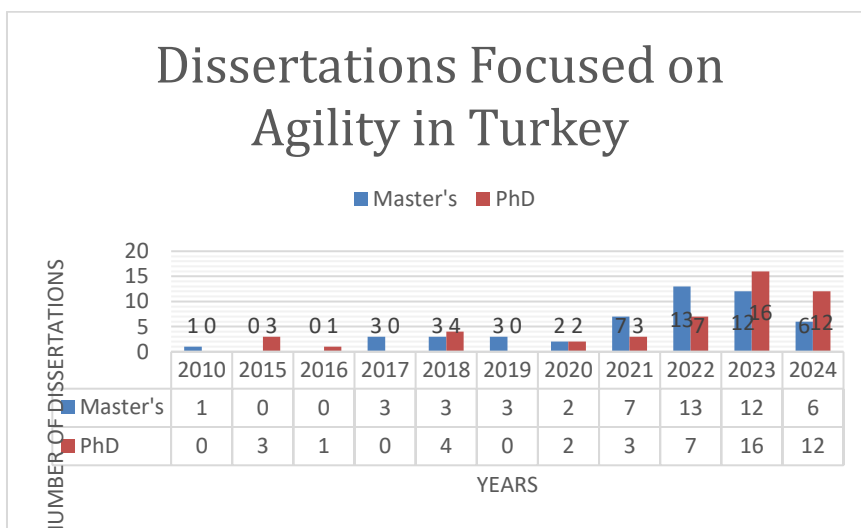
Figure 2: Types of Agility



Source: Nguyen et al. (2024)

In alignment with the study of Nguyen et al. (2024), when we observe the dissertations written between 2010 and 2024 (October) in Turkey, the Thesis Center of the Council of Higher Education (Council of Higher Education, Thesis Center) shows us quite a similar graphic which can be interpreted as research studies in Turkey regarding agility and its types are not so far behind. Figure 3 shows us the yearly distribution of 98 dissertations written by master’s and Ph.D. students in Turkey.

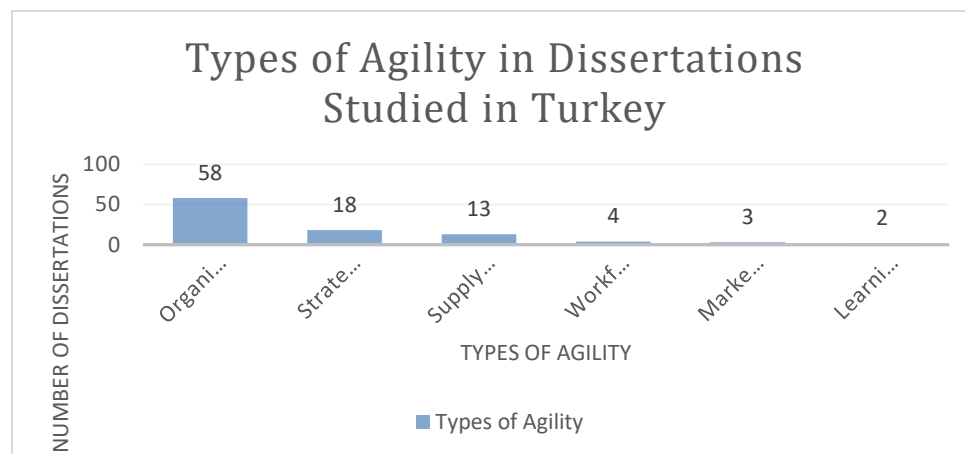
Figure 3: Dissertations Focused on Agility in Turkey



Source: Council of Higher Education Thesis Center (October, 2024)

As Figure 3 shows, the number of theses written on the concept of agility in master's and doctoral programs in business departments across universities in Turkey from 2010 to 2023 has increased rapidly in 2021, 2022, and 2023 since the topic gained its reputation aligned with foreign literature.

Figure 4: Distribution of Agility Types Studied in Turkish Business-Related Dissertations



Source: Council of Higher Education Thesis Center (October, 2024)

Also, similar to the systematic literature review done by Nguyen et al. (2024), domestic studies in Turkey identified agility types such as organizational agility, strategic agility, supply chain agility, workforce/employee agility, marketing agility, and learning agility. Thus, definitions of these types will be given to be in harmony with the most commonly referred agility types in business and management literature.

According to Gunasekaran (1998), organizational agility is “the capability to survive and prosper in a competitive environment of continuous and unpredictable change by reacting quickly and effectively to changing markets, driven by customer-designed products and services.” In support of this definition, Lu and Ramamurthy (2011) explain organizational agility as “a firm-wide capability to deal with changes that often arise unexpectedly in business environments via rapid and innovative responses that exploit changes as opportunities to grow and prosper.” Studies regarding organizational agility show a wide range of definitions with no agreement over a single explanation; however, none of these definitions appear to contradict one another as well. Apart from other types of agility, organizational agility tries to see the bigger picture inside the organization and act in a more generalist and strategic way, while other types mainly focus on one specialized function of the company, such as supply chain, manufacturing, marketing, or strategy. Organizational agility mainly focuses on the speed, responsiveness, competence, and flexibility of the entire organization in its ability to react to the rapid changes coming from the external environment (Sharifi and Zhang, 1999).

Operational agility, one of the foundational and most essential forms, was initially seen in the area of manufacturing. This form of agility focuses on rapidly modifying internal systems and processes to match changing needs. Corporations exhibiting operational agility can modify production techniques or reallocate resources in response to evolving client demands or marketplace conditions (Goldman et al., 1995). Operational agility is no longer limited to manufacturing; it is now essential across several sectors, including technology and retail, where timeliness and adaptability can determine an organization's competitiveness.

Supply chain agility, which was initially limited to manufacturing, has evolved to embody a complete and comprehensive answer to a great number of problems faced by firms operating in a turbulent business environment (Yauch, 2011; Zhang, 2011). Braunscheidel and Suresh (2009) use joint planning, demand response, customer responsiveness, and visibility as the first-order dimensions of the perception of agility and call firm supply chain agility a second-order construct. Supply chain agility is defined for firms by what Gligor et al. (2013) describes as “a firm's ability to quickly adjust tactics and operations within its supply chain to respond or adapt to changes, opportunities, or threats in its environment.”

Following that, strategic agility elevates this flexibility to an advanced tier. Operational agility is linked to the fundamental mechanics of a company's operations, whereas strategic agility involves an organization's capability to foresee market fluctuations and adjust its long-term strategies appropriately (Doz and Kosonen, 2008). Strategically agile companies foresee crises and are prepared to maneuver ahead of their competitors. This type of agility necessitates innovative management and a culture that is adaptive to change. The focus is strategically preparing the business to benefit from emerging

opportunities rather than enduring the most recent turbulence (Teece et al., 2016). Strategic agility is crucial in rapidly changing industries, such as technology and telecommunications, enabling organizations to prosper even in turbulent settings (Weber and Tarba, 2014). According to Doz and Kosonen (2010), strategic agility refers to a firm's capacity to constantly reinvent itself without losing the ability to be flexible while still being efficient. It has also been claimed that strategic agility is managing multiple dynamic capabilities, enabling a firm to enrich variety in its products, processes, and services across the business model (Weber and Tarba, 2014).

Furthermore, marketing agility is closely tied to a similar idea by focusing on an organization's ability to sense shifts in customer needs and respond quickly. Market agility is critical for staying competitive in today's fast-moving business world. Market-agile organizations know how to read customer signals, adapt their product or service ranges accordingly, and engage consumers meaningfully. For example, companies in industries such as e-commerce must be ready to adjust marketing strategies, tweak product designs, or shift pricing models to meet rapidly changing consumer demands (Cao et al., 2005). Companies can quickly lose relevance in a saturated marketplace without this kind of agility.

Another crucial type is learning agility, which deals with an organization's ability to learn and apply new knowledge in real time (DeRue et al., 2012). In industries that are always on the cutting edge, like information technology, companies need to be filled with employees who are eager and able to learn new skills continuously. Learning agility is one of the main predictors of long-term success because it helps organizations stay ahead of the curve. Businesses that encourage a culture of constant learning are often better equipped to deal with new challenges and opportunities (Lombardo and Eichinger, 2000).

Finally, cognitive agility is about how quickly individuals within a company can adapt their thinking to new situations. Although changing strategies or organizational processes are vital from the organizational level perspective, it's also quite critical to be adaptive to new mindsets and perspectives at an individual level. Good and Yeganeh (2012) define cognitive agility as "an individual's capacity to flexibly operate with openness and focused attention." Cognitive agility allows employees to remain innovative, solving problems creatively and effectively even when the ground is shifting beneath them. It is crucial in knowledge-driven fields, where fresh ideas and new approaches are crucial (Hodgkinson and Healey, 2011). When employees can think quickly and adapt their mental models, the whole organization benefits, becoming more agile and better able to navigate complex environments (Dyer and Ericksen, 2006).

All these different types of agility are interconnected. Companies that excel at operational agility are often better positioned to develop market agility because they can adjust their processes to meet customer needs more quickly (Overby et al., 2006). Similarly, strategic agility often leads to greater cognitive agility within the organization, as employees are encouraged to think flexibly and creatively approach problems. Ultimately, the most successful organizations are those that cultivate multiple forms of agility, using them together to create a more adaptive and resilient business (Weber and Tarba, 2014).

2.3. Concept of Workforce Agility

In this section, several of the most used definitions of workforce agility will be explained, and different aspects of the notion will be discussed. In the second part of the section, a systematic literature review table will be presented, prepared using the Scopus Database and business and management-related articles.

Among the various classifications of agility in literature, workforce agility stands out as a critical component in the evolution of the agility concept. Contemporary business environments are frequently described as VUCA — volatile, uncertain, complex, and ambiguous — demanding that people and teams react to evolving situations (Bundtzen and Hinrichs, 2021). Workforce agility emphasizes employees' ability to immediately adapt, adopt novel advances, and respond to evolving expectations of the external environment. This adaptability level is essential in rapidly evolving sectors, such as technology or finance. In its absence, enterprises may encounter difficulties in maintaining pace (Dyer and Ericksen, 2006). Workforce agility fundamentally surpasses basic technical skills; it involves building a more versatile culture where employees continuously learn, adapt, and are prepared to confront forthcoming challenges (Sherehiy et al., 2007).

In recent years, the focus on workforce agility has grown significantly. As organizations recognize the need for employees who can adapt quickly to new challenges, the ability to foster an agile workforce has become a key priority. Workforce agility indicates the collective capacity of the firm's personnel to swiftly adapt to evolving circumstances. As the uncertainty level of the market conditions increases exponentially, adjustment levels demanded by the external environment also increase rapidly. Therefore, building up an agile workforce is one of the primary criteria for staying in the business and sustaining the company's competitive power (Felipe et al., 2017). Like most of the agility types in the literature, workforce agility also refers to the ability to proactively identify upcoming market changes and prepare necessary contingency action plans accordingly to decrease the dependency level and retain the competitive advantage (Teece et al., 2016).

An agile workforce is inherently flexible and able to adjust as needed. Agile workers tend not to be restricted by rigid job roles or constrained by inadequate explanations of responsibilities. Instead, they are advised to welcome fresh challenges, shift

occupations as needed, and collaborate among teams (Sherehiy et al., 2007). Cross-functional teams—where people from several company departments interact to solve problems or start innovative projects—are often the foundation of agile teams. This form of collaboration fosters creativity by introducing people to several points of view and ideas. This kind of workforce agility can provide an essential edge over others in fields where adaptability is crucial, such as technology or consumer goods (Boehm and Turner, 2004).

Workforce agility can sometimes be mentioned as employee agility in literature, which is equally critical on an individual basis. Workers who are agile are able to pick up new tasks fast, adjust to different situations, and generally like change. Having the ability to quickly adapt to new situations and technology is essential in fast-paced workplaces where individuals are frequently expected to acquire fresh expertise on the spot (Verma, 2024). Employees who are agile not only accept but also embrace challenges. They're quick to pick up new information and are pioneers when it comes to trying out cutting-edge technology (Pulakos et al., 2000). Employees with the capability of being agile support increasing businesses' innovativeness, encounter and solve interruptions, and keep the firm's advantage in the market (DeRue et al., 2012).

As the fourth industrial revolution came into our lives, digital transformation has been a major factor in increasing workforce agility. Employees' capacity to absorb and utilize new technological knowledge and skillsets is becoming increasingly crucial as more enterprises integrate technological advancements into their everyday activities. Personnel not only require basic expertise about technological changes and new complex devices, but they also demand to know how to use it to their advantage for increased productivity and creativity (Overby et al., 2006). To stay effective in sectors undergoing digital transformation, firms must have an agile workforce (Bharadwaj et al., 2013). Employees who can learn faster and use the latest technology are vital to companies because they are capable of solving difficult challenges in novel ways.

However, technological and occupational agility aren't the only parts of an agile workforce; emotional and cognitive agility are similarly essential. The capacity to control one's emotions, keep one's cool under pressure, and adjust to new situations are all components of emotional agility (Cameron and Green, 2019). This agility becomes critical in fast-paced workplaces where workers are expected to maintain their concentration and output in the face of formidable obstacles. Emotionally agile workers are crucial in dynamic and chaotic workplaces because they can better deal with uncertain circumstances. Employees who are cognitively agile show qualities such as high levels of adaptiveness and flexibility, can alter their point of view, and face challenges from multiple aspects, thus enabling creativity and novel ideas (Hodgkinson and Healey, 2011).

The global COVID-19 pandemic emphasized the significance of an agile and flexible workforce as businesses were forced to respond rapidly to changes in customer needs, working conditions, supply chain interruptions, and remote labor (Dirani et al., 2020). It can arguably be said that the criticality of workforce agility is no longer open for discussion since companies with agile workforces performed superior in transitioning to huge changes in circumstances. Emotional agility was just as important as cognitive agility during the pandemic when workers were forced to deal with anxiety and unpredictability as they adjusted to new technology and working situations (Cameron and Green, 2019). The ability to quickly adapt to changing market conditions has become crucial for numerous companies (Felipe et al., 2017).

For long-term stability in the economy's unpredictable and dynamic environment today, the workforce's agility is an essential requirement. A further consideration is that an increase in workforce agility improves the firm's chances of withstanding disruptions and leveraging new opportunities. As for Sherehiy et al. (2007), such workforces, in this case, both employees and management, are inventive and capable of accommodating alterations, providing even further competitive advantage to an organization in a challenging environment. However, it seems that in the foreseeable future, industries will continue to transform their workforces to remain successful in the marketplace (Tece et al., 2016).

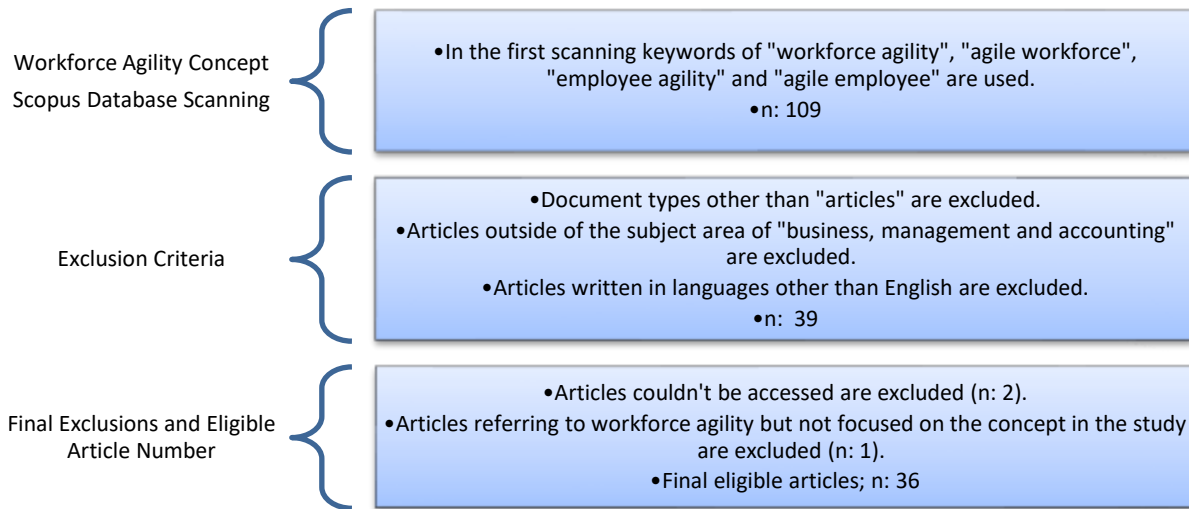
3. DATA AND METHODOLOGY

In this section, the concept of workforce agility is examined from two main perspectives. The first aspect is based on the information obtained through a systematic literature review concerning the studies listed in the Scopus Database. The second aspect is based on the information provided from domestic research, such as dissertations and articles published in Turkey.

3.1. Systematic Literature Review for Workforce Agility

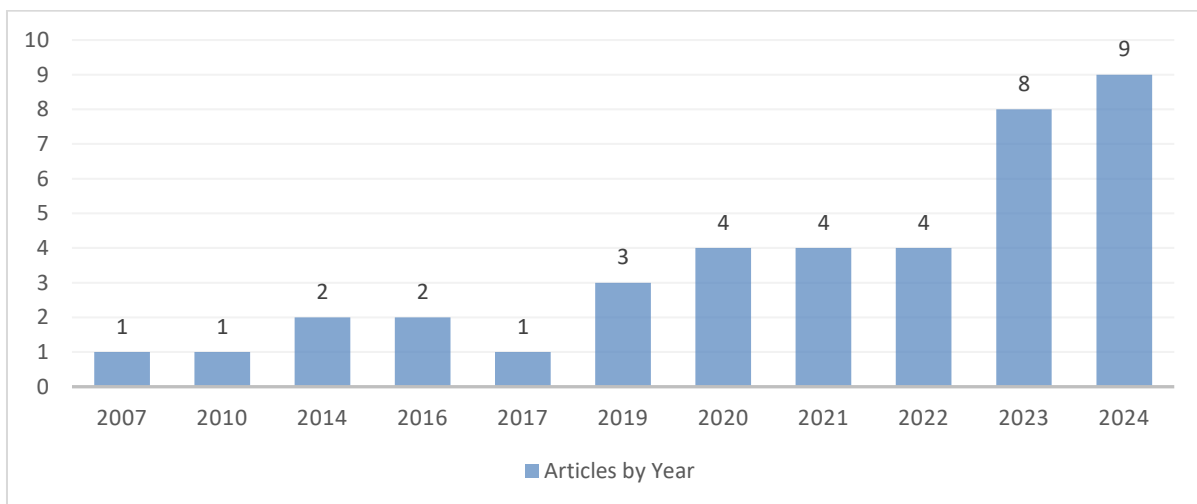
Figure 5 shows the phases of selecting eligible publications for the systematic literature review. The first step is to choose the database to reach high-quality sources. For this study, the Scopus database is chosen for its vast sources and high citation indexing. After the selection of the source database, the first scanning is executed with the following keywords: "workforce agility", "agile workforce", "employee agility", and "agile employee." Although the primary focus of the study is about workforce agility, workforce and employee words can be used interchangeably for this concept in literature.

Figure 5: Process of Resource Selection for Systematic Literature Review



In the first scanning, 109 documents are found and examined for eligibility and relativeness for the systematic literature review. In the next step, the following criteria are chosen for further filtering; “Business, Management and Accounting” category for the subject area, English for the language filtering, and “article” for the document type. After the final filtering, 36 articles are found eligible for the review. In the following figures and tables, additional information, such as the number of articles published through the years, their subject areas, and distribution between the countries, can be found.

Figure 6: Articles by Year



Source: Scopus Database (October, 2024)

As can be seen in Figure 6, articles indexed in the Scopus Database regarding workforce or employee agility concepts have dramatically increased in the last two years, which can be interpreted as researchers' recognition of the topic's criticality.

Table 1: Articles by Subject Area

Subject Area	No. of Articles
Business, Management and Accounting	39
Decision Sciences	9
Social Sciences	6
Engineering	5

Subject Area	No. of Articles
Computer Science	3
Psychology	3
Economics, Econometrics and Finance	1
Physics and Astronomy	1

Source: Scopus Database (October, 2024)

Table 1 presents the distribution of articles on workforce agility written in English across various areas. Although it is evident from the table that workforce agility is most frequently studied in business, management, and accounting as the primary discipline, it also can be seen that the topic is also examined in fields such as decision sciences, social sciences, engineering, and computer science. Thus, it can be easily said that the concept can be examined and interpreted in multiple different contexts.

Table 2: Articles by Country/Territory

Country/Territory	No. of Articles
India	20
China	7
Iran	3
Pakistan	3
South Africa	3
United Kingdom	3
Germany	2
Ghana	2
Malaysia	2
Norway	2

Source: Scopus Database (October, 2024)

Table 2 highlights the countries where workforce agility articles in the Scopus database are listed. As the table clearly shows, more than half of the articles found eligible for this research are listed from India, followed by China.

Table 3: Detailed Information for 36 Eligible Articles Regarding Authors, Goal, Methodology, Framework, Additional Variables, Sample and Findings

Authors	Goal	Methodology	Workforce Agility Framework	Other Variables in the Research Model	Sample	Findings
Iravani and Krishnamurthy (2007)	Investigate workforce management in repair/maintenance contexts by cross-trained workmen.	A numerical study is used based on multiple different scenarios for test cases.	No dimensions	-	-	Static machine-priority rules minimize system downtime; hidden symmetry improves repair environments.
Qin and Nembhard (2010)	Examine how to promote workforce agility in uncertain production environments using real options.	The real options valuation technique is used for workforce planning during the product lifecycle.	No dimensions	-	-	The real options approach significantly improves agility in high-demand volatility scenarios.
Alavi et al. (2014)	Investigate the impact of organizational structure and learning on workforce agility.	Structural Equation Modeling	Proactivity, Adaptability, Resilience	Organizational Learning, Organic Structure	Iranian SMEs, n: 161	Decentralization, flat structure, and organizational learning positively affect workforce agility.
Al-Faouri et al. (2014)	Analyze the effect of the agility of the workforce on declarative and procedural organizational memory.	Hierarchical Multiple Regression Analyses	Proactivity, Adaptability, Resilience	Organizational Memory	Mobile communications companies in Jordan, n: 430	Proactive workforce improves both declarative and procedural memory.

Alavi (2016)	Analyze the ways in which the agility of the workforce may affect external manufacturing flexibility within SMEs.	Structural Equation Modeling	Proactivity, Adaptability, Resilience	External Manufacturing Flexibility	Iranian SMEs, n: 161	Workforce agility significantly enhances new product, mix, and volume flexibility.
Muduli (2016)	Examine organizational practices that support the agility of the workforce and the mediating effect of psychological empowerment.	Multiple Regression Analyses	No dimensions	Organizational Practices, Psychological Empowerment	Manufacturing and Service Companies in India N: 344	Teamwork and reward system have the greatest influence on workforce agility; psychological empowerment mediates organizational practices and agility.
Muduli (2017)	Examine how organizational practices and psychological empowerment contribute to workforce agility.	Multivariate Regression Analysis	No dimensions	Organizational Practices, Psychological Empowerment	Manufacturing and Service Companies in India N: 524	Teamwork has the highest influence on agility; psychological empowerment also plays a crucial role.
Patil and Suresh (2019)	Identify and frame the factors that influence workforce agility in IoT-enabled projects.	Total interpretive structural modeling (TISM) of IoT project environments.	Workforce Agility Enablers	Workforce Agility Enablers	IoT Organizations in India N: 25 (Interviews)	Employee proactivity, innovativeness, and resiliency are key enablers of agility in IoT projects.
Rani et al. (2019)	Investigate the impact of holacracy on organizational performance and employee agility.	Conceptual analysis of holacratic management and its impact on organizations.	No dimensions	Organizational Performance	Interview with high-level officers of five manufacturing companies in India	Holacracy enhances employee performance by reducing hierarchical levels and increasing decision-making flexibility.
Pitafi et al. (2020)	Examine the impact of enterprise social media (ESM) on employees' agility with focus on IT skills and experience in the workplace.	Hierarchical Regression Analysis	Proactivity, Adaptability, Resilience	ESM Usage, Work Expertise, IT Proficiency	Two-wave data from 306 employees in Chinese organizations using ESM.	ESM usage enhances employee agility, especially among those with high work expertise; IT proficiency is not a significant moderator.
Storme et al. (2020)	Investigate psychological traits that predict workforce agility and build an inventory to measure agility potential.	Qualitative interviews and quantitative testing of psychometric properties (Structural Equation Method)	No dimensions	Psychological Traits	N1: 11 Professionals for qualitative study N: 808 workers for a quantitative study.	Traits such as job curiosity, ambiguity tolerance, and risk-taking predict workforce agility.
Tamtam and Tourabi (2020)	Create a model for assessing employee agility in Moroccan manufacturing based on fuzzy logic.	Applied fuzzy logic to assess workforce agility enablers.	No dimensions	Workforce Agility Enablers	Moroccan manufacturing company.	Key enablers include engagement, knowledge sharing, and self-motivation.
Varshney and Varshney (2020)	Explore how emotional intelligence influences workforce performance with workforce agility as a mediator.	Survey data from small entrepreneurial firms in India were analyzed using statistical methods.	No dimensions	Emotional Intelligence, Workforce Performance	Six entrepreneurial companies in India. N: 256	Workforce agility mediates emotional intelligence and performance.
Abrishamkar et al. (2021)	Examine how workforce agility impacts the growth of high-tech firms, with innovation as a mediator.	Logistic regression analysis of data from high-tech firms in Iran.	Proactivity, Adaptability, Resilience	High-Growth Firms, Innovation	High-tech manufacturing firms in Iran. N:169	Workforce agility significantly increases the likelihood of firms becoming high growth, mediated by product innovation.

Almahmeed and Salih (2021)	Validate workforce agility attributes for performance development in Royal Bahraini Armed Depots.	Exploratory and confirmatory factor analysis	Flexibility, Adaptability, Motivation, Training, Participation, Empowerment	Performance Development	Royal Bahraini Armed Depots. N:300	Agility attributes are valid for measuring performance development.
Tessarini Jr. And Saltorato (2021)	Conduct a systematic literature review on workforce agility and propose a research agenda.	Systematic literature review of articles from three databases.	-	-	Web of Science, Scopus, Science Direct N: 31 articles	Agility has four key dimensions: proactivity, flexibility, resilience, and competence.
Thayyib and Khan (2021)	Investigate the role of demographic variables in determining the relative employee agility levels among tax practitioners.	Descriptive statistics.	Responsiveness, Flexibility and Adaptability, Up-skilling, Collaboration, Speed, Proactiveness, Informativeness	Demographics	Survey of tax professionals in Bangalore N:220	Demographic factors such as age and experience influence agility scores.
Ajgaonkar et al. (2022)	Identify drivers of workforce agility from a dynamic capability perspective in IT companies.	Interviews and qualitative analyses	Drivers of Workforce Agility	Drivers of Workforce Agility	Qualitative interviews with senior IT professionals and managers. N:19	Sensing, seizing, and continual renewal are key drivers of workforce agility.
Franco and Landini (2022)	Understand how agility within employees is to contribute to innovation in organizations.	Analysis of a large sample of firms across 28 countries using survey data.	Time Agility, Task Agility	Firm Innovation	ECS Data.	Task agility is particularly important for process innovation, while time agility has a lesser impact.
Salmen and Festing (2022)	Conduct a systematic literature review of employee agility resources focusing on the theoretical and measurement approaches used.	Systematic literature review of academic databases on employee agility.	Learning Agility, Innovative Work Behavior	Job Demands Flexibility-Promoting HR practices	Web of Science N:61 articles	Employee agility is under-researched, especially in terms of HRM's role; proposes a new framework for future research.
AlAbood and Mohammedsmail (2023)	Examine how innovative work behavior is explained by the agility of the workforce, organizational identity, and solidarity.	Structural Equation Modelling	Proactivity, Adaptability, Resilience	Organizational Identification Organizational Solidarity Innovative Work Behavior	Survey of respondents from various industries in Saudi Arabia. N: 364	Workforce agility, organizational identity, and solidarity are positively related to innovative work behavior.
Das et al. (2023)	Explore how workforce agility can result in firm performance and reputation among IT firms in India.	Structural Equation Modelling	Proactivity, Adaptability, Resilience	Transformational Leadership, Talent Management, Firm Size, IT hub, Financial and non-financial performance, Corporate Reputation	Middle-level executives from IT firms. N: 225	Workforce agility enhances firm performance and corporate reputation; transformational leadership and talent management are key enablers.
Hanu et al. (2023)	Assess the influence of work-based learning on employee agility, ambidexterity, and goal-generating in the context of Ghana.	Structural Equation Modelling	No dimensions.	Work Based Learning, Supportive Organizational Culture, Proactive Goal Generation, Employee Ambidexterity	Cross-sectional survey in Ghana. N: 443	Work-based learning positively impacts agility, ambidexterity, and proactive goal generation, with agility having the strongest effect.

Janani and Vijayalakshmi (2023)	Propose an arts-based process of improving the workforce agility in Indian companies.	Conceptual model using intermodal arts-based intervention (IABI) to enhance epistemic curiosity and manage ruminative thoughts.	No dimensions.	Intermodal Arts-Based Intervention, Epistemic Curiosity, Reflective Pondering, Brooding, Trait Joy	-	Arts-based interventions can enhance agility by fostering curiosity and adaptive behaviors.
Pitafi et al. (2023)	Examine how ESM visibility affordance impacts employee agility through knowledge transfer.	Structural Equation Modelling	Proactivity, Adaptability, Resilience	ESM Affordance Knowledge Transfer, Task Interdependence	Two-wave data collection from employees in China and the U.S. N: 682	Visibility affordances of ESM (message transparency, network translucence) positively affect employee agility via knowledge transfer.
Rasheed et al. (2023)	Explore the relationship between ESM and employee creativity with the degree of employee agility and degree of communication visibility as moderator variables.	Statistical analyses. PROCESS macros in SPSS.	No dimensions.	ESM Usage Communication Visibility, Employee Creativity	Multi-wave study with data from employees in China and the U.S. N: 448	Employee agility mediates the relationship between ESM usage and creativity, moderated by communication visibility.
Talwar et al. (2023)	Examine how ESM affordances impact employee agility via social networking ties.	Structural Equation Modelling	Proactivity, Adaptability, Resilience	Enterprise Social Media Affordance Networking Ties	Data collected from Chinese professionals using ESM in workplaces. N: 318	ESM affordances (e.g., microblogging, PDAs) positively affect agility through instrumental and expressive social networking ties.
Sameer (2024)	Analyze the impact of digitalization and organizational support regarding workforce agility and task achievement.	Multiple linear regression analysis	No dimensions.	Perceived Usefulness of Digitalization, Task Performance, Perceived Organizational Support	Survey of managers in Indian public sector organizations N: 201	Digitalization enhances agility, which in turn improves task performance; organizational support has a limited direct role.
Chong and Zainal (2024)	Analyze the role of employee agility in the relationships between vitality, digital literacy, transformational leadership and job performance.	Smart PLS Predictive Analysis	Proactivity, Adaptability, Resilience	Employee Vitality, Digital Literacy, Transformational Leadership, Job Performance	Survey of HR professionals in Malaysian manufacturing companies. N: 300	Employee agility mediates the positive relationships between vitality, digital literacy, transformational leadership, and job performance.
Muduli and Choudhury (2024)	Evaluate the role of workforce agility in adoption and outcomes of digital technologies in Indian banking sector.	Structural Equation Modelling	No dimensions.	Digital Technology Adoption, Digital Technology Outcome	Survey of banking executives in India. N: 185	Workforce agility mediates the relationship between digital technology adoption and digital technology outcomes.
Naim et al. (2024)	Investigate how empowering leadership influences employee agility, with a focus on psychological safety and knowledge sharing.	Structural Equation Modelling	Proactivity, Adaptability, Resilience	Empowering Leadership, Psychological Safety, Knowledge Sharing	Survey of employees in India's IT sector. n: 924	Empowering leadership fosters employee agility through psychological safety and knowledge-sharing behaviors.
Panda (2024)	Study how ambidexterity impacts employee agility, moderated by organizational tenure.	Structural Equation Modelling	Proactivity, Adaptability, Resilience	Employee Ambidexterity, Employee Organizational Tenure	Survey of bank managers in India. N: 202	Employee ambidexterity is a strong predictor of agility, with tenure moderating this relationship.

Sackey et al. (2024)	Examine how internal marketing orientation affects innovative behavior through workforce agility and psychological empowerment.	Hierarchical regression is used.	No dimensions.	Internal Marketing Orientation, Psychological Empowerment, Employee Innovative Behavior	Survey of hospitality employees in Ghana. N: 731	Workforce agility mediates the relationship between marketing orientation and innovative behavior, moderated by psychological empowerment.
Sharma et al. (2024)	Examine the mediating role of readiness to change in the relationship between agility and digital transformation.	Structural Equation Modelling	No dimensions.	Readiness to Change, Digital Transformation	A two-wave survey from Indian organizations. N: 161	Workforce agility positively influences readiness to change, which mediates digital transformation outcomes.
Srigouri and Muduli (2024)	Find out how performance coaching and employee agility affect training transfer in Indian MSMEs.	Structural Equation Modelling	No dimensions.	Performance Coaching, Training Transfer	Survey of MSME employees in India. N: 411	Employee agility mediates the relationship between performance coaching and training transfer.
Yang et al. (2024)	Study how developmental HR practices impact employee agility, with thriving at work as a mediator and workplace spirituality as a moderator.	Structural Equation Modelling	Initiative, Adaptability, Resilience	Developmental Human Resource Practices, Thriving at Work, Workplace Spirituality	Survey of employees in China. N: 428	Developmental HR practices enhance agility, mediated by thriving at work and moderated by workplace spirituality.

4. FINDINGS AND DISCUSSIONS

Upon examining the detailed information in Table 3, identified patterns regarding the research methods are as follows: Structural Equation Modeling (SEM) was used in 14 of the 36 studies (Alavi et al., 2014; Alavi, 2016; Storme et al., 2020; AlAbood and Mohammedsmaail, 2023; Das et al., 2023; Hanu et al., 2023; Pitafi et al., 2023; Talwar et al., 2023; Muduli and Choudhury, 2024; Naim et al., 2024; Panda, 2024; Sharma et al., 2024; Srigouri and Muduli, 2024; Yang et al., 2024), while regression analysis was applied in 8 studies (Al-Faouri et al., 2014; Muduli, 2016; Muduli, 2017; Pitafi et al., 2020; Varshney and Varshney, 2020; Abrishamkar et al., 2021; Sameer, 2024; Sackey et al., 2024). Systematic literature reviews were conducted in 2 studies (Tessarini Jr. and Saltorato, 2021; Salmen and Festing, 2022), and a conceptual approach was used in 2 studies (Rani et al., 2019; Janani and Vijayalakshmi, 2023). Various other methods were used in the remaining studies such as a fuzzy logic approach (Tamtam and Tourabi, 2020), EFA and CFA for a scale generation (Almahmeed and Salih, 2021), a qualitative approach (Storme et al., 2020; Ajgaonkar et al., 2022), and a real options valuation technique (Qin and Nembhard, 2010).

Of the 36 studies, 28 are based on survey data, while qualitative data was obtained in only two studies (Storme et al., 2020; Ajgaonkar et al., 2022). The sample size of the studies is also stated in Table 5 (if available) for respective studies, so it will not be repeated in this part.

When examining the conceptual frameworks of workforce agility used in the studies, it is observed that 13 of the 36 studies utilize the subdimensions of proactivity, adaptivity, and resilience (Alavi et al., 2014; Al-Faouri et al., 2014; Alavi, 2016; Pitafi et al., 2020; Abrishamkar et al., 2021; AlAbood and Mohammedsmaail, 2023; Das et al., 2023; Pitafi et al., 2023; Talwar et al., 2023; Chong and Zainal, 2024; Naim et al., 2024; Panda, 2024; Yang et al., 2024). Additionally, some studies used alternative frameworks for workforce agility such as time agility and task agility (Franco and Landini, 2022), learning agility and innovative work behavior (Salmen and Festing, 2022), and alternative dimensions like flexibility, adaptability, motivation, training, participation, empowerment, responsiveness, up-skilling, collaboration, speed, proactiveness and informativeness (Almahmeed and Salih, 2021; Thayyib and Khan, 2021). Furthermore, there are 14 studies in which workforce agility is specified as a single dimension (or not specified at all) in the research model.

Table 3 shows the variables included in the same model with workforce agility and their relationships in a detailed perspective, indicating the variables that show a significant effect highlighted in the findings column.

Upon examination of Table 3 in detail, the goals, methodologies, workforce agility frameworks used in the research, other variables in the research models, sample size, and findings are compiled and highlighted in the following part. Additionally, the most frequently cited articles among those included in the systematic literature review are listed in Table 4. Out of the

36 articles included in the study, 30 received a total of 932 citations, while six articles received none. The top 5 most-cited articles among those included in the study are as follows.

Table 4: Top 5 High-Cited Publications in Scopus about Workforce Agility

Author and Publication Year	Publication Name	Scopus Citation	%
Alavi et al. (2014)	"Organic structure and organisational learning as the main antecedents of workforce agility"	149	16
Patil and Suresh (2019)	"Modelling the Enablers of Workforce Agility in IoT Projects: A TISM Approach"	123	13,20
Muduli (2016)	"Exploring the facilitators and mediators of workforce agility: an empirical study"	82	8,80
Muduli (2017)	"Workforce agility: Examining the role of organizational practices and psychological empowerment"	82	8,80
Pitafi et al. (2020)	"Employee agility and enterprise social media: The Role of IT proficiency and work expertise"	61	6,54
Total		497	53,34

Source: Scopus Database (October 2024)

According to Table 4, the top 5 most-cited articles constitute 53% (497 citations) of the total citations received by the 36 articles. The most-cited study, with 149 citations, is Alavi et al.'s (2014) research examining the impact of organic structure and organizational learning on workforce agility. This is closely followed by Patil and Suresh's (2019) publication, which investigates workforce agility enablers in IoT projects, with 123 citations. In third and fourth places are Muduli's studies, both with 82 citations: the 2016 study examining the facilitators and mediators of workforce agility and the 2017 study evaluating its relationships with organizational practices and psychological empowerment. In fifth place, with 61 citations, is Pitafi et al.'s (2020) study, which examines the role of IT proficiency and work expertise in the relationship between employee agility and enterprise social media.

Furthermore, the numbers shown in Table 5 are extracted when examining the number of publications by authors on this concept and the total citations per author.

Table 5: Number of Publications and Citations Per Author

Author	Number of Publications	Number of Citations
Muduli, Ashutosh	4	164
Pitafi, Abdul Hameed	3	92
Rasheed, Muhammad Imran	3	92
Alavi, Somaieh	2	177
Mishra, Shreya	2	33

Source: Scopus Database (October, 2024)

When looking at the individual data in Table 5, Muduli is observed to have made the highest contribution within the sample, with four studies. Pitafi and Rasheed follow Muduli with three studies each. Alavi and Mishra are also in the top 5, each with two studies. Based on Scopus data, the remaining authors included in this study have each contributed with 1 study to the concept of workforce agility. On the other hand, although Muduli is one of the most-cited authors with 164 citations, this number falls below the 177 citations received by Alavi, who contributed with only two studies.

4.1. Domestic Studies Regarding Workforce Agility: Dissertations and Articles

This section focuses on the domestic studies conducted in Turkey with a detailed discussion of their goal, samples, and findings. The highest number of publications by academicians and graduate students in Turkey regarding workforce and employee agility were found via Google Scholar and the YÖK Thesis Center. According to the search conducted on the database of YÖK Thesis Center, five thesis studies on workforce agility were found that were conducted in the field of business administration, as shown in Table 6. Furthermore, a search through Google Scholar of the domestic studies dealing with workforce agility returned a total of only six studies, which is demonstrated in Table 7.

In his dissertation work, Karalar (2015) assessed how reward management influences organizational identification and workforce agility in the hospitality sector, specifically in five-star hotels in the Istanbul context. Therefore, the study aims to determine and measure the relationship between reward management and the level of satisfaction, as well as the middle-

and upper-level managers working in a highly competitive environment. The study utilized correlations and regression analysis and tested the linkages between the three variables in administering the measured survey: reward management, organizational identification, and workforce agility. Through the administration of the questionnaire, data was collected from a sample of 308 managers, and the results obtained suggest that there is a positive correlation and regression between reward management practices and organizational identification and between intrinsic rewards and proactivity. However, key socio-demographic factors such as gender, age, and years of service seem to have significantly impacted the respondents' perceptions and response patterns, thus impacting the perceptions of rewards received and their level of agility. In Karalar's study, he emphasizes the importance of reward management as a tool that increases employees' organizational identification and agility levels in competitive areas of service provision (Karalar, 2015).

Table 6: Dissertations Written in Turkey About Workforce Agility

Author and Year	Dissertation Name	Program
Karalar (2015)	Ödül yönetiminin örgütsel özdeşleşme ile işgücü atikliği üzerine etkisi ve bir araştırma	Ph.D.
Özbay (2017)	Örgütsel sinizm ve işgücü atikliği arasındaki ilişki ve bir araştırma	Master's
Aktaş (2019)	Mahalli idarelerde politik beceriler iş gücü atikliği ve liderlik stili arasındaki ilişkilerin incelenmesi	Master's
Demirler (2023)	Dijital örgüt kültürü bağlamında işgücü çevikliği, yabancılaşma ve psikolojik güçlendirme ilişkisi	Ph.D.
Hacıoğlu (2024)	İnsan kaynakları yönetimine yönelik yapay zeka algısının çalışanların çeviklik performansı ve işe bağlanması üzerindeki etkisi	Master's

Source: Council of Higher Education, Thesis Center (October 2024)

Özbay (2017) addresses the interrelatedness of organizational cynicism and workforce agility from the Turkish energy sector employees' perspective. The critical focus is determining the effect of cynicism in organizations on workers' agility, particularly the variations resulting from demographic variables. In the process of evaluation, the data obtained from existing scales of Sherehiy's Workforce Agility Scale (2008) and Brandes et al.'s Organizational Cynicism Scale (1997), as reproduced in Turkish by Karacaoğlu and İnce (2012) are employed. Overall, results show that there is an inverse relationship between the levels of organizational cynicism and the employees' workforce agility. It had been anticipated that gender, age, and tenure would also affect agility levels, and the results support this anticipation. It is found that men tend to be more agile while younger women with shorter tenures have higher levels of cynicism especially. This means that there is a clear need, and most importantly, a practical application of finding ways of decreasing cynicism in order to increase agility, which is an important commodity in today's fast-moving economic environment (Özbay, 2017).

Aktaş (2019) focuses on the relationship between political skills, workforce agility, and leadership styles in the local government. The purpose of this research is to find out how political skills and leadership styles affect agility, particularly in municipal administrations. Incorporating a survey method, Aktaş initiated a survey of 33 local government mayors and 109 local government private secretaries in Turkey and analyzed the data collected through correlation and factor analysis. The study shows that the leaders' political skills and leadership styles, as perceived by these leaders, have significant relationships with workforce agility. Political skills, as well as political-type leadership, were found to influence employees' perceptions of their leaders' styles and were found to affect workforce agility. In other words, management staff who want to create an agile workforce in public administration should pay attention to these issues (Aktaş, 2019).

As part of the PhD dissertation evaluation, Demirler (2023) focuses on digital cultures: workforce agility, alienation, and psychological empowerment. The dissertation sheds light on the paradox that the strain of digital organizational cultures can engender alienation but suggests that workforce agility and psychological empowerment may alleviate the problem. Using a mix of methods, including bibliometric analysis, content analysis, and field study interviews of nine bank managers and a survey of 317 bank staff from Manisa, Turkey, Demirler employed a field approach. The results of this study found that alienation and workforce agility have a negative relationship and that situational psychological empowerment, which is a sense of meaningful work, has a moderating effect. This means that empowering strategies can lower alienation in staff and, at the same time, enhance digital organizational cultures, affording and retaining agility (Demirler, 2023).

Finally, Hacıoğlu (2024), one of the contributors from Turkey, investigates AI's impact on employees' attitudes toward work engagement and workforce agility in Human Resource Management. It specifically seeks to evaluate the ability of AI-powered HRM to increase the level of agility and engagement that is core to the organization's overall performance. The quantitative survey method applied in the study reveals positive relationship regression analyses between employees' perception of AI in HRM practices and engagement and agility. These outcomes point to the potential of AI-integrated HRM strategies to enhance organizational outcomes by promoting dedicated and agile teams (Hacıoğlu, 2024). Studies conducted concerning

further processes on workforce agility in Turkey contribute to a better understanding of the other sectors and the determinants of the process at the individual and organizational layers.

Table 7: Articles Written in Turkey About Workforce Agility

Author and Year	Article Name
Demir and Yaşar (2018)	Ödül Yönetiminin İşgücü Atıklığı Üzerine Etkisi: Kahramanmaraş İli Tekstil Sektöründe Bir Araştırma
Aktaş and Ülgen (2021)	Yenilikçi İnsan Kaynakları Yönetim Uygulamalarının Örgütsel Çeviklik Üzerindeki Etkisi: Savunma Sanayi İşletmelerinde Bir Araştırma
Demirler and Oral Ataç (2022)	İşgücü Çevikliği Literatürünün Bibliyometrik Analizi
Çömlekçi and Bozkurt (2024)	Dijital Liderlik ve Bireysel Yenilikçilik İlişkisinde İşgücü Çevikliğinin Rolü
Düger (2023)	İşgücü Çevikliğinin Öncülleri ve Etkilerini Belirlemeye Yönelik Sistemik Bir Analiz
Gerçek (2023)	İnsan Kaynakları Yönetimi (İKY) için "Çevik" Ne Anlama Geliyor? İKY ve Çeviklik Kavramına İlişkin Bir Sistemik Derleme Çalışması

Source: Google Scholar (October 2024)

When the studies indicated in Table 7 are examined, it can be seen that several studies on workforce agility in Turkey are empirical, meaning that they collect and analyze primary data to establish correlations and impacts within various spheres of activity. For example, Demir and Yaşar (2018) questioned reward management and its relations with workforce agility within the supply chains of the textile sector. The research encompassed the collection of data from 132 employees. It targeted surveys to determine how structured reward systems can maximize employee agility in responding to changes in the environment. This increased agility is most needed in business sectors such as textile manufacturing, in which a fast-changing market and production processes need employees who can withstand alteration (Demir and Yaşar, 2018). Like that, Aktaş and Ülgen (2021) conducted empirical research in the defense industry, collecting data on 498 white-collar employees and their managers. The authors examined the role of innovative HR practices on organizational agility and confirmed a statistically valid link between agile HR practices and higher organizational ability of adaptiveness (Aktaş and Ülgen, 2021).

Different empirical research embraced by Çömlekçi and Bozkurt (2024) investigated the information and communication technology (ICT) sector. They gathered a sample of 200 employees in order to test the mediating effect of workforce agility on the relationship between digital leadership and individual innovativeness. It was suggested that digital leadership directly improves workforce agility and innovation, making agility critical in the fast-changing ICT sectors (Çömlekçi and Bozkurt, 2024).

Even though these studies focus on some very strong empirical bases via industries such as textile, defense, and ICT, there are other studies, such as those of Demirler and Oral Ataç (2022), Düger (2023) and Gerçek (2023) that even though are not empirical provide good reviews of the literature and analysis. In their article, Demirler and Oral Ataç (2022) reported the results of a bibliometric study of 52 selected articles on the topic of workforce agility, which made it possible to look at the history of the development of this field from much broader perspectives in the past two decades. The authors mention several trends, and after 2018, there has been a growing interest in individual characteristics of workforce agility (Demirler and Oral Ataç, 2022). In the same vein, Gerçek (2023) performed a systematic literature review on human resource management (HRM) and its relationship with agility, which describes how introducing agile HRM approaches strengthens organizational performance (Gerçek, 2023).

Furthermore, Düger's (2023) goal is to evaluate the factors affecting the agility of the workforce and the outcomes of having a workforce within organizations, considering that it can serve as a competitive advantage in fast-paced environments. Employee agility, which is the skill of responding to sudden changes, has become one of the workplace's must-have requirements. A systematic review is employed which incorporates the features of Tranfield et al. (2003), planning, doing, and reporting approach. Using Web of Science, Scopus, and Google Scholar as databases, Düger found 39 studies out of 195 publications on the research topic with inclusion and exclusion criteria like method focusing on quantitative, case studies about the agility of the workforce and quality of the studies.

The sample includes studies from diverse sectors, such as technology, manufacturing, and services, predominantly from countries like China, Iran, and the U.S., though research from Turkey remains limited. Findings reveal that workforce agility is driven by individual factors like emotional intelligence, team dynamics such as collaboration, and organizational enablers like learning culture and flexible structures. The study concludes that agile workforces enhance organizational performance, innovation, and adaptability, highlighting workforce agility as a critical factor for organizational success in uncertain environments.

4.2. Encountered Gaps in the Turkish Literature about the Concept

Despite the valuable contributions of these studies, several gaps remain in the Turkish literature on workforce agility when compared with foreign publications. Initially, the number of empirical studies was still relatively low. Sector-level studies emphasize sectors such as textile, defense, and ICT. However, other significant sectors, such as health, education, public administration, and agriculture, have been given little attention. Such research could provide insight into the varieties of workforce agility across several industries and how these industries operate as a whole.

Another critical area that lacks attention is the style of management, which integrates the digital transformation and operation of the tools to drive agility. Even though studies such as Çömlekçi and Bozkurt (2024) point out that digital leaders have been vitally important in encouraging workforce agility, further studies are required to investigate the link, such as the traditional sectors that deal with the digital tools impact. Moreover, the organizational and managerial practices that affect workforce agility have been adequately covered, but additional studies on the individual level of the influence of such factors have not been done. For example, Demirler and Oral Ataç (2022) have stated that cognitive, emotional, and psychological flexibility is critical for workforce agility.

In addition, most of the studies available use a cross-sectional design, measuring workforce agility at a particular point in time. No such studies establish how agility grows over the years or perhaps as a response to external events such as recessions or pandemics. Such studies would shed light on the sustainability and growth of workforce agility over time in organizations. Also, most studies have concentrated on larger organizations, leaving a gap in the hows of workforce agility in small and medium-sized enterprises (SMEs), which are essential in Turkey's economy.

Finally, the existing literature does not adequately investigate Turkey's cultural and institutional settings. For instance, national labor laws or corporate culture may shape the work ethics associated with Turkish organizations in a way that differs from those of the rest of the world, which may affect workforce agility. With these dynamics being understood, the applicability of the study's findings within the context of Turkey may be more straightforward. There is also a notable gap in the literature on the influence of workforce agility on employee well-being, especially on job satisfaction and work-related stress.

5. CONCLUSION AND FURTHER IMPLICATIONS

The notion of agility has been gaining notable attention in the organizational literature, as it has been termed an essential competency for companies to survive in fast-moving and unpredictable markets. Initially associated with manufacturing tasks (Sharifi and Zhang, 1999), agility now encompasses strategic, operational, and workforce aspects that allow organizations to respond flexibly to changes in the market and other instabilities (Doz and Kosonen, 2008). This ability to be responsive, especially during critical times such as COVID-19 times, has been regarded as a vital determinant (Teece et al., 2016).

Among the different types of organizational agility, workforce agility is a unique form of organizational agility that has been recognized as a key driver of organizational resilience and flexibility. Sherehiy et al. (2007) refer to workforce agility as employees' ability, which is defined as the readiness to learn new things, modify behavior, or apply fresh new ideas. This kind of culture makes employees active and encourages development in order to be more flexible. With the inexorably complicated evolution of the markets, employees fulfill a significant part of the organization's competitive advantage (Felipe et al., 2017).

The systematic literature review on workforce agility discusses several dimensions that are considered critical, such as proactivity, adaptability, and resilience (Alavi et al., 2014; Das et al., 2023). It also notes the role of emotional and digital intelligence as important factors (Overby et al., 2006; Varshney and Varshney, 2020). Important schemas explain how organizational practices and structures, including psychological empowerment and leadership styles, help to achieve the agileness of the workforce (Muduli, 2016; Abrishamkar et al., 2021). Moreover, studies in parts like technology, health care service, and services provide some context in terms of the different enablers and barriers to developing agility (Verma, 2024).

In Turkey, the reviewed literature on workforce agility, including theses and journal articles, pays attention to multiple workforce contexts. For instance, the thesis by Karalar (2015) investigates the role of the reward management system in workforce agility within the Turkish hospitality sector. Other interesting issues include the moderation effect of organizational cynicism, political skills, and digital leadership on an understanding of workforce agility (Özbay, 2017; Aktaş and Ülgen, 2021; Çömlekçi and Bozkurt, 2024). It should be noted that even though some of these studies do advance our understanding of workforce agility in the context of Turkey, they tend to be in sectors such as defense, hospitality, and ICT. However, these sectors are certainly in the minority of the broader picture as limited work has been done in public administration, health care, or education, pointing out a discussion for expansion of the construct of the workforce to these areas.

A particularly interesting finding that comes out when comparing studies from abroad with domestic studies is that while foreign literature considers workforce agility in multiple national and industrial settings, the majority of Turkish studies seem to be more focused on the particular and rather empirical investigations of the industry. For example, whereas foreign studies look at cross-cultural determinants of agility (Pitafi et al., 2020; Muduli and Choudhury, 2024), Turkish studies are rather concerned about specific traits of individual nuance within specific organizations. However, such insights are still valuable, and it should be noted that Turkish literature has not delved into wider, intersectoral, or temporally broader studies on workforce agility thus far.

Several voids can be identified in Turkish literature. First, many of the available domestic studies are cross-sectional in nature and, therefore, can depict only a picture of agility at a particular moment. Considering how fast the workforce's demands for agility are, a change over time longitudinal analysis is needed to gauge the context that forces agility in expanding across economic cycles. Furthermore, Turkish literature does not adequately examine individual traits, particularly cognitive and emotional agility, concerning workforce agility. Finally, the relationship between workforce agility and organizational health is rarely studied. Hence, the interplay concerning job satisfaction, stress, and retention of employees remains unaddressed.

In order to overcome these deficits, Turkish researchers, in particular, could carry out prospective research focusing on how agility is shaped over time, especially in the context of less developed sectors such as health, public administration, and education. At the same time, studying the importance of cognitive and emotional agility in particular industries in Turkey can provide a better understanding of agility at the individual level. Future research can also examine workforce agility among micro, small, and medium-sized enterprises and family-owned businesses, which are crucial for the Turkish economy but have a different level of partnership and ownership structure and a lower level of agility than more prominent companies. Finally, Turkish researchers can conduct cross-cultural research on the workforce agility of Turkish organizations and organizations in other countries to learn how the contextual factors vary the manifestations of agility and how Turkish organizations can adapt their agility strategies to specific features of Turkey's social and institutional environment.

REFERENCES

- Abrishamkar, M. M., Abubakar, Y. A., & Mitra, J. (2021). The influence of workforce agility on high-growth firms: The mediating role of innovation. *The International Journal of Entrepreneurship and Innovation*, 22(3), 146–160. <https://doi.org/10.1177/1465750320973896>
- Ajgaonkar, S., Neelam, N. G., & Wiemann, J. (2022). Drivers of workforce agility: a dynamic capability perspective. *International Journal of Organizational Analysis*, 30(4), 951–982. <https://doi.org/10.1108/ijoa-11-2020-2507>
- Aktaş, İ. (2019). Mahalli idarelerde politik beceriler, iş gücü atikliği ve liderlik stili arasındaki ilişkilerin incelenmesi (Master's thesis). İstanbul Sabahattin Zaim Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.
- Aktaş, B. N., & Ülgen, B. (2021). Yenilikçi insan kaynakları yönetim uygulamalarının örgütsel çeviklik üzerindeki etkisi: Savunma sanayi işletmelerinde bir araştırma. *Anadolu İktisat ve İşletme Dergisi*, 5(1), 49-73.
- AlAbood, A., & Manakkattil MohammedIsmail, S. (2023). Workforce agility, organizational identity and solidarity as antecedents of innovative work behaviour – an examination using structural equation modelling. *Benchmarking: An International Journal*. <https://doi.org/10.1108/bj-07-2022-0458>
- Alavi, S. (2016). The influence of workforce agility on external manufacturing flexibility of Iranian SMEs. *International Journal of Technological Learning, Innovation and Development*, 8(1), 111-127. <https://doi.org/10.1504/ijtlid.2016.075185>
- Alavi, S., Abd. Wahab, D., Muhamad, N., & Arbab Shirani, B. (2014). Organic structure and organisational learning as the main antecedents of workforce agility. *International Journal of Production Research*, 52(21), 6273–6295. <https://doi.org/10.1080/00207543.2014.919420>
- Al-Faouri, A. H., Al-Nsour, M. M., & Al-Kasasbeh, M. M. (2014). The impact of workforce agility on organizational memory. *Knowledge Management Research & Practice*, 12(4), 432–442. <https://doi.org/10.1057/kmrp.2013.19>
- Almahmeed, G., & Salih, A. A. (2021). Validity of the workforce agility (WFA) attributes for measuring the performance development "Exploratory and Confirmatory Factor Analysis". *Academy of Strategic Management Journal*, 20(2), 1-10.
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital Business Strategy: Toward a Next Generation of Insights. *MIS Quarterly*, 37(2), 471–482. <https://doi.org/10.25300/misq/2013/37:2:3>
- Boehm, B., & Turner, R. N. (2003). *Balancing agility and discipline: A guide for the perplexed*. Addison-Wesley Professional.
- Brandes, P. M. (1997). *Organizational cynicism: Its nature, antecedents, and consequences*. (Doctoral dissertation). University of Cincinnati, Ohio, US.
- Braunscheidel, M. J., & Suresh, N. C. (2008). The organizational antecedents of a firm's supply chain agility for risk mitigation and response. *Journal of Operations Management*, 27(2), 119–140. <https://doi.org/10.1016/j.jom.2008.09.006>

- Bundtzen, H., & Hinrichs, G. (2021). The Link Between Organizational Agility And VUCA – An Agile Assessment Model. *SocioEconomic Challenges*, 5(1), 35–43. [https://doi.org/10.21272/sec.5\(1\).35-43.2021](https://doi.org/10.21272/sec.5(1).35-43.2021)
- Cameron, E., & Green, M. (2019). *Making sense of change management: A complete guide to the models, tools and techniques of organizational change*. Kogan Page Publishers.
- Cao, M., Zhang, Q., & Seydel, J. (2005). B2C e-commerce web site quality: an empirical examination. *Industrial Management & Data Systems*, 105(5), 645–661. <https://doi.org/10.1108/02635570510600000>
- Chong, Y. K., & Zainal, S. R. M. (2024). Employee agility's mediating role on the link between employee vitality, digital literacy and transformational leadership with job performance: an empirical study. *Cogent Business & Management*, 11(1), 2337447. <https://doi.org/10.1080/23311975.2024.2337447>
- Çömlekçi, M. G., & Bozkurt, S. (2024). DİJİTAL LİDERLİK VE BİREYSEL YENİLİKÇİLİK İLİŞKİSİNDE İŞGÜCÜ ÇEVİKLİĞİNİN ROLÜ. *Akademik Hassasiyetler*, 11(24), 75–97. <https://doi.org/10.58884/akademik-hassasiyetler.1384580>
- Das, K. P., Mukhopadhyay, S., & Suar, D. (2023). Enablers of workforce agility, firm performance, and corporate reputation. *Asia Pacific Management Review*, 28(1), 33–44. <https://doi.org/10.1016/j.apmr.2022.01.006>
- Demir, S., & Yaşar, F. (2018). Ödül Yönetiminin İşgücü Atıklığı Üzerine Etkisi: Kahramanmaraş İli Tekstil Sektöründe Bir Araştırma. *Ordu Üniversitesi Sosyal Bilimler Enstitüsü Sosyal Bilimler Araştırmaları Dergisi*, 8(3), 691-705.
- Demirler, S. (2023). *Dijital örgüt kültürü bağlamında işgücü çevikliği, yabancılaşma ve psikolojik güçlendirme ilişkisi* (Doctoral dissertation). Manisa Celal Bayar Üniversitesi Sosyal Bilimler Enstitüsü, Manisa.
- Demirler, S., & Oral Ataç, L. (2022). Bibliometric Analysis of the Literature on Workforce Agility. *Süleyman Demirel Üniversitesi Vizyoner Dergisi*, 13(30), 251–272. <https://doi.org/10.21076/vizyoner.1143315>
- DeRue, D. S., Ashford, S. J., & Myers, C. G. (2012). Learning Agility: In Search of Conceptual Clarity and Theoretical Grounding. *Industrial and Organizational Psychology*, 5(3), 258–279. <https://doi.org/10.1111/j.1754-9434.2012.01444.x>
- Dirani, K. M., Abadi, M., Alizadeh, A., Barhate, B., Garza, R. C., Gunasekara, N., Ibrahim, G., & Majzun, Z. (2020). Leadership competencies and the essential role of human resource development in times of crisis: a response to Covid-19 pandemic. *Human Resource Development International*, 23(4), 380–394. <https://doi.org/10.1080/13678868.2020.1780078>
- Doz, Y. L., & Kosonen, M. (2010). Embedding strategic agility: A leadership agenda for accelerating business model renewal. *Long range planning*, 43(2-3), 370-382. <https://doi.org/10.1016/j.lrp.2009.07.006>
- Doz, Y., & Kosonen, M. (2008). The Dynamics of Strategic Agility: Nokia's Rollercoaster Experience. *California Management Review*, 50(3), 95–118. <https://doi.org/10.2307/41166447>
- Düger, Y. S. (2023). İşgücü çevikliğinin öncülleri ve etkilerini belirlemeye yönelik sistematik bir analiz. In G. Örmeci Güney (Ed.), *Ekonomi, sürdürülebilir kalkınma ve işletme alanında akademik çalışmalar* (pp. 19-34). Gazi Kitabevi.
- Dyer, L., & Ericksen, J. (2006). Dynamic organizations: Achieving marketplace agility through workforce scalability. *Academy of Management Perspectives*, 20(4), 53-73.
- Felipe, C., Roldán, J., & Leal-Rodríguez, A. (2017). Impact of Organizational Culture Values on Organizational Agility. *Sustainability*, 9(12), 2354. <https://doi.org/10.3390/su9122354>
- Franco, C., & Landini, F. (2022). Organizational drivers of innovation: The role of workforce agility. *Research Policy*, 51(2), 104423. <https://doi.org/10.1016/j.respol.2021.104423>
- Gerçek, M. (2023). What is the Meaning of “Agile” for Human Resource Management? A Systematic Review on HRM and Agility. *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 25(2), 708–739. <https://doi.org/10.16953/deusosbil.1260274>
- Gligor, D. M., Holcomb, M. C., & Stank, T. P. (2013). A Multidisciplinary Approach to Supply Chain Agility: Conceptualization and Scale Development. *Journal of Business Logistics*, 34(2), 94–108. <https://doi.org/10.1111/jbl.12012>
- Goldman, S. L., Nagel, R. N., & Preiss, K. (1995). *Agile competitors and virtual organizations: strategies for enriching the customer* (Vol. 8). New York: Van Nostrand Reinhold.
- Good, D., & Yeganeh, B. (2012). Cognitive agility: adapting to real-time decision making at work. *OD Practitioner*, 44(2), 13-17.
- Gunasekaran, A. (1998). Agile manufacturing: Enablers and an implementation framework. *International Journal of Production Research*, 36(5), 1223–1247. <https://doi.org/10.1080/002075498193291>
- Hacıoğlu, B. N. (2024). İnsan kaynakları yönetimine yönelik yapay zeka algısının çalışanların çeviklik performansı ve işe bağlanması üzerindeki etkisi (Master's thesis). Gebze Teknik Üniversitesi Lisansüstü Eğitim Enstitüsü, Gebze.
- Hanu, C., Amegbe, H., Yawson, M. D. T. A., & Mensah, P. (2023). Differential impact of work-based learning on employee agility, ambidexterity and proactive goal generation. *Journal of Workplace Learning*, 35(1), 92–111. <https://doi.org/10.1108/jwl-01-2022-0005>

- Hodgkinson, G. P., & Healey, M. P. (2011). Psychological foundations of dynamic capabilities: reflexion and reflection in strategic management. *Strategic Management Journal*, 32(13), 1500–1516. <https://doi.org/10.1002/smi.964>
- Iravani, S. M. R., & Krishnamurthy, V. (2007). Workforce Agility in Repair and Maintenance Environments. *Manufacturing & Service Operations Management*, 9(2), 168–184. <https://doi.org/10.1287/msom.1060.0132>
- Janani, M., & Vijayalakshmi, V. (2023). An arts-based process to build Workforce agility. *Journal of Organizational Change Management*, 36(6), 917–931. <https://doi.org/10.1108/jocm-03-2023-0092>
- Karalar, S. (2015). *Ödül yönetiminin örgütsel özdeşleşme ile işgücü atikliği üzerine etkisi ve bir araştırma (Doctoral dissertation)*. Trakya Üniversitesi Sosyal Bilimler Enstitüsü, Edirne.
- Karacaoğlu, K., & İnce, F. (2012). Brandes, Dharwadkar ve Dean'in (1999) örgütsel sinizm ölçeği Türkçe formunun geçerlilik ve güvenilirlik çalışması: Kayseri Organize Sanayi Bölgesi örneği. *Business and Economics Research Journal*, 3(2), 77-92.
- Lombardo, M. M., & Eichinger, R. W. (2000). High potentials as high learners. *Human Resource Management*, 39(4), 321–329. [https://doi.org/10.1002/1099-050x\(200024\)39:4<321::aid-hrm4>3.0.co;2-1](https://doi.org/10.1002/1099-050x(200024)39:4<321::aid-hrm4>3.0.co;2-1)
- Lu, Y., & K. (Ram) Ramamurthy. (2011). Understanding the link between information technology capability and organizational agility: An empirical examination. *MIS quarterly*, 931-954. <https://doi.org/10.2307/41409967>
- Muduli, A. (2016). Exploring the facilitators and mediators of workforce agility: an empirical study. *Management Research Review*, 39(12), 1567–1586. <https://doi.org/10.1108/mrr-10-2015-0236>
- Muduli, A. (2017). Workforce agility: Examining the role of organizational practices and psychological empowerment. *Global Business and Organizational Excellence*, 36(5), 46–56. <https://doi.org/10.1002/joe.21800>
- Muduli, A., & Choudhury, A. (2024). Digital technology adoption, workforce agility and digital technology outcomes in the context of the banking industry of India. *Journal of Science and Technology Policy Management*. <https://doi.org/10.1108/jstpm-01-2024-0018>
- Naim, M. F., Sahai, S., & Elembilassery, V. (2023). Does empowering leadership enhance employee agility? A serial mediation model. *Evidence-Based HRM: A Global Forum for Empirical Scholarship*, 12(3), 666–682. <https://doi.org/10.1108/ebhrm-08-2022-0197>
- Nguyen, T., Le, C. V., Nguyen, M., Nguyen, G., Lien, T. T. H., & Nguyen, O. (2024). The organisational impact of agility: a systematic literature review. *Management Review Quarterly*, 1-49. <https://doi.org/10.1007/s11301-024-00446-9>
- Overby, E., Bharadwaj, A., & Sambamurthy, V. (2006). Enterprise agility and the enabling role of information technology. *European Journal of Information Systems*, 15(2), 120–131. <https://doi.org/10.1057/palgrave.ejis.3000600>
- Özbay, D. (2017). *Örgütsel sinizm ve işgücü atikliği arasındaki ilişki ve bir araştırma (Master's thesis)*. Bahçeşehir Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.
- Panda, S. (2024). The role of employee ambidexterity on employee agility: a moderation analysis with employee organizational tenure. *Evidence-Based HRM: A Global Forum for Empirical Scholarship*. <https://doi.org/10.1108/ebhrm-07-2023-0178>
- Patil, M., & Suresh, M. (2019). Modelling the Enablers of Workforce Agility in IoT Projects: A TISM Approach. *Global Journal of Flexible Systems Management*, 20(2), 157–175. <https://doi.org/10.1007/s40171-019-00208-7>
- Pitafi, A. H., Rasheed, M. I., Islam, N., & Dhir, A. (2023). Investigating visibility affordance, knowledge transfer and employee agility performance. A study of enterprise social media. *Technovation*, 128, 102874. <https://doi.org/10.1016/j.technovation.2023.102874>
- Pitafi, A. H., Rasheed, M. I., Kanwal, S., & Ren, M. (2020). Employee agility and enterprise social media: The Role of IT proficiency and work expertise. *Technology in Society*, 63, 101333. <https://doi.org/10.1016/j.techsoc.2020.101333>
- Pulakos, E. D., Arad, S., Donovan, M. A., & Plamondon, K. E. (2000). Adaptability in the workplace: Development of a taxonomy of adaptive performance. *Journal of Applied Psychology*, 85(4), 612–624. <https://doi.org/10.1037/0021-9010.85.4.612>
- Qin, R., & Nembhard, D. A. (2010). Workforce agility for stochastically diffused conditions—A real options perspective. *International Journal of Production Economics*, 125(2), 324–334. <https://doi.org/10.1016/j.ijpe.2010.01.006>
- Rani, P. U., Cynthia, A. R., Priyanka, S., & Kandaswamy, K. M. (2019). A flat organization model for agile workforce with reference to holacracy. *International Journal of Recent Technology and Engineering*, 8(2), 1525-1527. <https://doi.org/10.35940/ijrte.b1096.0882s819>
- Rasheed, M. I., Pitafi, A. H., Mishra, S., & Chotia, V. (2023). When and how ESM affects creativity: The role of communication visibility and employee agility in a cross-cultural setting. *Technological Forecasting and Social Change*, 194, 122717. <https://doi.org/10.1016/j.techfore.2023.122717>
- Sackey, B. B., Yang, J., Quansah, P. E., Ekumah, C. A., Arboh, F., & Boadu, B. (2024). Internal marketing orientation and employee innovative behaviour: the mediating role of workforce agility and moderating role of psychological empowerment. *Journal of Hospitality and Tourism Insights*. <https://doi.org/10.1108/jhti-01-2024-0063>
- Salmen, K., & Festing, M. (2021). Paving the way for progress in employee agility research: a systematic literature review and framework. *The International Journal of Human Resource Management*, 33(22), 4386–4439. <https://doi.org/10.1080/09585192.2021.1943491>

- Sameer, S. K. (2024). The Interplay of digitalization, organizational support, workforce agility and task performance in a blended working environment: evidence from Indian public sector organizations. *Asian Business & Management*, 23(2), 266–286. <https://doi.org/10.1057/s41291-022-00205-2>
- Sharifi, H., & Zhang, Z. (1999). A methodology for achieving agility in manufacturing organisations: An introduction. *International Journal of Production Economics*, 62(1–2), 7–22. [https://doi.org/10.1016/s0925-5273\(98\)00217-5](https://doi.org/10.1016/s0925-5273(98)00217-5)
- Sharma, K., Nigam, N., Jha, J. K., & Xu, X. (2024). Role of Readiness to Change in the Relationship Between Workforce Agility and Digital Transformation. *Journal of Global Information Management*, 32(1), 1–22. <https://doi.org/10.4018/jgim.345241>
- Sherehiy, B. (2008). Relationships between agility strategy, work organization and workforce agility. University of Louisville.
- Sherehiy, B., Karwowski, W., & Layer, J. K. (2007). A review of enterprise agility: Concepts, frameworks, and attributes. *International Journal of Industrial Ergonomics*, 37(5), 445–460. <https://doi.org/10.1016/j.ergon.2007.01.007>
- Srigouri, V. V., & Muduli, A. (2024). Performance coaching and training transfer in micro, small and medium enterprises of India: examining the mediating role of employee agility. *Journal of Management Development*, 43(4), 556–570. <https://doi.org/10.1108/jmd-12-2023-0360>
- Storme, M., Suleyman, O., Gotlib, M., & Lubart, T. (2020). Who is agile? An investigation of the psychological antecedents of workforce agility. *Global Business and Organizational Excellence*, 39(6), 28–38. <https://doi.org/10.1002/joe.22055>
- Talwar, S., Luqman, A., Kaur, P., Srivastava, P., & Mishra, S. (2023). How social networking ties mediate the associations between enterprise social media affordances and employee agility? *Technological Forecasting and Social Change*, 195, 122759. <https://doi.org/10.1016/j.techfore.2023.122759>
- Tamtam, F., & Tourabi, A. (2020). A Framework for Measuring Workforce Agility: Fuzzy Logic Approach Applied in a Moroccan Manufacturing Company. *Advances in Science, Technology and Engineering Systems Journal*, 5(3), 411–418. <https://doi.org/10.25046/aj050352>
- Teece, D., Peteraf, M., & Leih, S. (2016). Dynamic Capabilities and Organizational Agility: Risk, Uncertainty, and Strategy in the Innovation Economy. *California Management Review*, 58(4), 13–35. <https://doi.org/10.1525/cmr.2016.58.4.13>
- Tessarini Junior, G., & Saltorato, P. (2021). Workforce agility: a systematic literature review and a research agenda proposal. *Innovar*, 31(81), 155–167. <https://doi.org/10.15446/innovar.v31n81.95582>
- Thayyib, P. V., & Khan, M. A. (2021). Do demographics influence workforce agility score of tax professionals in Bangalore, India? *Global Business and Organizational Excellence*, 40(4), 34–49. <https://doi.org/10.1002/joe.22084>
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. *British Journal of Management*, 14(3), 207–222. <https://doi.org/10.1111/1467-8551.00375>
- Varshney, D., & Varshney, N. K. (2020). Workforce agility and its links to emotional intelligence and workforce performance: A study of small entrepreneurial firms in India. *Global Business and Organizational Excellence*, 39(5), 35–45. <https://doi.org/10.1002/joe.22012>
- Verma, A. (2024). Agile Leadership in the VUCA World: Combating Challenges of the COVID-19 Pandemic. *VUCA and Other Analytics in Business Resilience, Part A*, 267–285. <https://doi.org/10.1108/978-1-83753-902-420241013>
- Weber, Y., & Tarba, S. Y. (2014). Strategic Agility: A State of the Art Introduction to the Special Section on Strategic Agility. *California Management Review*, 56(3), 5–12. <https://doi.org/10.1525/cmr.2014.56.3.5>
- Yang, C., Tang, C., Xu, N., & Lai, Y. (2024). Developmental human resource practices, thriving at work, and employee agility: The moderating role of workplace spirituality. *Journal of Management & Organization*, 1–16. <https://doi.org/10.1017/jmo.2024.15>
- Yauch, C. A. (2011). Measuring agility as a performance outcome. *Journal of Manufacturing Technology Management*, 22(3), 384–404. <https://doi.org/10.1108/17410381111112738>
- Yükseköğretim Kurulu Ulusal Tez Merkezi. (n.d.). Ulusal Tez Merkezi. <https://tez.yok.gov.tr/UlusalTezMerkezi/>
- Zhang, D. Z. (2011). Towards theory building in agile manufacturing strategies—Case studies of an agility taxonomy. *International Journal of Production Economics*, 131(1), 303–312. <https://doi.org/10.1016/j.ijpe.2010.08.010>
- Zitkiene, R., & Deksnys, M. (2018). Organizational Agility Conceptual Model. *Montenegrin Journal of Economics*, 14(2), 115–129. <https://doi.org/10.14254/1800-5845/2018.14-2.7>

METaverse AND CHATGPT: INNOVATIVE LEARNING EXPERIENCES IN EDUCATION AND INTERACTIVE STRATEGIES IN MARKETING

DOI: 10.17261/Pressacademia.2024.1937

JMML- V.11-ISS.2-2024(6)-p.122-130

Kemal Gokhan Nalbant¹, Sevgi Aydin²

¹Istanbul Beykent University, Department of Software Engineering, Istanbul, Turkiye.

kemalnalbant@beykent.edu.tr, ORCID: 0000-0002-5065-2504

²Istanbul Beykent University, Department of Business, Istanbul, Turkiye.

sevgiaydin@beykent.edu.tr, ORCID: 0000-0002-9507-5448

Date Received: September 8, 2024

Date Accepted: December 12, 2024



To cite this document

Nalbant, K. G., Aydin, S. (2024). Metaverse and Chatgpt: innovative learning experiences in education and interactive strategies in marketing. *Journal of Management, Marketing and Logistics (JMML)*, 11(2), 122-130.

Permanent link to this document: <http://doi.org/10.17261/Pressacademia.2024.1937>

Copyright: Published by PressAcademia and limited licensed re-use rights only.

ABSTRACT

Purpose- This study investigates the potential of ChatGPT and the metaverse as transformative digital technologies, with a focus on their applications and benefits within education and marketing sectors. It aims to understand how ChatGPT, as an AI language model, can enhance interactivity in virtual environments, particularly within the metaverse.

Methodology- The research involves an in-depth literature review on digital technologies driving the metaverse, specifically examining ChatGPT's integration and its impact on user engagement in virtual spaces. The study also reviews current applications and explores potential roles for ChatGPT in marketing, branding, and educational contexts within the metaverse.

Findings- Results indicate that ChatGPT can significantly enhance user interaction in the metaverse by enabling more personalized, responsive virtual assistants. In education and marketing, this integration facilitates immersive experiences, providing tailored support, information, and engagement opportunities in a virtual format.

Conclusion- The combined application of ChatGPT and the metaverse holds significant promise, presenting opportunities for enhanced digital interaction and personalized experiences across industries. However, limitations such as technological constraints and privacy concerns require ongoing attention to maximize these benefits effectively.

Keywords: ChatGPT, metaverse, artificial intelligence, digital marketing, mathematics.

JEL Codes: M30, M31, Q30

1. INTRODUCTION

The metaverse is envisioned as a parallel realm that transcends our physical reality, where the lines between the real and the virtual become indistinct, creating an immersive and interactive experience for users. This idea relies on technologies that facilitate engagement with virtual spaces, digital items, and other people through various senses, including virtual reality (VR) and augmented reality (AR). Essentially, the metaverse can be seen as a network of interconnected, immersive environments on persistent multiuser platforms, allowing for smooth and integrated interactions between users and digital entities. Initially, it consisted of a series of virtual worlds where avatars could navigate from one to another (Mystakidis, 2022). The metaverse represents a fully immersive and interactive digital space where people can interact with one another in a highly realistic and fluid manner. Its potential to transform the Internet is fuelled by advancements in technologies such as the Internet, artificial intelligence, and VR/AR. Major tech companies are investing heavily in this space, with companies like Facebook and Roblox announcing their plans to be involved. The metaverse's design is intended to be decentralized, giving users complete control over their data and experiences (Cheng, 2023).

As an emerging concept, the metaverse aims to create a comprehensive virtual world where people can engage in activities such as gaming, working, and socializing. Once a theoretical concept in science fiction, the metaverse is becoming a tangible reality with the impact of progress in emerging technologies (Wang et al., 2022). The concept of the metaverse was first popularized in literature, notably in the 1992 science fiction novel "Snow Crash," which depicted a realistic virtual environment that has influenced modern interpretations of the metaverse. The development of the metaverse reflects the broader evolution of virtual worlds. The metaverse differentiates itself from augmented reality (AR) and virtual reality (VR) based on three basic attributes. VR-related research mostly focuses on the physical components and rendering techniques, but Metaverse lays a stronger emphasis on delivering services with sustainable content and social meaning. Additionally, it is

crucial to acknowledge that the metaverse does not intrinsically depend on AR and VR technologies. Although lacking VR and AR capabilities, the platform may nonetheless operate as a Metaverse application (Wang et al., 2023).

Finally, the metaverse possesses a scalable environment that is crucial for accommodating many individuals and reinforcing social significance. The successful implementation of the Metaverse on a large scale necessitated three key elements: (i) enhancements in hardware capabilities such as GPU memory and 5G connectivity; (ii) the creation of a recognition and expression model that effectively utilizes the parallel processing capabilities of the hardware; and (iii) the availability of immersive and engaging content for users to interact with (Park & Kim, 2022). The metaverse can interact with objects in the physical universe. They can create their digital counterparts through 3D modeling and maintaining them in a state that is consistent with the real world. In contrast, the physical-world state of the digital counterpart will be altered because of its manipulation/processing in the metaverse (Cheng et al., 2022).

The metaverse is widely recognized as the forthcoming advancement in social interaction. It refers to a fictional universe where individuals can "exist" based on the rules set by the author. Alternatively, a metaverse might exist either fully or partially in a virtual environment. For example, it may be a completely digital environment, like a virtual reality (VR) system, or a partially digital environment, like the use of augmented reality (AR) in real-life situations. Within the metaverse, users could engage in many social activities, such as discussing topics, collaborating on projects, playing games, and acquiring information by solving issues or gaining firsthand experience (Hwang & Chien, 2022). The ChatGPT language model developed by OpenAI is exceptional in its capacity to understand and generate text that closely mimics human language. Using the GPT-4 architecture, this system uses machine learning to examine and respond to various cues, giving users the impression of engaging in conversation with a human. ChatGPT is groundbreaking in its ability to produce logical, cohesive, relevant, and smoothly articulated responses, creating the illusion of a human actively typing the replies. ChatGPT offers advantages to many educational institutions, encompassing primary and high schools, universities, and professional training programs (Al-Emran, 2024).

2. DIGITAL TECHNOLOGIES FOR THE METAVERSE

The outer world is enhanced via AR. It provides layered networked information about daily places. World-improving interfaces are "see-through," "marker-based," and "GPS-based." AR utilizes a mobile device's GPS and Wi-Fi to identify a QR code marker or offer location-specific information. Virtual and real-world images can be viewed simultaneously using glasses or lenses. Augmented reality aids studying difficult-to-see or explain subjects, disciplines that require constant practice, and high-cost, high-risk industries (Kye et al., 2021). In 1970, NASA introduced the concept of digital twin (DT). DTs use the input data set to deliver risk prevention and process prediction in the real world. These two primary accomplishments allow managers to present more comprehensive information to customers. To achieve the utmost level of efficiency and adoption, managers and consumers must have precise product information (Far & Rad, 2022).

VR has the main qualities of manufactured views. Head tracking and haptic controls are typical in commercial VR headsets. Users interact with virtual objects in fully virtual environments. VR is often called 'the extreme opposite of reality in the reality-virtuality continuum'. VR headset users must ignore reality and focus on the virtual world (Lee et al., 2024). Mixed reality (MR) is an alternative method that involves the superimposition of virtual objects onto the actual environment. This enables users to simultaneously monitor the virtual images and the real world, thereby enabling a high bandwidth of communication between users (Billinghurst & Kato, 1999).

The metaverse seeks to provide users with immersive and personalized experiences within a 3D environment, utilizing a range of advanced technologies. One of the key concerns in the metaverse is safeguarding users' digital content and data, despite the significant benefits it offers. In this regard, blockchain technology emerges as a promising solution due to its unique features of transparency, immutability, and decentralization (Gadekallu et al., 2023). A sophisticated virtual reality arena where users may socialize and control digital things, the metaverse is expanding quickly. AI is shaping this evolution more and more. AI and metaverse technologies provide immersive experiences previously unattainable. Both the metaverse and AI are advancing quickly and have the potential to transform how we live, work, and connect with each other. While the metaverse aims to blend physical and digital worlds for unique and engaging experiences, AI refers to the capability of machines to perform tasks typically requiring human intelligence, such as understanding speech, analyzing images, and making decisions (Soliman et al., 2024).

The metaverse's visual architecture is based on graphical approaches that combine the physical and virtual domains to form a unified cosmos. This encompasses the creation of three-dimensional representations of environments, non-playable characters (NPCs), and player-controlled characters (Avatars). Interactive technology enables users to change visual elements, travel the metaverse with unrestricted movement, and participate in an immersive experience. Supplemental instructions and guidance are required to improve users' comprehension of the virtual world. Visualization can offer valuable assistance by analyzing the data in the metaverse and displaying it to consumers in a suitable format. The advancement of these technologies enhances the metaverse's realism and intrigue, making it more engaging and captivating for users to experience and explore (Zhao et al., 2022).

For the next-generation Internet to achieve true success, it is crucial that users have widespread and unrestricted access to the metaverse, much like the Internet currently serves billions of users daily. Thankfully, future communication systems will be designed to serve the metaverse, since it has been identified that AR/VR, the tactile Internet, and hologram streaming are important applications driving the development of 6G (Xu et al., 2022). The revolutionary apps employ virtual, augmented, and mixed reality. This technology changes how individuals obtain information, express joy, make decisions, and act to allow participation. Extended reality technology, applied in many fields, is essential to the metaverse, a phrase often used. Multiuser immersive environments with social networks are connected on permanent platforms in the metaverse. It is made possible by the coming together of technologies that let people, digital objects, and extended reality technology interact with each other in multiple ways. Consequently, this network enables users to engage in educational activities, play games, trade, collaborate, and travel with avatars and digital duplicates that they have created and controlled (Kucuksarac, 2023).

The following sentences clarify 7 layers of metaverse platform (Ludlow & Wallace, 2007; Ning et al., 2021; Far & Rad, 2022; Huynh-The et al., 2023; Nalbant & Aydin, 2023).

1. Experience: This layer is the layer most closely related to the concrete reality of consumers.
2. Discovery: To inspire and educate consumers and communities, artists and service providers drive this layer.
3. Creative: Previously in charge of keeping the layer below operating, creators now occupy this tier.
4. Spatial Computing: By disguising the border between digital and real areas, this layer enables hybrid computing. It permits distributed computing as well. It is feasible that the creative layer will use this layer as a foundation.
5. Decentralization: The Metaverse is built on the fundamental principle of decentralized computing, which provides a trusted environment for developers and consumers.
6. Human Interface: This layer handles the interface. Biosensors, smart glasses, 3D printers and scanners, and client neurons can connect physical and digital realms, together with augmented and virtual reality.
7. Infrastructure: The Internet layer connects consumers and gadgets to the digital world.

3. THE CHATGPT IN EDUCATION

ChatGPT has been used in several educational settings, including learning assistants, virtual tutors, assignment correctors, and interactive learning aids. Some of the advantages of employing ChatGPT AI in education include improved accessibility of learning materials, faster and more tailored feedback, and increased student engagement and learning motivation. However, various problems must be addressed, including ethical considerations, data privacy concerns, and technological limits (Viorennita et al., 2023). ChatGPT reflects computer scientists' efforts to achieve artificial general intelligence—it is capable of gaining information as well as developing and debugging programs. This new advancement in artificial generalized intelligence gives educators unprecedented chances to build AI-enabled learning assignments that interest students in learning. As a result, evaluation processes may need to adapt both their focus and forms. That is, general writing abilities are easier to outsource than critical thinking and innovation. Assessment techniques, particularly those designed for assessment reasons, should change the aims (Zhai, 2022).

OpenAI's ChatGPT language model is one such tool that may provide personalized suggestions to students, promote cooperation and communication, and improve student learning outcomes. However, there are several challenges to overcome, such as ethical considerations and execution problems (Rawas, 2024). ChatGPT is a customizable learning tool that adapts to each student's requirements and speed, enhancing their grasp of mathematical subjects. Some participants expressed concerns about ChatGPT's correctness and dependability, pointing out that it may deliver inaccurate or partial answers to mathematical problems. Overreliance on technology and the lack of human connection throughout the learning process raised concerns (Wardat et al., 2023).

Mathematics is a subject that is inextricably linked to life and plays a vital role in many dimensions of human existence. Consequently, it is imperative that all levels of education recognize its significance and existence as an essential component of the learning process. Mathematics has been instrumental in the rapid advancement of technology, which has led to rapid advancements in a variety of fields, including education. The function of learning media is essential for the successful completion of the learning process, particularly in the context of mathematics education, in the contemporary learning environment. Learning media is an interactive platform that allows students to acquire a more comprehensive understanding by utilizing technology, simulations, visualizations, and internet resources (Zafrullah et al., 2023). ChatGPT can also be a valuable tool for educators, as it can assist in the development of customized resources and learning activities (i.e., personalized learning support), the execution of assessment and evaluation, and the support of the research writing process. Additionally, it can create lesson plans for specific courses. Furthermore, by testing existing assessment methods and validating their scope, design, and capabilities beyond the potential use of GenAI, ChatGPT can enhance a reflective teaching practice. This serves to challenge academics to create AI-proof assessments and contribute to the authentic assessment of students' learning achievements (Michel-Villarreal et al., 2023).

4. THE METAVERSE IN EDUCATION

Artificial intelligence is a critical technology that can improve the efficacy of metaverse education by providing virtual teaching assistants, language processing for learners from varied regions, and learning outcome assessment. There are three critical issues that educational AI systems must address: the generation of virtual teaching assistants that are appropriate for the learners themselves, the facilitation of barrier-free communication between individuals who speak different languages, and the reasonable assessment of learners' learning outcomes (Lin et al., 2022). In mathematics education, new technology has increased; however, metaverse technology is still underutilized. VR and AR are mostly utilized for teaching in the metaverse. Virtual reality instructors and classrooms teach and experiment with arithmetic, improving students' understanding of everyday subjects. Three-dimensional shapes and the Pythagorean theorem are abstract mathematical ideas. However, they can be beneficial for children who struggle with spatial imagination and logical reasoning, since they provide an opportunity for learning and improvement in these areas. Augmented reality technology utilizes 3D learning cards to facilitate students' comprehension of the spatial structure of three-dimensional forms and the growth of abstract formulae (Wu et al., 2023).

The metaverse contributes significantly to education by providing learners with a true environment in which to cooperate and study alongside intelligent, non-player character teachers, classmates, and pupils. The use of AI technology is critical for sustaining the metaverse's authenticity, allowing non-player characters (NPCs) to learn and grow in accordance with the chronology. AI serves as an NPC tutor or adviser, an NPC tutee or student, and an NPC peer, assisting and engaging learners in a variety of educational situations. The metaverse improves learning by providing innovative training opportunities and scenarios that are not available in the real world. In the process of learning information, it overcomes barriers such as time and space limitations, as well as possible risks. The metaverse's features allow for the delivery of powerful training programs with efficient learning aids, promoting an increase in research and applications relating to the use of the metaverse in education. The metaverse has various advantages for professional training, especially in sectors like medicine, nursing, healthcare, research, military, manufacturing, and language learning education. The metaverse has various characteristics that distinguish it from traditional education based on VR or AR (Hwang & Chien, 2022). Numerous educators and researchers began to provide numerous future agendas and implementation scenarios in their educational practices. A variety of factors, such as the virtual space that provides realistic representations of oneself, may contribute to the burgeoning interest in the educational landscape, potentially enhancing the social aspect of teaching and learning (Tlili et al., 2022).

Academics have identified education as one of the most significant applications of the metaverse with significant future potential. We believe that the metaverse has the potential to serve as a unique educational environment. Consequently, metaverse-related technologies enhance the metaverse in education by fusing the elements of virtual and real-world learning environments. Using their digital identities, learners can interact with a diverse array of items such as avatars, intelligent NPCs, and virtual learning resources in real-time, unrestricted by time or location, and access the educational environment through wearable devices. This allows them to fully immerse themselves in a real-world educational setting. As a result, the metaverse has the potential to provide students with a wide range of exceptional learning experiences through its integration into the educational system (Zhang et al., 2022). The metaverse is a new teaching tool that blends physical and digital environments. Family business management educators use simulations and games to use the metaverse, but more effort is needed to integrate learning methodologies. Some digital natives feel more comfortable online. Most people have smartphones and mobile devices; thus, the metaverse can promote collaborative work. This lets students comment on content online. Students participating in content production can boost topic interest (Ratten, 2023).

5. THE CHATGPT INTO THE METAVERSE

ChatGPT is an exceptionally sophisticated language model in artificial intelligence. It has many uses, including administrative and economic studies. Conversely, the metaverse is a vast and broad realm that embodies a virtual reality pertaining to the characteristics of the freshly created or developed service or product. Integrating these two technologies entails incorporating ChatGPT's optimal mechanisms into metaverse applications (Atiyah et al., 2023).

The operation of GPT-3.5 may be divided into three phases (Schulman et al., 2017; Siddique et al., 2022; Ray, 2023; OpenAI Blog, 2023).

(i) Collect demonstration data and train a supervised policy

Initially, a prompt is selected from the prompt dataset. The desired output behavior is demonstrated by a labeler. GPT3 is optimized through the application of supervised learning to this data.

(ii) Collect a comparison data and train a reward model

Subsequently, prompt and numerous model outputs are examined. The deliverables are ranked by a labeler in order of their quality. The reward model is trained using this data.

(iii) Optimize a policy against the reward model using reinforcement learning

Finally, a different prompt is chosen from the dataset. The policy generates an output. The reward model sets a reward for the output. The proximal policy optimization (PPO) algorithm is employed to adjust the policy with the reward.

Just like in the physical world, communication and interaction among the residents of the metaverse are crucial. Within the metaverse, the boundless potential of imagination enables the generation of digital replicas, known as digital twins, that accurately depict both animate and inanimate entities. These digital replicas possess the capability to share and transfer information in accordance with their setups and behaviors. To effectively imitate a human representation, a virtual conversational agent must possess the cognitive capacity to assimilate, comprehend, and assess inputs to provide effective answers and appropriately interpret its thoughts. ChatGPT is a great tool for creating interactive material that efficiently meets the needs of the metaverse, hence enhancing its objective of developing fascinating virtual worlds. On the other hand, the metaverse has the capacity to improve ChatGPT's ability to watch and participate in interactions, giving it lifelike qualities like those of other players and human beings (El Saddik & Ghaboura, 2023).

By incorporating ChatGPT into virtual reality (VR) technologies like metaverses, a novel dimension is added to the sharing of knowledge and ideas in the realm of transdisciplinary communication. ChatGPT, as a language model, engages with users by encouraging conversations that transcend conventional disciplinary boundaries. It allows individuals from various fields of study to collaborate and share knowledge. However, the integration of ChatGPT into metaverses and other virtual reality (VR) technologies raises ethical concerns regarding the potential for malicious persons to use this technology in an unregulated market, particularly owing to the lack of transparency in ChatGPT. The term "black box" originated in the field of engineering, particularly in reference to electrical or mechanical devices. Referring to a system as a black box implies that the user or observer cannot access or see its underlying mechanics (Cowin, 2024). Academic editing is an essential undertaking to guarantee the excellence and precision of scientific publications. Nevertheless, the process of examining and revising substantial quantities of material can be intimidating and require a significant amount of time. Language models powered by artificial intelligence, such as Chat GPT, have demonstrated their use in identifying and rectifying grammatical mistakes, enhancing the logical flow and lucidity of writing, and producing supplementary information (Castillo-González et al., 2022).

GPT models have demonstrated exceptional performance on many natural languages processing tasks, encompassing text creation, question-answering, language translation, and sentiment analysis, therefore establishing themselves as the leading models in the field. Moreover, various practical scenarios such as chatbots, customer support, and content generation have utilized them (Comparison of GPTs, 2023). On March 14, 2023, OpenAI published a new version of its large language models (LLM), ChatGPT-4, that is far more sophisticated than the previous version (Lewandowski et al., 2023).

6. CHATGPT AND METAVERSE ON MARKETING AND BRANDING IN THE DIGITAL AGE

The linguistic model ChatGPT is "Chat Generative Pre-Trained Transformer." A natural language processing model OpenAI created the language model. It is built on GPT-3.5 and taught using transformer-based machine learning. The strategy is meant to foster conversations and produce contextually relevant and responsive writing. ChatGPT is taught by analyzing massive amounts of online content, including articles, blogs, forums, and others (Mutoffar et al., 2023). It is critically important to acknowledge that ChatGPT has the potential to significantly assist marketers in a variety of applications, such as content generation, keyword research, customer service, language translation, and text summarization. ChatGPT is revolutionizing brand advertising, consumer management, and content and campaign creation for marketers worldwide. In an efficient manner, ChatGPT enables marketers and researchers to conduct global business. Different segments of the marketing discipline can implement ChatGPT to generate superior research and practice outcomes (Jain et al., 2023).

On November 30, 2022, OpenAI introduced a chatbot named ChatGPT. This caught the interest of AI researchers and academicians, who proceeded to test the system extensively over the next several hours and days. The launch of ChatGPT generated significant global public attention, as individuals worldwide were enthusiastic to witness the invention and evaluate its possibilities. ChatGPT is a chatbot platform that utilizes artificial intelligence to allow human users to engage in conversations with robots. It employs natural language processing and machine learning techniques, revolutionizing the way individuals engage with AI technology. ChatGPT possesses notable benefits compared to prior analogous tools, and its capacity for implementation across many domains has garnered considerable interest and expectation. Nevertheless, several specialists express caution over ChatGPT due to its ethical concerns (Rivas & Zhao, 2023). Education professionals, particularly those in the advertising and marketing communications sectors, are cautious about the possibilities and difficulties that come with AI-powered systems such as ChatGPT and how they will affect the fundamental essence of learning. There is a scarcity of new technology that effortlessly fits into people's daily routines. Frequently, innovation is associated with disruption (McAlister et al., 2024).

OpenAI has recently released the latest iteration of GPT-4, which now has the capability to handle images in addition to an enhanced capacity for creating higher-quality textual content. Although ChatGPT possesses impressive functionalities, it is not without its limits. Specifically, the data used to train ChatGPT forms the basis of the information it provides. However, this reliance on training data can lead to biases, errors, and constraints in its capacity to effectively address specific sorts of inquiries (Zhou et al., 2023). Implementing ChatGPT in marketing plans has the capacity to enhance the efficacy of a company's social media marketing, particularly on Instagram. In our everyday lives, the internet and social media have

become the primary tools for communicating, exchanging information, and conducting information searches in the age of Industry 4.0 and rapid technological advancement. The AI Chat GPT technology plays a significant role in simplifying human tasks and offering valuable commercial advice. Humans could offer valuable guidance for conducting business in the future (Saputra et al., 2023).

Artificial intelligence language model ChatGPT is from OpenAI. This transformer-based model is developed using deep learning on a lot of textual input. ChatGPT has the capacity to understand and generate text in a way that closely mimics human communication. This encompasses the ability to comprehend the surrounding circumstances, respond to queries, and produce content that is both syntactically accurate and relevant. ChatGPT's impressive ability to produce clear and comprehensible language has rendered it highly beneficial in several applications, such as virtual assistants, chatbots, writing aids, and translators. This technology has the potential to greatly enhance human-machine interactions in several domains, including customer service, education, healthcare, and digital marketing. It accomplishes this by providing a user experience that is customized and responsive to specific requirements (Rachman et al., 2024).

Marketers have numerous opportunities to enhance customer engagement, acquire insights, and refine marketing strategies through the use of ChatGPT in Marketing Research (Alghizzawi, 2024). ChatGPT can offer assistance in a variety of capacities, such as the formulation and execution of marketing campaigns. ChatGPT is a chatbot or virtual assistant that is propelled by AI and is capable of understanding and responding to human conversations. This technology has the capacity to replicate human abilities in the areas of natural language comprehension and speech. ChatGPT employs deep learning methods, a form of machine learning technique that employs a neural network structure with numerous layers. The extensive datasets obtained from a variety of sources, including books, articles, and human conversations, are used to train this neural network. As a result, the system has the potential to replicate human abilities in both speaking and understanding natural language, thereby providing appropriate responses. The decision-making process in marketing tactics is improved by conducting market research, sentiment analysis, and promptly responding to market demands. The optimization of client service, the enhancement of marketing materials, and the immediate response to market demands are all facilitated by technology (Wilendra et al., 2024).

7. THE ADVANTAGES AND LIMITATIONS OF CHATGPT

ChatGPT is a highly effective tool for generating text-based interactions. It operates as a natural language processing (NLP) system that produces responses to user inputs in a way that mimics human conversation. This model uses a generative pre-trained transformer architecture and has been trained on a vast amount of conversational data from the internet. Once trained, it can perform various NLP tasks such as translation, answering questions, and completing text. It can also function as a conversational AI for chatbots, virtual agents, and other interactive applications (An et al., 2023). By automating conversations, ChatGPT enhances productivity, eliminating the need for manual interactions and resulting in both time and cost savings. Its quick response time leads to more efficient and effective dialogues. Businesses can use ChatGPT to address customer inquiries promptly and accurately, optimizing resource use and improving the customer experience. Its extensive pre-trained language model allows it to analyse customer queries and deliver responses that are coherent and natural. This advanced NLP technology helps businesses offer a tailored customer experience, improving customer service and productivity by allowing companies to focus on critical tasks. ChatGPT's ability to provide precise and reliable responses stems from its extensive training, which helps it understand context and generate appropriate answers. Moreover, it can reduce operational costs for companies by minimizing the need for expensive human customer service representatives (Deng, & Lin, 2022).

In healthcare, ChatGPT's capacity to generate detailed and realistic text from large datasets can aid individuals and communities in making informed decisions. It can offer information on public health issues such as infectious and non-infectious diseases, and environmental health risks. Additionally, ChatGPT can explain the roles and contributions of community health workers and educators, including their qualifications, responsibilities, and impact on public health, particularly in both urban and rural settings (Biswas, 2023).

In medicine, ChatGPT is used to create virtual assistants that support patients in managing their healthcare. It can generate automated summaries of patient visits and medical histories, streamlining recordkeeping for healthcare professionals. It also helps keep medical students and practitioners updated on recent advancements and assess their clinical skills. However, the use of ChatGPT and similar AI systems in medical settings comes with ethical and legal challenges. These include potential copyright issues, legal concerns regarding medical practices, and the risk of errors or biases in the generated content. Addressing these challenges is essential when incorporating AI into medical documentation (Dave et al., 2023). Clearly, this technology is limited. The first part is wrong. ChatGPT produces citations but has inconsistent accuracy. Before signing, the user must assess output quality and accuracy. Like the calculator and other technical assistance, the user has the last say. Although ChatGPT has a low learning curve, grasping its potential and limits takes knowledge and self-training. Learning curves are compared to graphing calculators. Beginners may utilize the basics, while more advanced topics require practice. If output doesn't match needs, prompts may be restricted or ambiguous. ChatGPT responded most clearly to orders (Rice et al., 2024).

8. FINDINGS AND DISCUSSION

The digital era is marked by the fast development of marketing and branding tactics in response to technological progress. The metaverse and ChatGPT are trailblazers in these transformations, and they hold important positions in the marketing and branding procedures.

ChatGPT enables companies to offer personalized experiences to their customers. AI-powered chatbots can quickly address client inquiries, deliver tailored recommendations, and deepen interactions, which helps build brand loyalty and boost customer satisfaction. Serving as a comprehensive customer support tool, ChatGPT allows brands to provide consistent service, effectively handle customer questions, and resolve issues promptly. It can also analyze data from customer interactions to give businesses insights into consumer preferences and behaviors, which can be used to create targeted strategies and campaigns that cater to specific audience needs.

In the virtual reality space, the metaverse offers marketers exciting opportunities to create engaging and interactive experiences. Companies can set up virtual stores, events, or experience spaces where customers can interact with their products and services in a digital environment. This approach helps brands project a forward-thinking and innovative image. The metaverse also opens up new marketing avenues, including virtual sponsorships, influencer partnerships, and virtual advertising. Virtual avatars allow brands to connect more directly and effectively with their target audience, while virtual communities can foster a strong sense of brand loyalty among users.

Integrating ChatGPT with the metaverse can further enhance marketing strategies, making them more comprehensive and impactful. For instance, virtual assistants powered by ChatGPT can be embedded in a brand's metaverse presence, helping customers navigate products, complete transactions, and improve their overall brand experience within a simulated environment. ChatGPT and the metaverse are transforming marketing and branding tactics in the digital age, empowering firms to amplify the efficacy and ingenuity of customer engagements. These technologies allow firms to develop a more extensive and resilient online presence while also enhancing their relationships with clients.

9. CONCLUSIONS

ChatGPT's integration into the metaverse has the capacity to significantly impact the future of digital interactions by offering a more immersive and comprehensive communication experience within virtual environments. The integration of these two technologies, which have the potential to enhance and expand the user experience, might further obscure the distinction between the virtual and physical realms.

The Metaverse's environment facilitates users' engagement in significant activities within virtual environments by integrating digital technologies such as blockchain, AR, and VR. To enhance the immersive and participatory nature of the metaverse, these technologies offer users the chance to engage in dynamic and realistic experiences. The metaverse offers noteworthy educational innovations. Virtual classrooms, interactive learning modules, and simulations provide students with the chance to participate in a learning process that is both more participatory and in-depth. By utilizing these virtual environments, students can acquire skills that are relevant to the real world, making instructional materials more engaging and accessible. Users can enjoy a more customized experience by integrating ChatGPT as a virtual assistant into the Metaverse. Because of its ability to engage, instruct, and convey information, the virtual environment is capable of facilitating more meaningful and efficient interactions. This integration will provide metaverse users with improved assistance and information flow.

Metaverse offers marketers the chance to host virtual events, engage in interactive advertising, and establish virtual shopping platforms. ChatGPT provides customer support services in virtual environments, improving user satisfaction and customizing brand interactions. This combination enhances brands' virtual representation and strengthens brand loyalty.

ChatGPT has several benefits, such as the ability to give customized interactions, offer scalable assistance, and deliver rapid responses. However, the language model has limitations in its capacity to fully understand context and deliver up-to-date information with precision. Moreover, there is a possibility that ChatGPT may not be capable of fully reproducing human-like emotional reactions, leading to some limitations in interactions.

The Metaverse and ChatGPT provide cutting-edge solutions in education and marketing that improve user experiences and strengthen relationships. ChatGPT enhances these procedures, providing tailored and efficient services, while Metaverse expands possibilities for education and engagement. To overcome the existing constraints of ChatGPT and enhance its effectiveness, sustained technological advancement is necessary.

REFERENCES

- Al-Emran, M. (2024). Unleashing the role of ChatGPT in Metaverse learning environments: opportunities, challenges, and future research agendas. *Interactive Learning Environments*, 11, 1-10.
- Alghizzawi, M. (2024). A Review of the Chat GPT Technology Role in Marketing Research. *Artificial Intelligence in Education: The Power and Dangers of ChatGPT in the Classroom*, 497-507.

- An, J., Ding, W., & Lin, C. (2023). ChatGPT: tackle the growing carbon footprint of generative AI. *Nature*, 615(7953), 586-586.
- Atiyah, A. G., Faris, N. N., Rexhepi, G., & Qasim, A. J. (2023, December). Integrating Ideal Characteristics of Chat-GPT Mechanisms into the Metaverse: Knowledge, Transparency, and Ethics. In *International Multi-Disciplinary Conference-Integrated Sciences and Technologies* (pp. 131-141). Cham: Springer Nature Switzerland.
- Billingham, M., & Kato, H. (1999, March). Collaborative mixed reality. In *Proceedings of the first international symposium on mixed reality* (pp. 261-284).
- Biswas, S. S. (2023). Role of chat gpt in public health. *Annals of biomedical engineering*, 51(5), 868-869.
- Castillo-González, W., Lepez, C. O., & Bonardi, M. C. (2022). Chat GPT: a promising tool for academic editing. *Data and Metadata*, 1, 23-23.
- Cheng, R., Wu, N., Chen, S., & Han, B. (2022). Will metaverse be nextg internet? vision, hype, and reality. *IEEE network*, 36(5), 197-204.
- Cheng, S. (2023). Metaverse. In *Metaverse: Concept, Content and Context* (pp. 1-23). Cham: Springer Nature Switzerland.
- Comparison of GPTs https://en.wikipedia.org/wiki/Generative_pre-trained_transformer (2023) Available Online, Accessed on August
- Cowin, J. B. (2024). ChatGPT, Metaverses and the Future of Transdisciplinary Communication. *Journal of Systemics, Cybernetics and Informatics*, 22(1), 165-178.
- Dave, T., Athaluri, S. A., & Singh, S. (2023). ChatGPT in medicine: an overview of its applications, advantages, limitations, future prospects, and ethical considerations. *Frontiers in artificial intelligence*, 6, 1169595.
- Deng, J., & Lin, Y. (2022). The benefits and challenges of ChatGPT: An overview. *Frontiers in Computing and Intelligent Systems*, 2(2), 81-83.
- El Saddik, A., & Ghaboura, S. (2023). The integration of ChatGPT with the metaverse for medical consultations. *IEEE Consumer Electronics Magazine*, 13, 6-15.
- Far, S. B., & Rad, A. I. (2022). Applying digital twins in metaverse: User interface, security and privacy challenges. *Journal of Metaverse*, 2(1), 8-15.
- Gadekallu, T. R., Wang, W., Yenduri, G., Ranaweera, P., Pham, Q. V., da Costa, D. B., & Liyanage, M. (2023). Blockchain for the metaverse: A review. *Future Generation Computer Systems*, 143, 401-419.
- Huynh-The, T., Pham, Q. V., Pham, X. Q., Nguyen, T. T., Han, Z., & Kim, D. S. (2023). Artificial intelligence for the metaverse: A survey. *Engineering Applications of Artificial Intelligence*, 117, 105581.
- Hwang, G. J., & Chien, S. Y. (2022). Definition, roles, and potential research issues of the metaverse in education: An artificial intelligence perspective. *Computers and Education: Artificial Intelligence*, 3, 100082.
- Jain, V., Rai, H., Parvathy, P., & Mogaji, E. (2023). The prospects and challenges of ChatGPT on marketing research and practices. *Emmanuel, The Prospects and Challenges of ChatGPT on Marketing Research and Practices* (March 23, 2023).
- Kucusarac, B. (2023). The Extended Reality Technology and Its Utilization in Metaverse. In *Metaverse: Technologies, Opportunities and Threats* (pp. 65-81). Singapore: Springer Nature Singapore.
- Kye, B., Han, N., Kim, E., Park, Y., & Jo, S. (2021). Educational applications of metaverse: possibilities and limitations. *Journal of educational evaluation for health professions*, 18, 32.
- Lee, L. H., Braud, T., Zhou, P. Y., Wang, L., Xu, D., Lin, Z., ... & Hui, P. (2024). All one needs to know about metaverse: A complete survey on technological singularity, virtual ecosystem, and research agenda. *Foundations and Trends in Human-Computer Interaction*, 18(2-3), 100-337.
- Lewandowski, M., Łukowicz, P., Świetlik, D., & Barańska-Rybak, W. (2023). An original study of ChatGPT-3.5 and ChatGPT-4 dermatological knowledge level based on the dermatology specialty certificate examinations. *Clinical and experimental dermatology*, 11ad255.
- Lin, H., Wan, S., Gan, W., Chen, J., & Chao, H. C. (2022, December). Metaverse in education: Vision, opportunities, and challenges. In *2022 IEEE International Conference on Big Data (Big Data)* (pp. 2857-2866). IEEE.
- Ludlow, P., & Wallace, M. (2007). *The Second Life Herald: The virtual tabloid that witnessed the dawn of the metaverse*. MIT press.
- McAlister, A. R., Alhabash, S., & Yang, J. (2024). Artificial intelligence and ChatGPT: Exploring Current and potential future roles in marketing education. *Journal of Marketing Communications*, 30(2), 166-187.
- Michel-Villarreal, R., Vilalta-Perdomo, E., Salinas-Navarro, D. E., Thierry-Aguilera, R., & Gerardo, F. S. (2023). Challenges and opportunities of generative AI for higher education as explained by ChatGPT. *Education Sciences*, 13(9), 856.
- Mutoffar, M. M., Kuswayati, S., Anggraeny, F. T., & Sumarni, T. (2023). Exploring the potential of ChatGPT in improving online marketing and promotion of MSMEs. *Jurnal Minfo Polgan*, 12(1), 480-489.
- Mystakidis, S. (2022). Metaverse. *Encyclopedia*, 2(1), 486-497.
- Nalbant, K. G., & Aydin, S. (2023). Development and transformation in digital marketing and branding with artificial intelligence and digital technologies dynamics in the Metaverse universe. *Journal of Metaverse*, 3(1), 9-18.

- Ning, H., Wang, H., Lin, Y., Wang, W., Dhelim, S., Farha, F., ... & Daneshmand, M. (2021). A Survey on Metaverse: the State-of-the-art, Technologies, Applications, and Challenges. arXiv preprint arXiv:2111.09673.
- OpenAI Blog, <https://openai.com/blog/chatgpt>, Available Online, Accessed on March, 2023.
- Park, S. M., & Kim, Y. G. (2022). A metaverse: Taxonomy, components, applications, and open challenges. *IEEE access*, 10, 4209-4251.
- Rachman, A., Ausat, A. M. A., & Rijal, S. (2024). Humanizing Digital Marketing: The Role of ChatGPT in Human Resource Management Training Programs. *Journal of Contemporary Administration and Management (ADMAN)*, 2(1), 356-362.
- Ratten, V. (2023). ChatGPT, the metaverse and artificial intelligence: implications for family business management education. *Journal of Family Business Management*, 13(4), 821-827.
- Rawas, S. (2024). ChatGPT: Empowering lifelong learning in the digital age of higher education. *Education and Information Technologies*, 29(6), 6895-6908.
- Ray, P. P. (2023). ChatGPT: A comprehensive review on background, applications, key challenges, bias, ethics, limitations and future scope. *Internet of Things and Cyber-Physical Systems*, 3, 121-154.
- Rice, S., Crouse, S. R., Winter, S. R., & Rice, C. (2024). The advantages and limitations of using ChatGPT to enhance technological research. *Technology in Society*, 76, 102426.
- Rivas, P., & Zhao, L. (2023). Marketing with chatgpt: Navigating the ethical terrain of gpt-based chatbot technology. *AI*, 4(2), 375-384.
- Saputra, R., Nasution, M. I. P., & Dharma, B. (2023). The impact of using ai chat gpt on marketing effectiveness: A case study on instagram marketing. *Indonesian Journal of Economics and Management*, 3(3), 603-617.
- Schulman, J., Wolski, F., Dhariwal, P., Radford, A., & Klimov, O. (2017). Proximal policy optimization algorithms. arXiv preprint arXiv:1707.06347.
- Siddique, A. B., Maqbool, M. H., Taywade, K., & Foroosh, H. (2022, October). Personalizing task-oriented dialog systems via zero-shot generalizable reward function. In *Proceedings of the 31st ACM International Conference on Information & Knowledge Management* (pp. 1787-1797).
- Soliman, M. M., Ahmed, E., Darwish, A., & Hassaniien, A. E. (2024). Artificial intelligence powered Metaverse: analysis, challenges and future perspectives. *Artificial Intelligence Review*, 57(2), 36.
- Tlili, A., Huang, R., Shehata, B., Liu, D., Zhao, J., Metwally, A. H. S., ... & Burgos, D. (2022). Is Metaverse in education a blessing or a curse: a combined content and bibliometric analysis. *Smart Learning Environments*, 9(1), 1-31.
- Viorennita, A., Dewi, L., & Riyana, C. (2023). The role of ChatGPT AI in student learning experience. *Indonesian Journal of Multidisciplinary Research*, 3(2), 445-452.
- Wang, Y., Su, Z., Zhang, N., Xing, R., Liu, D., Luan, T. H., & Shen, X. (2022). A survey on metaverse: Fundamentals, security, and privacy. *IEEE Communications Surveys & Tutorials*, 25(1), 319-352.
- Wang, H., Ning, H., Lin, Y., Wang, W., Dhelim, S., Farha, F., ... & Daneshmand, M. (2023). A survey on the metaverse: The state-of-the-art, technologies, applications, and challenges. *IEEE Internet of Things Journal*, 10(16), 14671-14688.
- Wardat, Y., Tashtoush, M. A., AlAli, R., & Jarrah, A. M. (2023). ChatGPT: A revolutionary tool for teaching and learning mathematics. *Eurasia Journal of Mathematics, Science and Technology Education*, 19(7), em2286.
- Wilendra, W., Nadlifatin, R., & Kusumawulan, C. K. (2024). ChatGPT: The AI Game-Changing Revolution in Marketing Strategy for the Indonesian Cosmetic Industry. *Procedia Computer Science*, 234, 1012-1019.
- Wu, X., Chen, Y., & Wu, Y. (2023, March). Exploration of mathematics education by metaverse technology. In *2023 IEEE 12th International Conference on Educational and Information Technology (ICEIT)* (pp. 173-178). IEEE.
- Xu, M., Ng, W. C., Lim, W. Y. B., Kang, J., Xiong, Z., Niyato, D., ... & Miao, C. (2022). A full dive into realizing the edge-enabled metaverse: Visions, enabling technologies, and challenges. *IEEE Communications Surveys & Tutorials*, 25(1), 656-700.
- Zafrullah, Z., Hakim, M. L., & Angga, M. (2023). ChatGPT open AI: Analysis of mathematics education students learning interest. *Journal of Technology Global*, 1(01), 1-10.
- Zhai, X. (2022). ChatGPT user experience: Implications for education. Available at SSRN 4312418.
- Zhang, X., Chen, Y., Hu, L., & Wang, Y. (2022). The metaverse in education: Definition, framework, features, potential applications, challenges, and future research topics. *Frontiers in Psychology*, 13, 1016300.
- Zhao, Y., Jiang, J., Chen, Y., Liu, R., Yang, Y., Xue, X., & Chen, S. (2022). Metaverse: Perspectives from graphics, interactions and visualization. *Visual Informatics*, 6(1), 56-67.
- Zhou, W., Zhang, C., Wu, L., & Shashidhar, M. (2023). ChatGPT and marketing: Analyzing public discourse in early Twitter posts. *Journal of Marketing Analytics*, 11(4), 693-706.

EFFECTS OF ECONOMIC AND GEOPOLITICAL RISKS ON THE SUPPLY CHAIN: AN ECONOMETRIC ANALYSIS

DOI: 10.17261/Pressacademia.2024.1938

JMML- V.11-ISS.2-2024(7)-p.131-141

Rahmi Incekara¹, Beyhan Incekara²

¹Bahcesehir University, Department of Economics, Istanbul, Turkiye.

rahmi.incekara@bau.edu.tr, ORCID0000-0001-8052-9315

²Independent Researcher, Istanbul, Turkiye.

beyhaninckr@gmail.com, ORCID: 0000-0002-4937-0868

Date Received: September 11, 2024

Date Accepted: November 23, 2024



To cite this document

Incekara, R., Incekara, B., (2024). Effects of economic and geopolitical risks on the supply chain: an econometric analysis. Journal of Management, Marketing and Logistics (JMML), 11(2), 131-141.

Permanent link to this document: <http://doi.org/10.17261/Pressacademia.2024.1938>

Copyright: Published by PressAcademia and limited licensed re-use rights only.

ABSTRACT

Purpose- The lockdowns and restrictions imposed as part of the response to the COVID-19 pandemic, which first emerged in China, the Russia-Ukraine conflict and its broader geopolitical implications, and tensions in other geographies have exacerbated an already problematic global supply chain situation. While freight markets have limited direct contact with Russia and Ukraine, global logistics have exposed supply chains to an increasing number of risk factors, including airspace restrictions, uncertainty about the future path of consumer demand, and China's ongoing interventions regarding the COVID-19 process. The effects of various economic and geopolitical risks on the supply chain are the main analysis subject of this study.

Methodology- In accordance with the scope of the study, the causality analysis suggested by Toda Yamamoto was applied between the Baltic Dry Cargo Index (BALDIC) and Brent oil prices (BRENT). In the study, data covering the period 2020:1-2023:12 at monthly frequency was used. In order to examine the relationship between Baltic Dry Cargo Index (BALDIC) and Brent oil prices (BRENT), data regarding the causality analysis proposed by Toda and Yamamoto are shared in tables. Extended Dickey-Fuller (ADF) unit root test was used to analyze the data. The results are presented in tables and interpreted.

Findings- The effects of risks, conflicts and crises that arise in different ways in different geographies on the supply chain are examined in detail with country examples. The problems experienced by countries against supply chain problems, steps taken towards solutions, the effects of crises experienced in the supply chain, and future scenarios are presented in detail in different regions. This study clearly states that geopolitical tensions and the pandemic have dealt a significant blow to the supply chain, and that the disruptions in the supply chain have reached a level that will leave countries helpless

Conclusion In the study, the relationship between the Baltic Dry Index (BALDIC) and Brent oil prices (BRENT) was empirically examined. Contrary to studies in the literature, no significant causality relationship was found between the two variables. In the study, it was emphasized that the cost increases in the supply chain and transportation axis were not due to oil prices, but geopolitical and economic risks. Geopolitical and economic risks arise from pandemics, political instability at international borders, trade conflicts and legislative changes. Increases in risks, tariffs, trade restrictions and sanctions disrupt supply chains, increase costs and hinder market access. The increase in risks experienced in recent years has been a determinant in the disruption of supply chains and the increase in costs.

Keywords: Economics, supply chain, Toda Yamamoto, geopolitical risk, cost of economic risk

JEL Codes: A10, E00, R40

1. INTRODUCTION

Global supply chains play a critical role in today's complex business world. These chains are directly affected by various external factors such as geopolitical events, natural disasters and economic fluctuations. This study aims to examine how risk management in global supply chains is shaped, especially under the influence of geopolitical, natural and economic factors.

Geopolitical factors include the dynamics of relations between countries and the resulting trade policies. These policies have a direct impact on the efficiency and security of supply chains. For example; trade wars, embargoes and political instability cause significant problems in supply chains. Economic factors refer to the effects of global and local economic conditions on supply chains. Various factors such as inflation, exchange rates, and economic crises negatively affect supply chain costs and operational efficiency. The combination of these three main factors creates significant risks for supply chains, and managing these risks becomes more essential for businesses.

The tension experienced in the geopolitical environment, the US-China trade war, the COVID-19 pandemic, and the Russia-Ukraine war have significant impacts on global supply chains. Understanding what may happen in the future regarding geopolitical developments is critical for companies to remain competitive. Assessing geopolitical trends and risks is becoming an increasingly important risk reduction strategy for businesses worldwide. Therefore, how geopolitical changes can affect supply chains, global data, people and capital flows is expressed from a multi-faceted perspective.

Open economies generally have higher economic and productivity growth than closed economies. However, some countries allow geopolitical concerns to override economic concerns and pursue policies that lead to a contraction in globalization. Examples include Brexit, US tariffs on imports from the European Union, the South Korea-Japan trade dispute, and the US-China trade war.

These geopolitical challenges come on top of numerous other disruptions in supply chains, including pandemics and natural disasters. One way to assess the impact of geopolitical risks is to look at different scenarios that predict what could happen over the next 10 years and test how they would affect global operations. At this level, two baseline scenarios focus on the US-China relationship.

The “strategic competition” scenario sees China and the United States use restrictive trade practices to gain advantage in high-tech industries of national importance, while exhibiting mutual restraint and cooperation in others. One of the biggest concerns under this scenario is that traded goods have military applications, historically referred to as “dual use.” Importing such goods increases the risk of corporate and government espionage. For example, chips stored in a server could be used to infiltrate a user’s computer systems. Exporting them therefore increases the risk of providing a foreign government with military capabilities it would not otherwise have.

The “decoupling” scenario presents a more contentious U.S.-China relationship in which reducing interdependence across most industries is more urgently pursued. While neither scenario is likely to play out exactly as described, each scenario provides a reasonably plausible outline of how the geopolitical landscape could change over the next 10 years. It raises complex questions about current supply chains, cross-border operations, and flows.

The COVID-19 pandemic and the war between Russia and Ukraine have once again emphasized that the world is as interconnected as it is. The people, companies and transportation networks that order and produce goods; deliver them to warehouses, stores and even doors have been significantly affected by bottlenecks in global supply chains. Increasing costs in the supply chain will also affect the types, quantities and speed of access to store shelves. The impact of increasing household bills and inflation will inevitably reduce demand to some extent. This study reveals that the impact of economic and geopolitical risks and the global pandemic on supply chains is inevitable and that the crisis in supply chains has a negative impact on global trade and logistics. In this study, the fact that no causal relationship was found between the Baltic Dry Index and Brent Oil prices analyzed using the causality analysis predicted by Toda-Yamamoto supports the conclusion that economic and geopolitical risks have an impact on increasing costs in the supply chain.

In this study, risk management practices in global supply chains will be considered as a literature review and how these risks are defined, assessed and managed will be examined in the literature. In addition, how geopolitical, natural and economic factors are integrated into these processes and how risk management strategies are developed will be discussed in detail. This analysis aims to provide a comprehensive view of the challenges faced by supply chains, supported by academic literature and econometric analysis.

2. LITERATURE REVIEW

There are many studies examining various aspects of supply chain applications. Articles on geopolitical risk management in supply chains contribute to the understanding and effective management of risks within a sustainable framework. There are important studies in this field that contribute to the literature on supply chain risk management.

Kara and Firat (2015) discussed the uncertainties and risks that arise in supply chains that are becoming increasingly complex under the influence of factors such as globalization, increasing competition conditions, intensification of relationships between supply chain partners and developments in technology. Risk events have affected companies in different countries and have highlighted the importance of early detection of risks and effective intervention. The article examines in detail the major supply chain disruption events frequently cited in the supply chain literature, analyzing the causes, timing, locations, and sectors affected by these events and their consequences.

Orel and Akkan (2018) discussed supply chain management, which has an increasing importance in the business world. In this regard, the results of research conducted worldwide show that supply chain disruptions or interruptions are among the important types of risks. The vulnerability of supply chains to external factors such as climate change, economic crises and natural disasters increases the importance of studies in this area.

Eriçok (2020) aims to deeply examine the effects of the global economic slowdown on supply chains. The challenges faced by the global economy, such as trade wars, geopolitical tensions, Brexit uncertainty and the COVID-19 pandemic, have had

significant impacts on supply chains. This study is designed to understand these effects and how risk management strategies in supply chains adapt to these changes.

Özgüner and Aytekin (2021) focused on the critical importance of supplier relationships in supply chains operating at risk. In terms of the effective operation of supply chains and the reduction of risks, the role played by suppliers in the rapid delivery of basic elements such as raw materials and semi-finished products to production points was examined. This study contributes to businesses to effectively combat supply chain risks and reduce the effects of risks. In addition, this study provides a basis for conducting similar research in different regions and making inter-regional comparisons.

By monitoring geopolitical risks, businesses can reduce their risks and increase their brand reputation. They can create long-term value for both their operations and activities. When looking at the studies in this field, it is seen that researchers (Carter & Rogers, 2008; Ho et al., 2015; Nisar et al., 2022; Seuring & Beske, 2014; Shekarian et al., 2022) have conducted a comprehensive literature review and attempted to create a conceptual theory to demonstrate the relationships between environmental, social and economic performance in a supply chain.

Nimmy et al. (2022) conducted that included the use of various tools and techniques such as risk assessments, risk mapping, and scenario planning to develop risk management, contingency plans, and risk reduction strategies in logistics. They argue that they aim to strike a balance between minimizing the impact of identified risks and optimizing operational efficiency.

Risk and crisis management are essential components of effective logistics operations, as the industry is inherently exposed to a multitude of uncertainties and potential disruptions. Amin et al. (2022) provide a comprehensive overview of risk and crisis management practices in the logistics sector, highlighting their significance in ensuring smooth and resilient supply chain operations.

Articles on Sustainable Risk Management in Supply Chains contribute to the understanding and effective management of risks within a sustainable framework. There are studies in this field that contribute to the literature on supply chain risk and performance management. (Aman et al, 2023; Jamalnia et al., 2023; Reshad et al., 2023;)

Samir et al. (2023) stated that when sustainable supply chain management, risk management and digital supply chain management are combined, businesses will be in a stronger position to achieve sustainability goals, manage risks and increase operational efficiency. Digital supply chain management aims to optimize the operations of businesses with digital technologies. Technologies such as data analytics, artificial intelligence, automation and the internet of things (IoT) allow businesses to run their business processes more effectively and efficiently. Thanks to this transformation, businesses can access the capacity to better monitor, analyze and predict supply chain activities. Blockchain and IoT facilitate traceability, transparency and real-time data sharing, ensuring that sustainability criteria are effectively followed. (Samir et al., 2023)

Qin, Su, Umar, Lobonç, and Manta (2023) discussed the critical importance of the stability of global supply chains for sustainable development around the world. In their study, they deeply examined the impact of factors such as the Southern Oscillation Index (SOI) and Geopolitical Risk (GPR) on global supply chains. The main purpose of the research is to understand whether these factors cause disruptions in the global supply chain and the nature of these disruptions.

3. THE EFFECTS OF THE RUSSIA-UKRAINE CONFLICT ON THE SUPPLY CHAIN

The war between Russia and Ukraine is expected to disrupt top-tier suppliers, further weakening global supply chains. Supply chains are being tested once again by extraordinary events due to war. The days when supply chain disruptions could be treated as one-off events, with companies struggling to reduce disruption to their operations and maintain the flow of goods, funds and information throughout their supply chains, are long gone. War and conflict between the two countries reinforce the need for most organizations to have more resilient supply chains.

The most pressing vulnerabilities include Europe's heavy reliance on natural gas and crude oil from Russia, as well as its reliance on both Russia and Ukraine for key agricultural products. According to the Food and Agriculture Organization of the United Nations, Russia and Ukraine account for more than 25% of world wheat trade, more than 60% of global sunflower oil, and 30% of global barley exports. Russia is also a major global exporter of fertilizer, meaning that any supply shortages or restricted access could impact crop yields globally (FAO, 2022).

It's not just oil and agricultural products that are under stress. As Deloitte notes in its report, "Russia's primary reason for weighing on supply chains is that it is a major exporter of some of the world's most important commodities." (Deloitte, 2020a).

Russia is a major source of 35 critical minerals that the US Department of the Interior (DOI) considers vital to the country's economic and national security interests, including 30% of the world's supply of platinum-group elements (including palladium). These include 13% titanium and 11% nickel. Russia is a major source of neon, which is used to etch circuits on silicon wafers. Palladium, a critical component of catalytic converters for cars, has increased in price by 80% since the conflict began. Additionally, as a result of the war, LMC Automotive has lowered its light vehicle sales forecast in Europe by 2 million units per year for the next two years (Vuksic, 2022).

The interconnectedness of economies and businesses is both exacerbating and, to some extent, masking the growing supply chain crisis. According to Dun & Bradstreet, there are fewer than 15,000 Tier 1 suppliers in Russia. However, there are 7.6 million Tier 2 supplier relationships with Russian organizations worldwide. More than 374,000 businesses, 90% of which are based in the US, trust Russian suppliers. Deloitte's annual survey of purchasing leaders shows that 70% believe they have a good view of risks at Tier 1 suppliers, while only 15% have the same confidence about Tier 2 and beyond (Deloitte, 2020b).

Successful leaders will need to take decisive action to respond to the immediate risks of this crisis and stabilize supply chains. They will also take the long view, recognizing that this crisis will amplify many of the fundamental and structural changes in global supply chains that were already accelerating as we emerge from the COVID-19 pandemic.

4. GLOBAL REFLECTION OF THE FOOD SUPPLY CRISIS WITH COUNTRY EXAMPLES

Wheat and corn account for almost 30% of all calories in the world, or simply all food (in various forms). Ukraine and Russia together export about 27% of all wheat and 14% of all corn in the world. Wheat is perhaps the most important commodity in terms of global food security. Ukraine alone exports about 9% of all wheat and 13% of all corn in the world. Ukraine leads in canola seed with 10%, and in barley with 12%, Russia leads.

The Middle East and North Africa (Egypt, Yemen, Israel, Indonesia, Bangladesh, Ethiopia, Libya, Lebanon, Tunisia, Morocco, Pakistan, Saudi Arabia, Türkiye) are the main buyers of wheat and corn, which poses a food security problem for these countries. In total, more than 400 million people worldwide are dependent on grain supplies from Ukraine alone.

Egypt: More than 32.5% of its citizens live below the poverty line, making malnutrition and hunger an urgent problem in Egypt.

Yemen: The rate of malnutrition among women and children in Yemen is extremely high. With 1.2 million pregnant or breastfeeding women and 2.3 million children under the age of 5 receiving treatment for acute malnutrition, the country is among the highest in the world.

Indonesia: 14.3% of the population lives below the poverty line, with 19.4 million unable to meet their nutritional needs.

Bangladesh: 40 million people are food insecure and 11 million suffer from chronic hunger.

Ethiopia: 5.9 million people are in acute food need.

Lebanon: 22% of Lebanese households are food insecure.

Libya: 83% of people live on less than \$1.25 per day. 699,000 people are food insecure.

Pakistan: 20.5% of the population is undernourished. 44% of children under 5 are reported to be stunted. - Iraq: 2.4 million people are reported to be in acute need of food and livelihood support.

The end of grain exports from Ukraine means that if this war continues, Ukraine will not be able to supply the remaining 6 million tons of wheat and 15 million tons of corn to the world. If exports from Russia are also terminated, it means that Russia will not be able to supply approximately 8 million tons of wheat.

Large production and export deficits are inevitable in the future. While winter crops (wheat) can be found in the soil in Ukraine and in good condition, their yields are significantly reduced if spring fertilization is not done on time. In many regions, it is not physically possible to produce because of military activities. The limitation of fuels and mineral fertilizers due to restrictions in ports also makes farming activities in other relatively safe regions difficult. The planting of spring crops (corn, feed barley, sunflower) should normally start in March-April, but it is observed that a negative picture has emerged due to the war.

The withdrawal of major international suppliers of agricultural machinery and other inputs from Russia will have a significant negative impact on yields in the country and Russia will not be able to export grain in the near future, making grain production much less attractive to farmers in the coming years. Due to the expected decreases in yields, exports from Ukraine and Russia are bound to face serious obstacles if the war continues. Under these conditions, in the best case scenario, a short end to the war would still make some exports possible. Under the scenario where the war continues continuously, the world will be deprived of approximately 38 million tons of corn, 10.5 million tons of barley and 60 million tons of wheat, or grain exports will fall. Oil crops (soy and rapeseed) and vegetable oils only make the situation worse. It will take at least 2-3 years to return to pre-war levels (Glauber and Laborde, 2022).

A major global humanitarian crisis is being caused by war. Hundreds of millions of people face food insecurity, while many low-income grain importing countries are also threatened by a major humanitarian crisis.

5. CHINA IN THE SUPPLY CHAIN AXIS

China, the world's second largest economy and a leading provider of manufacturing services, has been grappling with a series of troubling developments in its ever-growing export markets. Since 2018, the ongoing 'trade war' initiated by the US has

destabilized industries worldwide. These developments have disrupted China's position as the heart of global supply chain systems. Rising tariffs, political tensions and the resulting economic slowdown have placed reactivity, change management and strategic planning at the forefront of the country's supply chain management (SCM) functions, along with a continued focus on digital transformation. Despite the ongoing tariff onslaught that shows no signs of slowing down, China's domestic power and global influence have made its economy surprisingly stable. These include a strategically weak Yuan, strong domestic markets and the country's decision to send exports that depend on the US to other Asian countries to circumvent tariffs.

Downtown Shanghai has been in a negative position as US-based companies have moved their sourcing offices to neighboring countries such as Bangladesh and Vietnam. The slowing economy has led companies in Shanghai to digital transformation, such as omnichannel e-commerce and supply chains. Their goal is to create digital supply chain systems. They note that there has been a significant impact on the B2B sector and sourcing function in Suzhou. Companies in Suzhou are trying to keep costs as low as possible because they are unsure of how their future revenues will be affected by the increased tariffs. The trade war has forced Chinese companies to review and further optimize their supply chains and sourcing strategies. If Chinese companies need to export to the US and continue manufacturing in China, the only way to counter the increase in tariffs is to reduce costs, starting with raw material prices. (ICAO, 2022)

China's supply chain industry favors employers who have a conservative outlook on the job market. Widespread cost reductions are evident in the market. This highlights the importance of skill development when it comes to salary increases, flexible working hours, and other benefits. The domestic focus has also led to fewer opportunities for foreign workers. It is observed that companies need to offer exceptional packages and benefits to attract the right local candidates in the market. (Statista, 2020)

As Chinese companies look to keep costs down in the digital transformation era, they will have an advantage in identifying ideal suppliers, negotiating terms and conditions, and having an existing network of useful contacts. Stakeholder management and soft skills, which are directly related to being successful in this function, will also help set the candidate apart. Soft skills, such as stakeholder management and the ability to work with local colleagues, are in high demand in most Supply Chain functions, covering both leadership and mid-level roles.

6. SUPPLY CHAIN AND THE USA

In 2021, as a result of the COVID-19 pandemic, global supply chains and shipments have slowed down, causing shortages around the world. Consumer patterns are also affected by this process. The reasons for the global supply chain crisis, which has also caused an economic slowdown, include employees getting sick due to COVID-19, and obligations and restrictions affecting the availability of staff. (Tanyas, 2020).

The crisis has escalated due to cargo transportation being stuck at the port and personnel shortages in the supply chain. The global chip shortage has affected the supply chain crisis, especially as it relates to the automotive and electronics sectors. The increased economic spending in North America during the Christmas and holiday season in 2021, along with the spread of the Omicron variant of COVID-19, has further exacerbated supply and supply. The effects of supply chain crises have contributed to the ongoing food security issues with the pandemic and have played a role in the 2022 food crises.

In early 2020, the COVID-19 pandemic slowed down the global supply chain as manufacturers suspended operations until safety measures were taken. Global trade continued at reduced capacity and has not fully recovered. New challenges in 2021, including the Delta variant and reduced access to COVID-19 vaccines in developing countries, have further weakened the recovery in global manufacturing, although wealthier, vaccinated economies such as the US and Europe have transitioned to new manufacturing models. (WTO, 2022).

By mid-2021, major U.S. ports were inundated with historic amounts of incoming cargo. Terminal personnel were left without the bandwidth to process the cargo, leading to long wait times. Container ships began to sit outside ports for days or even weeks. This increase has spread inland as rail and trucking services struggle to cope with the increased loads and labor shortages. The U.S. trucking industry was already experiencing driver shortages before the pandemic, with high turnover and below-average compensation. While there are sufficient shipping containers available to meet global needs, containers have created a supply gap, given the supply positions held in transit and misaligned in different parts of the supply chain (UTIKAD, 2020).

When the COVID-19 pandemic began shutting down manufacturing facilities, it set off a chain reaction of disruption for many companies that had adopted lean principles on their production lines. Then, as demand for consumer goods and medical supplies like personal protective equipment skyrocketed, facilities were unable to keep up with demand. This situation also caused a huge backlog. Due to supply issues, China's Commerce Minister advised its citizens to stock up on food. In the United States, there were shortages of shelves and stock in areas such as electronics, jewelry, clothing, pet supplies, and home and garden items.

7. DISRUPTIONS IN THE SUPPLY CHAIN AND THE IMPACT OF THE ENERGY CRISIS ON THE EUROPEAN UNION

Europe is faced with a serious energy supply problem. While domestic energy production is decreasing, the dependence on Russia, a major supplier, for natural gas reserves is striking. The global demand for liquefied natural gas, especially the war between Russia and Ukraine, has brought about serious supply problems as China, enduring an energy crisis caused by COVID-19-related outages, has doubled its imports to compensate for the lack of domestic coal production. The EU is no longer the largest market for oil-rich countries such as Qatar, shifting its focus to East Asian customers. The Russia-Ukraine war has emerged as a problem that has led to higher costs for EU energy imports.

Among countries in Europe, the UK has been perhaps one of the worst hit by the energy crisis. After wholesale gas prices rose globally, 25 energy companies in the UK went bankrupt. In October 2021, Ofgem, the country's energy regulator, raised the price cap on household gas and electricity bills by 12% to £1,277 to help the sector. However, some companies have failed because they were unable to pass on the wholesale price increase to consumers (BBC News, 2022).

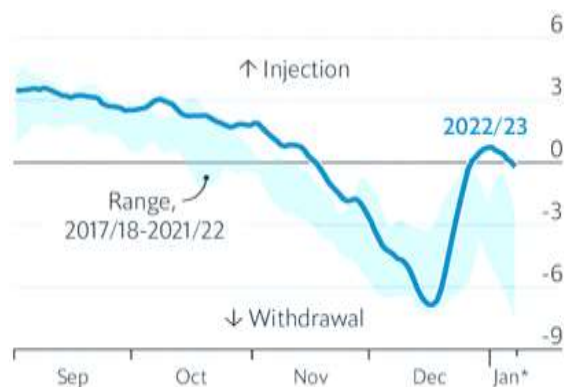
Due to the cost of energy company failures in the UK, citizens have had to pay higher bills. It is not just the rising gas prices that the UK has to deal with. The oil shortage caused by the lack of tankers to carry fuel has forced the government to announce a temporary visa scheme that will allow 5,000 HGV drivers to come to the UK to ease this crisis (Euronews,2022).

Natural gas prices have soared in Europe as countries emerge from COVID-19 lockdowns, adding fuel to consumers' bills. The cost is four times higher in Europe than in previous years. Governments are trying to provide subsidies and lower taxes to protect consumers. (Figure 1.)

Figure 1: EU Daily Change in Gas * Storage Volume, TWh

What crisis?

EU, daily change in gas-storage volume, TWh
Seven-day moving average



Source: The Economist, 2023

One of the EU's concerns is the storage of natural gas. Traders are expecting a potential supply crunch for the winter months, with inflation reaching a record high of 5.1% in eurozone countries, driven by inflation of 28.6% in the energy sector. Currently, Europe continues to struggle with this rising supply-side inflation. Despite the increase in policy interest rates during the years of high inflation, inflation has not decreased at the desired pace. Risks in supply chains have also affected the macroeconomic picture.

8. THE ROLE AND IMPORTANCE OF TURKIYE IN THE SUPPLY CHAIN

Due to the change in supplier preferences during the pandemic, countries like Türkiye stand out with their strategic locations and production capabilities. During the first phase of the global pandemic, China suspended its production activities and global markets, including manufacturing giants like Germany, experienced supply shortages. It has been repeatedly emphasized that diversifying suppliers will be of strategic importance for production to continue without interruption. Even during the peak of the pandemic, Türkiye exported and donated vital medical products such as ventilators and face masks to many countries, including developed countries. Türkiye is among the strongest suppliers with its strategic logistics networks, educated workforce and high-quality production capacity.

Companies have focused on the Far East for their global sourcing, looking for low-cost sources, sales growth, advantageous incentives and strategic purchasing targets. Shortly after the COVID-19 crisis period, companies and governments have been focusing on business continuity and supply chain risk and resilience management on a macro scale. This is leading to a shift from globalization to regionalization. (OECD, 2020) Türkiye has shown a decline in the macroeconomic environment and

product market efficiency, while it has made progress in technology adoption, infrastructure and the labor market. The macroeconomic environment and labor market are seen as the areas with the highest potential for development. Many companies are moving production closer to customers, which can be both more cost-effective and sustainability-friendly, leading to diversification of the supply chain, making the business less vulnerable.

If an environment is created where foreign investors can see the way, it is inevitable for Türkiye to become a supply center. Investors focus on two important issues. One is profitable, the other is a safe investment. The only mechanism that can provide safe investment is law and the rule of law. Profitability and the rule of law will directly affect Türkiye becoming a supply center. By taking advantage of such improvements and its large market size, Türkiye will have the opportunity to become an even more attractive place for a regional production, trade and logistics center. (Figure 2.)

Figure 2: Türkiye's Central Position in Supply Chains



Source: Işık, 2012.

The Covid-19 pandemic responds to the 'region-to-region sourcing' approach, which is based on the assumption that a new form of globalization will result in greater regionalization of value chains across 3 major economic areas. Türkiye is central to the equation of North America, the EU and Asia hubs.

9. DATA AND METHODOLOGY

The Baltic Dry Index (BDI) is an economic indicator published daily by the London-based Baltic Exchange. Contrary to its name, it is not limited to the Baltic Sea countries. The index is a value calculated by taking into consideration the tonnage, number, routes, cargo they carry and price of Handysize, Supramax, Panamax and Capesize bulk carriers. If the index is rising, it can be said that there is a boom in world trade; if it is falling, it can be said that there is a decline. Brent oil is a type of sweet light oil first extracted from the North Sea. It is also known as London Brent or Brent Blend. Brent is the leading global price benchmark for Atlantic basin crude oils. It is used to determine the price of two-thirds of the world's internationally traded crude oil supply. It is one of the two main reference prices for oil purchases worldwide. Oil fields in the North Sea are located in very challenging geographical conditions, but the oil extracted in this region is in great demand in the world market thanks to its easy refining and high quality.

In this part of the study, the relationship between the Baltic Dry Index (BAL TIC) and Brent oil prices (BRENT) was examined empirically. In the study, data covering the period 2020:1-2023:12 were used at a monthly frequency depending on the availability of data. The data was accessed from "investing.com Türkiye". In the empirical analysis, the logarithm of the variables was finally taken.

Table 1: Baltic Dry Index (BDI) and Brent Oil Futures (Brent) Rawdata Set

Date	BADI	Brent	Date	BADI	Brent	Date	BADI	Brent	Date	BADI	Brent
1.12.2023	2.094,00	76,91	1.03.2023	1.389,00	79,89	1.06.2022	2.240,00	109,03	1.09.2021	5.167,00	78,31
1.11.2023	2.937,00	80,86	1.02.2023	990,00	83,45	1.05.2022	2.566,00	115,6	1.08.2021	4.132,00	71,63
1.10.2023	1.459,00	85,02	1.01.2023	681,00	85,46	1.04.2022	2.404,00	107,14	1.07.2021	3.292,00	75,41
1.09.2023	1.701,00	92,20	1.12.2022	1.515,00	85,65	1.03.2022	2.358,00	104,71	1.06.2021	3.383,00	74,62
1.08.2023	1.086,00	86,83	1.11.2022	1.355,00	86,97	1.02.2022	2.040,00	97,97	1.05.2021	2.596,00	68,95
1.07.2023	1.127,00	85,43	1.10.2022	1.463,00	92,81	1.01.2022	1.418,00	89,26	1.04.2021	3.053,00	66,76
1.06.2023	1.091,00	75,41	1.09.2022	1.760,00	85,14	1.12.2021	2.217,00	77,35	1.03.2021	2.046,00	62,74
1.05.2023	977,00	72,60	1.08.2022	965	95,64	1.11.2021	3.018,00	69,23	1.02.2021	1.675,00	64,42

1.04.2023	1.576,00	80,33	1.07.2022	1.895,00	103,97	1.10.2021	3.519,00	83,72	1.01.2021	1.452,00	55,04
1.12.2020	1.366,00	51,82	1.11.2020	1.227,00	47,88	1.10.2020	1.283,00	37,94	1.09.2020	1.725,00	42,3
1.08.2020	1.488,00	45,66	1.07.2020	1.350,00	43,52	1.06.2020	1.799,00	41,27	1.05.2020	504	37,84
1.04.2020	635	26,48	1.03.2020	626	26,35	1.02.2020	535	49,67	1.01.2020	487	56,62

In this study, the causality analysis proposed by Toda and Yamamoto (1995) was used to examine the relationship between the Baltic Dry Index (BALTIC) and Brent oil prices (BRENT). The advantage of this method developed by Toda and Yamamoto (1995) is that it allows causality findings through the VAR model, independent of the cointegrated relationship between the series.

In the Toda-Yamamoto causality test, regardless of the stationarity of the time series, the VAR model is created using the level values. In this test consisting of two stages, first the optimal lag length is determined and the maximum integration degree (dmax) is determined for the series in question. The determination of the appropriate lag length for the VAR model is made using criteria such as Akaike and Hannan-Quinn. Thus, the extended VAR model containing the lag length k+dmax is estimated together with the determination of the optimal lag length k and the maximum integration degree dmax. In the second stage, Wald tests are applied to the obtained k-lag VAR coefficient matrix and as a result, inferences based on Granger causality can be made.

In the analysis, firstly, Extended Dickey-Fuller (ADF) unit root test was used to determine the stationarity levels of the variables. The results of the ADF unit root tests applied to the levels and first differences of the variables are presented in the table.

Table 2: ADF Unit Root Test Results for Levels and Differences of Variables

Variables	Lag Length	t-Statistics
BALTIK	1	-2.88078
BRENT	0	-1.90431
ΔBALTIK	1	-9.06236*
ΔBRENT	0	-5.74151*

Notes: *It shows that the existence of a unit root with a null hypothesis at the 5% significance level is rejected. Latency lengths were determined using the Akaike Information Criteria (AIC). "Δ" indicates that the 1st difference of the series is taken.

According to the results of the ADF unit root test shown in Table 1, the Baltic Dry Index (BALTIC) and Brent oil prices (BRENT) variables were determined as first-order stationary variables. The models established for the Toda-Yamamoto causality test are adapted to the study as follows:

$$BALTIK_t = \alpha_1 + \sum_{i=1}^{k+d \max} \beta_{1i} BRENT_{t-i} + \sum_{i=1}^{k+d \max} \theta_{1i} BALTIK_{t-i} + \varepsilon_{1t} \quad (1)$$

$$BRENT_t = \alpha_2 + \sum_{i=1}^{k+d \max} \beta_{2i} BALTIK_{t-i} + \sum_{i=1}^{k+d \max} \theta_{2i} BRENT_{t-i} + \varepsilon_{2t} \quad (2)$$

Accordingly, k was determined as "1" and dmax was determined as "1" with the help of the VAR model and the extended VAR(3) model was estimated with the seemingly unrelated regression method. The causality analysis results obtained with the help of this model are shown in Table 2.

Table 3: Toda-Yamamoto Causality Analysis Results

Zero Hypothesis	k+dmax	MWALD Statistics
BALTIK \nrightarrow BRENT	2	2.54509**
BRENT \nrightarrow BALTIK	2	3.73119**

* This indicates that the null hypothesis is rejected at the 5% significance level. The lag length k is set to 1.

According to the results in Table 2, no causality relationship was found between the Baltic Dry Index (BALTIC) and Brent oil prices (BRENT) variables.

10. FINDINGS AND DISCUSSIONS

As a result of the COVID-19 pandemic, global supply chains and shipments have slowed down, causing shortages worldwide and affecting consumer habits. The economic slowdown, the COVID-19 cases that caused workers to become infected, and the restrictions that negatively affected staff availability have brought about a significant test for all countries. In cargo transportation, many products have been stuck at ports due to staff shortages.

The global chip crisis has contributed to a supply chain crisis, particularly in the auto and electronics sectors. The surge in spending in North America, combined with the spread of the Omicron variant of COVID-19, has exacerbated already tight supplies.

The long-term effects of supply chain crises have contributed to ongoing food security issues related to the pandemic, including food crises. India, the United States, and Brazil stand out as the hardest-hit countries in the supply chain, with significant shortages across many different product categories. Supply chain disruptions have been particularly difficult to overcome and contain, putting these countries at a disadvantage in global trade.

In addition to the huge human losses and destruction, Russia's invasion of Ukraine – the 'breadbasket of Europe' – has triggered energy and food supply challenges, exacerbating the vulnerabilities of existing food systems already weakened by climate change and the COVID-19 pandemic. It has raised fears of an unprecedented global food crisis, similar to or worse than the 2008 crisis, with ripple effects on security, migration and political instability. The supply shock provoked by the blockade of Ukrainian exports, combined with record prices for energy and essential commodities, has led many countries to adopt export restrictions, fuelling market shocks and speculative operations, creating unpredictability in global food supplies.

As the war continues and the stakes rise, fears of food shortages in this hybrid war are growing. It is at the top of the international political agenda. The influence of the international community, including the UN- Türkiye brokered grain corridor agreement to lift export restrictions from Black Sea ports, has allayed fears of an imminent widespread global food crisis. However, some food importers and food aid-dependent countries are highly vulnerable to food price and currency volatility.

The simultaneous crises that emerged for different reasons in different geographies continue to have an impact on supply chains. The crises experienced in supply chains support global price increases and supply-side inflation, deepen hunger crises in African countries, and the impacts of food, energy, logistics, economy and social issues are the top agenda items for all countries on a global scale.

The solution to ongoing supply chain issues appears to be either an increase in capacity or a decrease in demand. The freight fleet is also expected to expand more rapidly after a more constrained capacity situation since the COVID-19 pandemic. In air transport, the recovery in capacity is likely to be linked to the return of commercial airline flights, especially for intercontinental capacity. On the demand side, the recovery in stocks seen in many importing countries is likely to help this process. Increasing pressures on consumer budgets will also slow import demand.

11. CONCLUSION AND IMPLICATIONS

Geopolitical risk represents the potential impact of international political events on the economic and business environment. It encompasses multifaceted risks arising from the geopolitical dynamics of nations, including political conflict, wars, pandemics, economic policy changes, social upheavals, and environmental factors. Flexibility is critical to responding to geopolitical uncertainties. This approach reduces reliance on a single source and provides alternatives in the event of disruptions. Adopting flexible logistics solutions can help overcome logistics challenges created by geopolitical changes.

With the pandemic, the direction of the determinants in the supply chain has changed. While the reality in the literature states that the increase in energy prices has the biggest impact on the supply chain, it now reveals that geopolitical and economic risks affect the supply chain.

In January 2024, container shipping rates were significantly increased due to US and UK airstrikes in Yemen. The geopolitical developments have triggered fears of long-term disruptions to Red Sea trade. Most container ships have been forced to avoid the Suez Canal, a vital trade route that handles 12% of global trade. Ships have been forced to reroute around Africa's Cape of Good Hope, increasing transit time and costs.

The Shanghai Containerized Freight Index, which reflects container shipment rates from Chinese ports, has increased by 114% since mid-December 2023. Rates for routes to Europe and the US West Coast have also increased sharply. This shift is causing global shipping challenges, causing major industry players to face rising costs and delays.

The creation of new routes in supply chains adds approximately 10 days and \$1 million in fuel costs per Asia-Europe voyage. Major importers are experiencing product shortages and delays. The overall reduction in available ship space on major trade routes is leading to higher shipping rates and surcharges. This is contributing to rising global inflation for a wide range of global goods.

This study reveals how risk management in global supply chains evolves under the influence of geopolitical, logistic and economic factors and the importance of the impact of these risks. The results of the econometric analysis conducted within the scope of the research emphasize how sensitive supply chains are to such external effects and the necessity of taking proactive measures against these risks.

Geopolitical events and economic changes directly affect the decision-making processes and operations of supply chains. Therefore, it is recommended that companies constantly monitor these factors and develop flexible risk management strategies. It was also concluded that supply chains should be diversified and strengthened to increase resilience against natural disasters and other unexpected events.

It is recommended that supply chain managers adopt a more comprehensive and integrated approach to reduce uncertainties and ensure the continuity of supply chains. Geopolitical events and economic changes directly affect the decision-making processes and operations of supply chains. Therefore, it is recommended that companies constantly monitor these factors and develop flexible risk management strategies. It was also concluded that supply chains should be diversified and strengthened to increase resilience against pandemics, natural disasters and other unexpected events.

It is recommended that supply chain managers adopt a more comprehensive and integrated approach to reduce uncertainties and ensure the continuity of supply chains. Companies and policymakers need to continually develop and implement new strategies to effectively manage supply chain risks. Because changes in energy prices are not the only factors that affect supply chains.

Natural disasters, health crises, unexpected factors that suddenly emerge exacerbate the effects of geopolitical risks. This study states that external factors have a primary effect on supply chain costs. In this respect, this study can contribute to the shaping of future practices. The suggestions presented in this study increase the knowledge in the field of geopolitical risk management and form a basis for future research.

REFERENCES

- Aman, S., Seuring, S., ve Khalid, R. (2023). Sustainability performance measurement in risk and uncertainty management: An analysis of base of the pyramid supply chain literature. *Business Strategy and the Environment*, 32(4), 2373-2398.
- Amin, F. U., Dong, Q. L., Grzybowska, K., Ahmed, Z., & Yan, B. R. (2022). A Novel Fuzzy-Based VIKOR–CRITIC soft computing method for evaluation of sustainable supply chain risk management. *Sustainability*, 14(5), 2827.
- BBC News (2022). UK electricity and gas bills soar: Government announces plan to help households, Available electronically at: <https://www.bbc.com/turkce/haberler-dunya-60243274>. [Date Accessed: November 4, 2024].
- Carter, C., ve Rogers, D. (2008). A framework of sustainable supply chain management: Moving toward newtheory. *International journal of physical distribution ve logistics management*. 38(5), 360-387.
- Deloitte (Haziran, 2020a). Supply Chain Re-establishment After COVID-19. Available electronically at: <https://www2.deloitte.com/en/pages/consulting/articles>. [Date Accessed: September 10, 2024].
- Deloitte (Mayıs, 2020b). The Global COVID-19 Pandemic's Effects on Different Categories in Türkiye. Available electronically at: <https://www2.deloitte.com/en/pages/consulting/articles>. [Date Accessed: September 10, 2024].
- Eriçok, R. E. (2020). Global economic slowdown: risks, uncertainties and effects on TurkishEconomy. *Court of Accounts Journal*, 116, 33-64.
- Euronews (2022). 10,500 temporary visas to solve UK HGV driver shortage. Available electronically at: <https://tr.euronews.com/en/articles> [Date Accessed: August 5, 2024].
- FAO (2022). Food and Agriculture Statistics. Available electronically at: <https://www.fao.org/publications/sofi/2020/en/> [Date Accessed: August 15, 2024].
- Glauber J.and Laborde D. (2022). How will Russia's invasion of Ukraine affect global food security? *International Food Policy Research Institute (IFPRI)* Available electronically at: <https://www.ifpri.org/blog/how-will-russias-invasion-ukraine-affect-global-food-security> [Date Accessed: September 20, 2024].
- Ho, W., Zheng, T., Yıldız, H., and Talluri, S. (2015). Supply chain risk management: a literature review. *International Journal of Production Research*, 53(16). 1-56.
- ICAO (2020). Effects of novel coronavirus (COVID-19) on civil aviation: economic impact analysis. Available electronically at: https://www.icao.int/sustainability/Documents/COVID-19/ICAO_Coronavirus_Econ_Impact.pdf [Date Accessed: September 15, 2024].
- Isik, I. (2012). *Intermodal Transport in Turkey*. Ministry of Transport and Maritime Affairs and Communications, Ankara.
- Jamalnia A, Gong Y, Govindan K, et al., (2023). A decision support system for selection and risk management of sustainability governance approaches in multi-tier supply chain. *International Journal of Production Economics*, 264, 112-129.
- Kara, M. E. and Fırat, Ü. O. (2015). A study on risk events that trigger the development of supply chain risk management. I. V. Gümüşhane University (Dü.), IV. National Logistics and Supply Chain Congress, (p. 326-334). Gümüşhane.
- McKinsey & Company, (2020). Türkiye as a Regional Manufacturing Hub. Available electronically at: https://www.mckinsey.com/tr/~/_media/mckinsey/locations/europe%20and%20middle%20east/turkey/our%20insights/future%20of%20work%20turkey/future-of-work-mckinsey-turkey-full-report.pdf [Date Accessed: September 20, 2024].

- Nimmy, S. F., Hussain, O. K., Chakraborty, R. K., Hussain, F. K., & Saberi, M. (2022). Explainability in supply chain operational risk management: a systematic literature review. *Knowledge-Based Systems*, 235, 107587.
- Nisar, Q., Haider, S., Ameer, I., Hussa, M., Gill, S., ve Usam, A. (2022). Sustainable supply chain management performance in post COVID-19 era in an emerging economy: a big data perspective. *International Journal of Emerging Markets*. doi:<https://doi.org/10.1108/IJOEM-12-2021-1807>
- OECD (2020). Coronavirus: the world economy at risk. OECD Interim Economic Assessment. Available electronically at: <https://www.oecd.org/berlin/publikationen/Interim-Economic-Assessment-2-March-2020.pdf> [Date Accessed: October 20, 2024].
- Orel, F. D., ve Akkan, E. (2018). Risk management and performance relationships in supply chain: a literature review. *Beykoz Academy Journal*, 6(1), 84-117.
- Özgüner, M., Aytekin, M. (2021). The moderating role of supplier relationships in the effect of supply chain risks on business performance. *Journal of Business Research*, 3(2), 75-89.
- Qin, M., Su, C. W., Umar, M., Lobonç, O. R. &Manta, A. G. (2023). Areclimate and geopolitics the challenges to sustainable development? Novel evidence from the global supply chain. *Economic Analysis and Policy*, 77, 748-763
- Reshad, A., Biswas, T., ve Agarwal, R. (2023). Evaluating barriers and strategies to sustainable supply chain risk management in the context of an emerging economy. *Business Strategy and the Environment*, 1-20.
- Samir, Y., Sood, K., ve Grima, S. (2023). Blockchain-augmented digital supply chain management: a way to sustainable business. *Journal of Risk and Financial Management*, 16, 1-7.
- Seuring, S., and Beske, P. (2014). Putting sustainability into supply chain management. *Supply Chain Management*, 19(3), 322-331.
- Shekarian, E., Ijadi, B., Zare, A., & Majava, J. (2022). Sustainable supply chain management: a comprehensive systematic review of industrial practices. *Sustainability*, 14(13), Article 7892. <https://doi.org/10.3390/su14137892>
- Statista (2020). Coronavirus Impact on Chinese Manufacturing Output. Available electronically at: <https://www.statista.com/chart/21171/coronavirus-impact-on-chinese-manufacturing-output/> [Date Accessed: August 3, 2024].
- Tanyaş, M. (2020). Coronavirus outbreak breaks supply chain. Available electronically at: <http://www.loder.org.tr/en/news/announcements.html>. [Date Accessed: September 3, 2024].
- The Economist (2022). The energy crisis and Europe's astonishing luck Available electronically at: <https://www.economist.com/finance-and-economics/2023/01/11/the-energy-crisis-and-europes-astonishing-luck> [Date Accessed: October 25, 2024].
- Toda, H. Y. and Yamamoto, T. (1995). Statistical inference in vector autoregression with possibly integrated processes. *Journal of Econometrics*, 66, 225-250.
- UTİKAD (2020). Korona konteyner navlunlarını füze gibi fırlattı. Available electronically at: <https://www.utikad.org.tr/Detay/Sektor-Haberleri/26785/corona-started-container-freight-like-a-missile> [Date Accessed: August 14, 2024].
- Vuksic, S. (2022). 100 Days of War: the Sanctions Response to Russia's Invasion. Available electronically at: <https://www.castellum.ai/insights/sanctions-100-days-since-russian-invasion>. [Date Accessed: November 14, 2024].
- WTO (2020). Trade set to plunge as COVID-19 pandemic upends global economy. Available electronically at: https://www.wto.org/english/news_e/pres20_e/pr855_e.htm [Date Accessed: October 21, 2024].

IMPACT OF BLOCKCHAIN TECHNOLOGY AND ITS COMPONENTS ON TOURISM OUTCOMES WITH THE MEDIATING ROLE OF SUPPLY CHAIN MANAGEMENT

DOI: 10.17261/Pressacademia.2024.1939
JMML- V.11-ISS.2-2024(8)-p.142-152

Marzieh Mehrabi¹, Javad Mehrabi²

¹Islamic Azad University, Marketing Management, Qom Branch, Qom, Iran.

tehranmomh@yahoo.com, ORCID: 0009-0004-6598-7042

²Islamic Azad University, Department of Public Administration, Qazvin Branch, Qazvin, Iran.

mehrabijavad@yahoo.com, ORCID: 0000-0001-6204-4008

Date Received: April 11, 2024

Date Accepted: December 21, 2024



To cite this document

Mehrabi, M., Mehrabi, J., (2024). Impact of blockchain technology and its components on tourism outcomes with the mediating role of supply chain management. *Journal of Management, Marketing and Logistics (JMML)*, 11(2), 142-152.

Permanent link to this document: <http://doi.org/10.17261/Pressacademia.2024.1939>

Copyright: Published by PressAcademia and limited licensed re-use rights only.

ABSTRACT

Purpose- The current research “investigates the impact of blockchain technology and its components on tourism outcomes with the mediating role of supply chain management .It reviews concepts such as tourism, blockchain technology, and supply chain management through the structural equation modeling method, and investigates the mediating role of supply chain management.

Methodology- A questionnaire was used to collect data. Its validity was checked by experts as content validity, construct validity by confirmatory factor analysis in smart pls software, and its reliability by using Cronbach's alpha coefficient in SPSS software.

Findings. The population under study included tourists from tourist centers of the Tehran province and the sample size was determined by using the Morgan Krejcie table to be 384 people. Kolmogorov-Smirnov tests, confirmatory factor analysis test and structural equation modeling were used to analyze the data in smart pls software.

Conclusion- The results showed that blockchain technology and its components have led to favorable outcomes such as the sustainable development of tourism destinations, the creation of tourism opportunities, the increase in tourism demand in Iran, the attraction of tourists, the increase in tourism business activities, the adoption of blockchain in the tourism industry, and supply chain management plays a mediating role in this effectivity.

Keywords: Blockchain technology, tourism, supply chain management, tourism destinations.

JEL Codes: L86 , L83, M11

1. INTRODUCTION

The emergence of the Internet has created the concept of e-tourism; it means the digitalization of all processes and value chains in the tourism industry, travel, and hospitality, which enables organizations to have maximum productivity and effectiveness. Here, a relatively new development is a change from electronic tourism to smart tourism, which involves the transition from the digital domain to a digital and physical domain. This occurs with the gradual replacement of websites by sensors and smartphones, and the shift from information to big data. The main exchanges are no longer B2B (Business-to-Business), B2C (Business-to-Consumer), and C2C (Customer-to-Customer), but general-private-consumer collaboration. Blockchain is another step in this gradual process of technical progress and not only provides new opportunities but may be a serious threat to many current shareholders (Treiblmaier 2020). Nowadays, tourism products often involve the transfer of money across national borders and between partners who previously had no business relationship. Therefore, a certain trust is required, and intermediaries are often used to reduce the risk of non-fulfillment of contracts. However, the intermediaries themselves must also be trusted in these cases, and obviously, they receive a percentage of the commission. Cryptocurrencies based on blockchain technology enable the easy exchange of money without the need for trusted third parties, which makes possible the emergence of new forms of customer-to-customer (C2C) transactions in the primary and secondary markets of tourism products (Önder and Treiblmaier 2018). Blockchain is a distributed database consisting of a list of transaction packets called blocks that are connected. One of these blocks, which are also generally called distributed ledgers, cannot be modified under normal conditions, because they are accepted as part of the entire chain in a complex decentralized way. Blockchain technology is not managed by a central server, but by a peer-to-peer network where decentralized nodes hold copies of the entire blockchain. The task of adding and verifying new transaction records is performed by miners (Narayanan et al. 2016). Operating systems such

as Ethereum have emerged in the wake of Bitcoin, and enable a secure conclusion of online agreements between parties who do not even need to know each other through the establishment of so-called smart contracts based on blockchain technology. The power of digital currencies in combination with smart contracts can prove very disruptive technologies for many industries (Giancaspro 2017). Technically, there are different blockchain systems based on different data structures and consensus mechanisms, including public, private, and permissioned. A public blockchain (eg, Bitcoin, Ethereum) is an open system whereby anyone can participate freely, while a private blockchain is a closed system that limits participation to authorized individuals. Finally, several companies operate a permissioned blockchain or consortium that acts as a semi-closed system (Kunnigber et al., 2019).

Certainly, blockchain is still in the early stages of its formation and many individuals do not have the necessary and sufficient knowledge and confidence about the potential power of this technology. Nevertheless, innovation in blockchain architecture and its applications is proceeding rapidly. Blockchain as a decentralized and open structure has attracted the attention of many experts and even governments in a short time. The extreme fluctuations in the price of Bitcoin and other digital currencies, and their contradictory regulations, have caused many individuals to have a negative view of these currencies. It is noteworthy that digital currency is only one application of blockchain technology. However, the main obstacle is the lack of widespread adoption of blockchain. A comprehensive participation and gaining more knowledge can actualize its potential.

Add sentences stating the flow of the paper. Tourism has been developed by information technology in three stages. The last decade of the 20th century, the first decade of the 21st century and after 2010 until now. Using the Internet as a communication tool with the market in the first stage changed the business model of many tourism organizations with a focus on creating new forms of value in the tourism supply chain in the second stage. Then, in the third stage, new social systems based on information and communication technologies were developed and evolved, which co-create the tourism experience with the participation of supply and demand, and the participation of tourists in tourist destinations and providing highly personalized services to them through these technologies. In fact, in the third stage, travel and tourism has been fundamentally transformed by the influence of information technology. . Therefore, there is a growing consensus among researchers that the world is entering the era of smart tourism.

2. THEORICAL FOUNDATION OF RESEARCH

2.1. Smart Tourism

Nowadays, smart tourism destinations are at the top of research in tourism, and the efforts of researchers to provide models, tools, and strategies to stabilize the process of intelligent configuration of destinations are very promising. Any smart tourism destination provides advanced services, a high degree of innovation, and the presence of open, interconnected, and shared processes to improve the quality of life of residents and tourists. Smart tourism destination comprehends technology, people, and institutions. Creating a smart tourism destination requires the linking of technologies, systems, services, and capabilities within an organic network that is multi-sector and flexible enough for future developments, besides having free access (Del Vecchio and Passiante 2018). The smart tourism ecosystem has problems such as data privacy, safety, and management. Blockchain technology, which is based on the Merkel tree algorithm and a decentralized ledger, offers ready-made solutions to the above problems. Blockchain technology provides the benefits of increased efficiency, transparency, and certainty. However, the smart integration of tourism with blockchain may create its problems (Yadav et al. 2021). True smart tourism focuses on the needs of tourists by combining information and communication technologies, maximizing tourist satisfaction, and improving the effectiveness of resource management. The application of smart techniques in tourism, besides creating fundamental changes in tourist behavior and directing demand, has also drastically changed the functions and structure of the tourism industry (supply aspect). As it seems, tourism will continue to grow and change dramatically in the foreseeable future with a wider and more use of smart devices and technologies in various sectors (Wang et al. 2016). Another technological advancement that changes the tourism industry is artificial intelligence. AI has many implications for smart tourism; for example, AI helps collect data and integrate it with databases and supports analytics of globally used platforms in providing details. The psychological profile of potential tourists can change the accuracy of predicting customer interests (Jessop 2018). Smart tourism requires, during its development, bridging between digital and physical institutions and activating artificial intelligent machines, environment, public-private consumer collaboration, mutual sharing, and an ecosystem enabled by big data (Beverungen et al. 2019; Nam et al. 2019). These things, as prerequisites for smart tourism, bring serious challenges such as data privacy, data security, and data management (Hawlicscek et al. 2018).

2.2. Blockchain Technology

Blockchain as an evolving technology is expected to improve competitive advantages through innovative platforms in business models (Tseng et al. 2020). Blockchain use cases as an innovative technology have increasingly attracted the attention of tourism companies. To date, the literature examines the benefits of blockchain instead of examining the early adoption of this technology by organizations and innovators (Maiso et al., 2024). Blockchain-based applications can replace traditional loyalty programs, solve rate integrity issues, and manage service provider credentials and passenger identity. The first adopters of blockchain technology have always seen improvements in their competitive advantage and brand position (Park et al., 2020).

The emergence of blockchain technology can completely transform the global economy. Blockchain, as an emerging technology, is of great importance and current attention in the tourism industry. Small economies are leading in using this digital technology. For example, Caribbean economies are launching their first digital legal license, and Aruba is developing a blockchain platform to boost tourism revenue. Blockchain technology has significant and important consequences in the development of tourism because of the speed of adoption (Kwok and Koh 2019). Blockchain technology, which is used in the digital currency Bitcoin, is believed to have the ability to meet challenges to achieve end-to-end transparency. This tool, as a network tool to facilitate business operations, uses peer-to-peer technology to share and verify data. Blockchain technology uses public key encryption to verify transactions on the Internet and defend cyber security, and against threats such as ransomware, Trojans, worms, rootkits, and botnets (Maleh et al. 2020). The fintech revolution, crowdfunding, and blockchain-based funding have dramatically reduced borrowing and lending transaction costs. (Boreiko and Vidusso 2019)

2.3. Supply Chain Management

Blockchain includes, based on the supply chain, smart contracts, product traceability, execution tracking, stock control, transactions, settlement, and immutability of information, which have improved the market, economy, and performance of the performance as participation growth. Blockchain has also had marginal effects on participation efficiency (Kim and Shin 2019). Digital information sharing platforms can enhance various types of supply chain capabilities, which can ultimately improve various supply chain performance outcomes. In addition, various theories of information technology and management can be used to strengthen these relationships (Zu et al., 2022).

The beneficiaries of the supply chain should combine and incorporate blockchain into their activities because blockchain transactions become in this way easier, more reliable, and traceable (Kshetri 2014) and cooperation between supply chain members based on cost savings and increased productivity in the supply chain continues their advancement (Hald and Kinra 2019; Queiroz and Wamba 2019). Blockchain implementation strengthens consumer trust and enables them to track the entire product path throughout the supply chain with full confidence (Saber et al. 2019). Blockchain traceability helps prevent counterfeit goods through the supply chain. So the supply chain will benefit greatly in savings and performance (Alazab et al. 2021). Studies have shown that blockchain can solve supply chain challenges and include several major strategic goals for supply chain management such as cost, quality, and speed (Alazab 2014).

Digital transformation plays a key role in improving information sharing and information processing in the supply chain. Supply chains require multiple data and document exchanges and can significantly benefit from digital information sharing (Sorosubalsi et al., 2024).

As supply chains involve multiple stakeholders and become more complex and dynamic in nature, digital information sharing platforms (DIS) supported by blockchain and cloud technologies enable information sharing, exchange and processing in operations, finance, customer relations and The sustainability functions of SCs help (Jabbar and Dani, 2020). A large number of monetary transactions and data exchanges, documentation resulting from reservations, required approvals, information processing, shipment tracking, collaboration, customs clearance, payment tracking, taxation, product authentication, customer service, The release report and compliance with regulations are done in supply chains (Zheng et al., 2020).

Alasfar, (2024) in an article entitled "The effect of supply chain management and logistics on competitive advantage and organizational performance: a field study in tourism organizations in Syria" showed that there is a strong relationship between supply chain management, logistics, competitive advantage and organizational performance. has it. Supply chain management and logistics have shown a positive and significant effect on competitive advantage and organizational performance. In order to achieve competitive advantages and organizational performance, the organization will save money if they put enough emphasis on supply chain management and logistics structures.

Bentalha, (2024) in an article entitled "Sustainable supply chain management in tourism: understanding the potential possibilities of environmental performance" showed that the goal of sustainable logistics management is to ensure sustainable economic, environmental and social stability that leads to long-term sustainable development. The global push towards sustainable development is driving the adoption of sustainable logistics practices in tourism-related logistics management, with a particular focus on meeting environmental performance goals. The findings show that coordinated, collaborative and integrated logistics resources can increase the efficiency of the supply chain in the tourism industry.

Chadhori et al., (2024) in an article titled "Resilience strategies to mitigate "severe" disruptions in the sustainable tourism supply chain" showed that sustainable tourism performance during a severe disruptive event (e.g., the Covid-19 health crisis), rather than an individual impact it depends on the combined effect of their tourism resilience strategies and risks. Adnani et al., (2023) in an article entitled "The role of innovation and information sharing in supply chain management and commercial performance of halal products in tourism destinations" showed that information sharing and innovation play a significant mediating role in the relationship between management supply chain and performance.

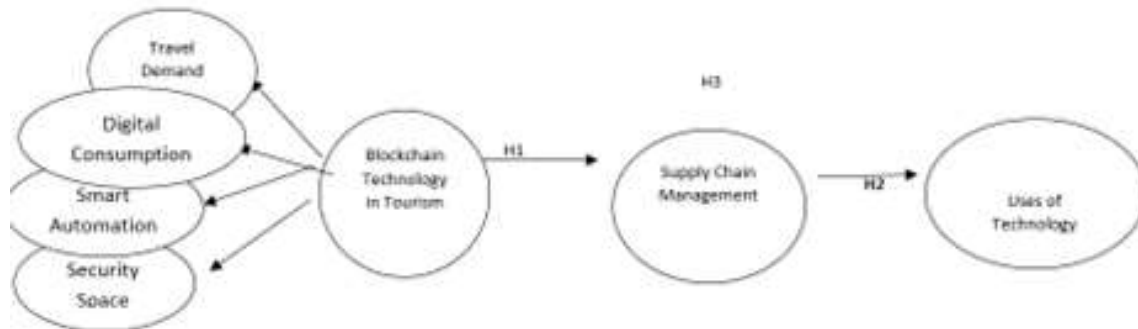
Al-Rawashedh et al., (2023) in an article titled "Supply Chain Management and Organizational Performance: The Moderating Effect of Supply Chain Complexity" showed that postponing the sharing of information quality and supplier strategic partnership has a strong positive effect on organizational performance. The relationship between information level and organizational performance is statistically significant. These findings show that organizations can improve their performance by implementing strategies to manage and optimize these factors in their supply chain. This study also showed that supply chain complexity as a moderator helps to increase organizational performance through interactions with supplier strategic partnership, information level, information sharing quality, sharing delay.

Wu and Zhang (2022) showed that smart production has raised higher requirements for the supply chain with the development of the new generation of information technology, and the synchronization of supply chain operations and the reliability of supply chain management is necessary. Zhou et al. (2022) showed a supply chain consisting of a supplier and a retailer (or two competing retailers) where the supplier and retailer can use blockchain technology to ensure authentic product information. Paul et al. (2022) showed that radio frequency identification technology based on blockchain technology can help manage the complexities of tea supply chain management, transparency, and traceability in the industry. Alazab et al. (2021) showed that the technology acceptance and use theory does not have a significant effect on the intention to adopt blockchain, while intra-organizational trust has a significant effect on the relationship between technology acceptance and use theory and acceptance intention. Baralla et al. (2021) showed that local food and drink can become a suitable combination to attract tourists and promote the region. Blockchain-based system for food supply chain management has been designed and developed for food tracking. This platform ensures transparency, efficiency and reliability through smart contracts. Luo and Zhou (2021) showed that the traditional tourism industry urgently needs digital technologies to reduce costs and increase efficiency. Blockchain, as an emerging technology, promises a reformed tourism industry as it provides a trusted platform for connecting tourism companies and tourists.

Thus, the research hypotheses are as follows:

1. The impact of blockchain technology on supply chain management is significant.
2. The impact of supply chain management on the favorable outcomes of tourism is significant.
3. The impact of blockchain technology on the favorable outcomes of tourism with the mediating role of supply chain management is significant.

Uses of technology, supply chain management, blockchain technology in tourism, travel demand, digital consumption, smart automation, security space

Exhibit 1: The Conceptual Model of the Research**3. RESEARCH METHOD**

The current research is applied and descriptive-analytical. Data is analyzed by confirmatory factor analysis and path analysis by structural equation modeling. As for collecting information, the theoretical part of the data extracted the data through the library method, and the practical part through the questionnaire and the field method. Its statistical population includes tourists from the tourism centers of the Tehran province, and the sample size was 384 people because of the unlimited statistical population. The data collection tool was a researcher-made questionnaire. The validity of the questionnaire as content and formal validity was confirmed by experts, and the validity of the construct and structure was confirmed by confirmatory factor analysis in smart pls software and the reliability of the questionnaire by using Cronbach's alpha coefficient in spss software. Kolmogorov-Smirnov tests were used to analyze the data and for the normality test. A structural equation modeling test was used for path analysis and model validation in smart pls software.

4. RESEARCH FINDINGS**4.1. Descriptive Statistics**

As the results of the descriptive part show, 48.7% of the questionnaire respondents are men and 51.3% are women. As for education, 9.6% have a diploma or post-diploma, 53.1% have BSc, 28.9% have MSc, and 8.3% have studied up to the doctorate level. As for age, 8.6% of individuals are between 18 and 25 years old, 12.2% between 26 and 30 years old, 44.3% between 31 and 40 years old, 0.24% between 41 and 50 years old, and 10.9% are over 50 years old. The variables all have an acceptable value in the average index. Because it is in the range of 3 and if the variable is in this range, the variables have a favorable status in the statistical population according to the 5-point Likert scale in the questionnaire.

4.2. Inferential Statistics

First, we examine the external and internal model of the research in the partial least squares method, and then the model validation and the hypotheses.

4.2.1. Examining the External Model of Research

A traditional criterion for reliability control is Cronbach's alpha, which shows an estimate of reliability based on the internal correlation of indicators. If this coefficient is higher than 0.70, internal consistency is confirmable. PLS path models also use, besides Cronbach's alpha coefficient, compound or composite reliability to evaluate reliability. If the value of this index is higher than 0.70, the composite reliability of the model is also confirmable. Table 1 describes the results.

Table 1: Composite Reliability and Cronbach's Alpha

Research variables	Composite reliability	Cronbach's alpha
Smart automation	0.801	0.734
Travel demand	0.869	0.775
Security space	0.798	0.731
Tourism blockchain technology	0.905	0.885
Supply Chain Management	0.858	0.794
Digital consumption	0.830	0.794
Results and consequences	0.885	0.848

As Exhibit Table1 shows, the gained values are higher than 0.70, so the measurement models have good reliability.

4.2.2. Evaluation of Convergent and Divergent Validity of Measurement Models

The most important validity under investigation is convergent validity to confirm the validity of measurement models. This type of convergent validity means that the set of indicators explains the main construct.

Table 2: Calculation Results of Average Variance Index

Research variables	Variables
Smart automation	0.575
Travel demand	0.698
Security space	0.572
Tourism blockchain technology	0.551
Supply Chain Management	0.550
Digital consumption	0.620
Results and consequences	0.525

As Table2 shows, the value of AVE for all variables is higher than 0.5. Therefore, convergent validity of measurement models is desirable (Table3).

Table 3: Factor Loadings Table

Dimensions	Component	Row	Code	Frequency (index weight)	Factor loadings
Results and consequences	-	1	Improving the level of tourism	8	0.675
		2	Sustainable development of tourist destinations	8	0.680
		3	Creating tourism opportunities	9	0.820
		4	Increasing tourism demand in Iran	8	0.663
		5	Attracting tourists	10	0.753
		6	Increasing commercial tourism activities	7	0.758
		7	Blockchain adoption in tourism	10	0.723
Supply Chain Management	-	8	Quality management	8	0.775
		9	Cost management	9	0.632
		10	Management of speed and reliability	8	0.731
		11	Risk reduction	7	0.788
		12	Stability and flexibility	7	0.773
Tourism blockchain technology	Travel demand	13	Demand for speed in service delivery using technologies	10	0.841
		14	Demand for quality services using technologies	10	0.836
		15	Demand to diversify services using technologies	10	0.813
	Digital consumption	16	- Using the digital world	7	0.797
		17	Creating digital networks between passengers	7	0.764
		18	Demand for digital information	8	0.802
	Smart automation	19	Smartening of processes	9	0.679
		20	Smartening the provision of travel services	8	0.760
		21	Smartening communication with tourists	7	0.830
	Security space	22	Creating an atmosphere of trust	8	0.613
		23	Establishing security in the travel payment gateway	10	0.793
		24	Providing travel insurance and using safe and secure ways	8	0.845

4.2.3. Model Fitting

The general fitting index of the model or the GOF index, which is calculated as the geometric mean of the explained variance R^2 and the average quality of the COMMUNALITY measurement model, is as follows:

Equation 1: $GOF = \sqrt{Communality \times R^2} = 0.591$

The overall fitting of the model is favorable based on the gained coefficient, because this value is higher than 0.35, so the overall fitting of the model is confirmable.

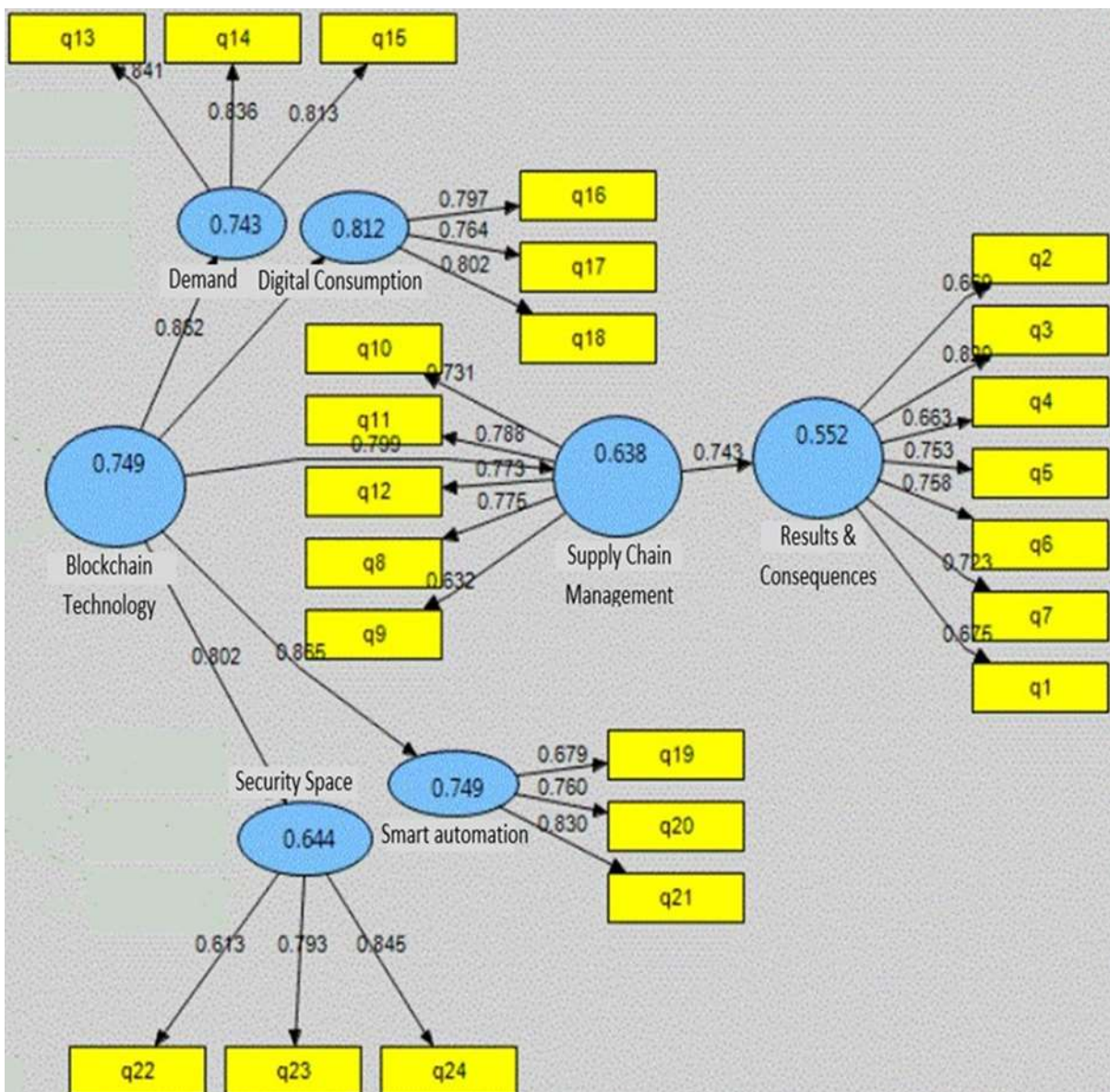
4.2.4. Structural Model Evaluation

The structural equation model has been used to evaluate the overall model. The critical value must be greater than 1.96 based on the significance level of 0.05; the parameter value lower than this is not considered important in the model. Exhibits 5,6 show the results.

4.2.5. Standard Coefficients

Overall model measurement and hypothesis results in standard mode presented in Exhibit 2

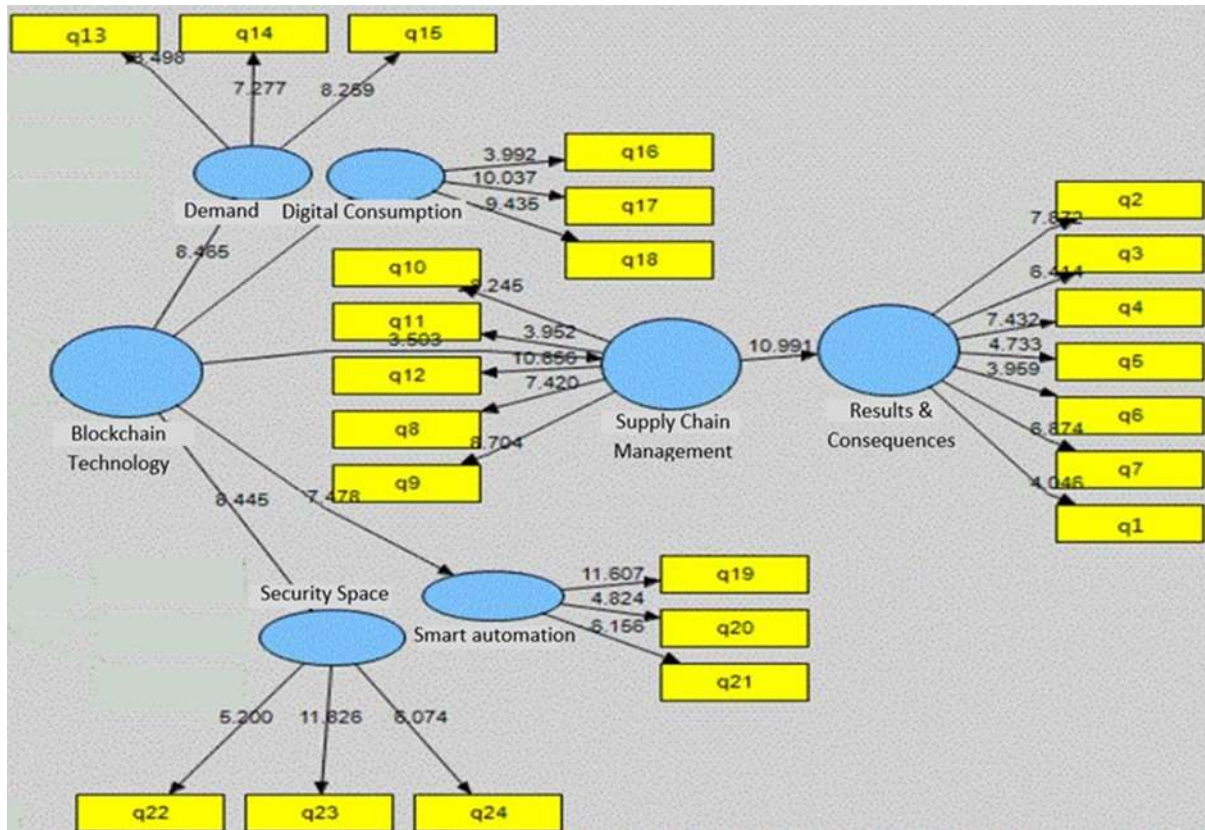
Exhibit 2: Overall Model Measurement and Hypothesis Results in Standard Mode



4.2.6. T-Value Coefficients

Exhibit 3 shows the significance level of path coefficients. A significance level greater than 1.96 and less than -1.96 is acceptable.

Exhibit 3: Measurement of the Overall Model and the Results of the Hypotheses in a Significance Mode



As Exhibit 3 shows, the path coefficients have a good level of significance because they are more than 1.96.

4.3. Results of the Statistical Analysis

The path analysis method has been applied to examine the causal relationship between the research variables and verify the hypotheses.

The first hypothesis: the impact of blockchain technology in tourism on supply chain management:

As Figures 2 and 3 show, the path coefficient is 0.799, which has a level of 3.503 and is desirable, because it is higher than 1.96. Therefore, the path coefficient is confirmed.

The second hypothesis: the effect of supply chain management on results and consequences:

As Diagrams 2 and 3 show, the path coefficient is 0.743, which has a level of 10.991, which is favorable because it is higher than 1.96. Therefore, the path coefficient is confirmed.

The third hypothesis: The impact of blockchain technology in tourism on the results and consequences of the mediation of supply chain management is significant.

The Sobel test is used to investigate the mediating role of the supply chain management variable:

$$\text{Equation 2 : } Z - \text{value} = \frac{a \times b}{\sqrt{(b^2 \times s_a^2) + (a^2 \times s_b^2) + (s_a^2 \times s_b^2)}}$$

Where:

a: Path coefficient value between the independent variable and mediator variable: 0.799

b: Path coefficient value between mediator variable and dependent variables: 0.734

Sa: standard error of the path between independent and mediator: 0.04

Sb: standard error of the mediator and dependent path: 0.05

As the Sobel test formula and the mentioned values reveal, the value of the significance level is 4.357, which is higher than 1.96, and therefore the mediator role is confirmed.

The VAF coefficient is used to calculate the impact.

$$VAF = \frac{a \times b}{(a \times b) + c}$$

Where:

a: Path coefficient value between the independent variable and mediator variable: 0.799

b: Path coefficient value between the mediator and dependent variables: 0.734

C: coefficient of the path between independent and dependent: 0.502

As the VAF coefficient and the mentioned values show, the coefficient value is 0.542.

The following table shows a summary of the results (Table 4).

Table 4: Summary of Hypothesis Test Results

Hypothesis	Independent variable	Mediator variable	Dependent variable	Path coefficient	Significance	Result
1	Blockchain technology in tourism	-	Supply Chain Management	0.799	3.503	Confirmed path
2	Supply Chain Management	-	Results and consequences	0.743	10.991	Confirmed path
3	Blockchain technology in tourism	Supply Chain Management	Results and consequences	0.542	4.357	Confirmed path

As Exhibit 7 shows, significant coefficients have good values because they are all higher than 1.96. Therefore, all three hypotheses are confirmable. The goodness of fit (GOF) value of 0.591 shows the overall fitting of the model. Because this value is higher than 0.35, the overall fitting of the model is confirmable.

5. DISCUSSION AND CONCLUSION

Comparing the results of the research with the conducted research and investigating the hypotheses of the research give the following results:

Alasfar, (2024) in a research showed that there is a strong relationship between supply chain management, logistics, competitive advantage and organizational performance. Supply chain management and logistics have shown a positive and significant effect on competitive advantage and organizational performance. Adnani et al., (2023) in a research showed that information sharing and innovation play a significant mediating role in the relationship between supply chain management and performance.

Wu and Zhang (2022) stated that the emergence of blockchain technology provides an opportunity to improve the supply chain ecosystem. Their results are in line with the results of the current research on supply chains.

Alazab et al. (2021) showed that the technology acceptance and use theory does not have a significant effect on the intention to adopt blockchain, while intra-organizational trust has a significant effect on the relationship between technology acceptance and use theory and acceptance intention. Treiblmaier (2020) shows that it is necessary to refer to economic theories to better understand how blockchain features will be formed in the future of the tourism industry and its main beneficiaries. His results are in line with the results of the current research on blockchain technology.

6. SUGGESTION

The research suggests, based on the results and consequences, to improve the level of tourism, and sustainable development of tourism destinations by creating tourism opportunities. Increasing tourism business measures and the use and acceptance of blockchain technology in tourism increase tourism demand in Iran and attract tourists from all foreign countries.

Quality management and cost management, based on the supply chain management, will create a favorable outlook for tourists, managing speed and reliability in travel will reduce risk, and high stability and flexibility improve the level of tourism in Iran.

Using blockchain technology in tourism improves the level of tourism through speed, quality, and diversity in providing services. Using digital technology and creating digital networks between travelers and digital information attracts tourists.

This industry can achieve a favorable vision of the country's tourism by making processes smarter, providing travel services, and communicating with tourists. Creating security at the travel payment portal, providing travel insurance, and using safe and secure methods create an atmosphere of trust on the part of tourists.

The following suggestions are for future researchers:

- Investigating the impact of blockchain technology components on supply chain management.
- Investigating the impact of blockchain technology components on tourism outcomes with the mediating role of supply chain management.
- Investigating the impact of blockchain technology components on tourism outcomes with the moderating role of tourists' characteristics.

REFERENCES

- Adnani, L., Jusuf, E., Alamsyah, K., & Jamaludin, M. (2023). The role of innovation and information sharing in supply chain management and business performance of halal products in tourism destinations. *Uncertain Supply Chain Management*, 11(1), 195-202.
- Alazab, M., Alhyari, S., Awajan, A., & Abdallah, A. B. (2021). Blockchain technology in supply chain management: an empirical study of the factors affecting user adoption/acceptance. *Cluster Computing*, 24(1), 83-101
- Alazab, M.: Analysis on smartphone devices for detection and prevention of malware. Deakin University(2014).
- Alasfar, W. (2024). The Impact of Supply Chain Management and Logistics on the Competitive Advantage and Organizational Performance: A Field Study in Tourism Organizations in Syria (Doctoral dissertation, soe).
- Al-Rawashdeh, O. M., Jawabreh, O., & Ali, B. J. (2023). Supply Chain Management and Organizational Performance: The Moderating Effect of Supply Chain Complexity. *Information Sciences Letters*, 12(3), 1673-1684.
- Baralla, G., Pinna, A., Tonelli, R., Marchesi, M., & Ibba, S. (2021). Ensuring transparency and traceability of food local products: A blockchain application to a Smart Tourism Region. *Concurrency and Computation: Practice and Experience*, 33(1), e5857.
- Bentalha, B. (2024). Sustainable Supply Chain Management in Tourism: An Understanding of the Prospective Possibilities of Environmental Performance. In *Implementing Sustainable Development Goals in the Service Sector* (pp. 53-66). IGI Global.
- Beverungen, D., Muller, O., Matzner, M., Mendling, J., & Vom Brocke, J. (2019). Conceptualizing smart service systems. *Electronic Markets*, 29(1), 7-18.
- Chowdhury, M. M. H., Mahmud, A. S., Banik, S., Rabbanee, F. K., Quaddus, M., & Alamgir, M. (2024). Resilience strategies to mitigate "extreme" disruptions in sustainable tourism supply chain. *Asia Pacific Journal of Marketing and Logistics*, 36(2), 408-434.
- Del Vecchio, P., & Passiante, G. (2017). "Is tourism a driver for smart specialization? Evidence from Apulia, an Italian region with a tourism vocation". *Journal of Destination Marketing and Management*, 6(3), 163-165.
- Giancaspro, M. (2017). Is a 'smart contract' really a smart idea? Insights from a legal perspective. *Computer Law and Security Review*. Available online: <http://www.sciencedirect.com/science/article/pii/S026736491730167X> Accessed July 15, 2017 .
- Hawlitshchek, F., Notheisen, B., & Teubner, T. (2018). The limits of trust-free systems: A literature review on Blockchain technology and trust in the sharing economy. *Electronic Commerce Research and Applications*, 29, 50-63.
- Hald, K.S., Kinra, A.: How the blockchain enables and constrains supply chain performance. *Int. J. Phys. Distrib. Logist. Manage.* 49(4), 376-397(2019).
- Jabbar, A., Dani, S., 2020. Investigating the link between transaction and computational costs in a blockchain environment. *International Journal of Production Research*, 58(11), 3423-3436.
- Jessop, D. (2018). Artificial intelligence and tourism: Opportunities and risks. Retrieved December 08, 2019 from <https://www.caribbeancouncil.org/artificial-intelligence-tourism-opportunities-risks/>.
- Kannengießer, N., Lins, S., Dehling, T., & Sunyaev, A. (2019). Mind the gap: Trade-offs between distributed ledger technology characteristics. arXiv preprint arXiv:1906.00861.
- Kwok, A. O., & Koh, S. G. (2019). Is blockchain technology a watershed for tourism development?. *Current Issues in Tourism*, 22(20), 2447-2452.
- Kim, J.-S., Shin, N., (2023). The impact of blockchain technology application on supply chain partnership and performance. *Sustainability* 11(21), 6181.
- Kshetri, N., (2018). Blockchain's roles in meeting key supply chain management objectives. *International Journal of Informatics Management*, 39, 80-89.
- Luo, L., & Zhou, J. (2021). BlockTour: A blockchain-based smart tourism platform. *Computer Communications*, 175, 186-192.
- Maleh, Y., Shojafar, M., Alazab, M., Romdhani, I.: *Blockchain for Cybersecurity and Privacy: Architectures, Challenges, and Applications*. CRC Press, Boca Raton (2020).

- Maythu, Y., Kwok, A. O., & Teh, P. L. (2024). Blockchain technology diffusion in tourism: Evidence from early enterprise adopters and innovators. *Heliyon*, 10(2), 89-98.
- Nam, K., Dutt, C. S., Chathoth, P., & Khan, M. S. (2019). Blockchain technology for smart city and smart tourism: Latest trends and challenges. *Asia Pacific Journal of Tourism Research*, 10(1), 1–15. <https://doi.org/10.1080/10941665.2019.1585376>
- Narayanan, A., Bonneau, J., Felten, E., Miller, A., & Goldfeder, S. (2016). Bitcoin and cryptocurrency technologies: A comprehensive introduction. Princeton: Princeton University Press.
- Önder, I., & Treiblmaier, H. (2018). Blockchain and tourism: Three research propositions. *Annals of Tourism Research*, 72(C), 180-182.
- Park, G., Shin, S. R., & Choy, M. (2020). Early mover (dis) advantages and knowledge spillover effects on blockchain startups' funding and innovation performance. *Journal of Business Research*, 109, 64-75.
- Paul, T., Islam, N., Mondal, S., & Rakshit, S. (2022). RFID-integrated blockchain-driven circular supply chain management: A system architecture for B2B tea industry. *Industrial Marketing Management*, 101, 238-257 .
- Queiroz, M.M., Wamba, S.F., (2019). Blockchain adoption challenges in supply chain: an empirical investigation of the main drivers in India and the USA. *International Journal of Informatics Management*, 46, 70–82.
- Saberi, S., Kouhizadeh, M., Sarkis, J., Shen, L., (2019). Blockchain technology and its relationships to sustainable supply chain management. *International Journal of Production Research*. 57(7), 2117–2135.
- Surucu-Balci, E., Iris, Ç., & Balci, G. (2024). Digital information in maritime supply chains with blockchain and cloud platforms: Supply chain capabilities, barriers, and research opportunities. *Technological Forecasting and Social Change*, 198, 122978.
- Tseng, L., Wong, L., Otoum, S., Aloqaily, M., Othman, J.B.:Blockchain for managing heterogeneous internet of things: a perspective architecture. *IEEE Network*, 34(1), 16–23(2020)
- Treiblmaier, H. (2020). Blockchain and tourism. *Handbook of e-Tourism*, 1-21.
- Wang, X., Li, X. R., Zhen, F., & Zhang, J. (2016). "How smart is your tourist attraction? Measuring tourist preferences of smart tourism attractions via a FCEM-AHP and IPA approach". *Tourism Management*, 54, 309-320. Willie, P. (2019). Can all sectors of the hospitality and tourism industry be influenced by the innovation of Blockchain technology? *Worldwide Hospitality and Tourism Themes*, 00–00. <https://doi.org/10.1108/WHATT-11-2018-0077>
- Wu, Y., & Zhang, Y. (2022). An integrated framework for blockchain-enabled supply chain trust management towards smart manufacturing. *Advanced Engineering Informatics*, 51, 101522.
- Yadav, J. K., Verma, D. C., Jangirala, S., & Srivastava, S. K. (2021). An IAD type framework for Blockchain enabled smart tourism ecosystem. *The Journal of High Technology Management Research*, 32(1), 100404.
- Zeng, F., Chan, H.K., Pawar, K., 2020. The adoption of open platform for container bookings in the maritime supply chain. *Transportation Research E: Logistics Transportation Review*, 141, 102019.
- Zhou, Z., Liu, X., Zhong, F., & Shi, J. (2022). Improving the reliability of the information disclosure in supply chain based on blockchain technology. *Electronic Commerce Research and Applications*, 101121.
- Zhu, Q., Bai, C., Sarkis, J., 2022. Blockchain technology and supply chains: the paradox of the atheoretical research discourse. *Transportation Research E: Logistics Transportation Review*, 164, 102824

DETERMINING THE PRODUCTIVITY AND POVERTY LEVEL OF QUEEN PINEAPPLE FARMERS IN CAMARINES NORTE, PHILIPPINES

DOI: 10.17261/Pressacademia.2024.1946

JMML- V.11-ISS.2-2024(9)-p.153-168

Maria Christina F. Campita¹, Hiromi Tokuda², Hector M. Sales³

¹Department of Agriculture, Regional Field Office 5, Pili, Camarines Sur, Philippines.

Christina.campita@gmail.com , ORCID: 0000-0002-5678-8752

²Nagoya University, Furuchu, Chikusa Ward, Nagoya, Japan.

tokuda@agr.nagoya-u.ac.jp , ORCID: 0000-0002-5436-1683

³Ateneo de Naga University, Naga City, Camarines Sur, Philippines.

Hecsam74@gmail.com , ORCID: 0000-0002-9386-2544

Date Received: October 26, 2024

Date Accepted: December 21, 2024



To cite this document

Campita, M. C., Tokuda, H., Sales, H.M., (2024). Determining the productivity and poverty level of queen pineapple farmers in Camarines Norte, Philippines. *Journal of Management, Marketing and Logistics (JMML)*, 11(2), 153-168.

Permanent link to this document: <http://doi.org/10.17261/Pressacademia.2024.1946>

Copyright: Published by PressAcademia and limited licensed re-use rights only.

ABSTRACT

Purpose- Queen pineapple production is a small-scale farming activity in Camarines Norte Philippines. Despite its production potential, pineapple farmers report of low productivity as the price of input increases and the net income decreases. This paper compares the productivity level relative to the poverty threshold of Queen pineapple farmers who use traditional and innovative production practices.

Methodology- Data was gathered from January to March 2022 in Camarines Norte, where Queen pineapple production is highly concentrated. A total of 96 farmers were interviewed using a semi-structured questionnaire. Productivity was measured based on the cost and revenue analysis of traditional practices, the use of innovative production, and the input and output ratio in terms of land labor and capital.

Findings- Results revealed that innovative production increased land, labor, and capital productivity. The poverty threshold is influenced by educational status, household size, and pineapple cultivation area. Thus, 56 percent of the farmers live with less than the basic food requirements, 17 percent live below the poverty threshold, and only 27 percent live above the poverty threshold.

Conclusion- To earn more than the poverty threshold the decision point may be based on area planted or based on farming system. The former suggest that a Queen pineapple farmer must utilize 1.6 hectares (ha) using traditional practices but only 0.68 ha using innovative production practices while the latter suggest that based on farming system, expanding production areas through mixed or integrated cropping or adopting production innovations for single cropping is recommended.

Keywords: Traditional practices, cost of production, farming system.

JEL Codes: D24, D31, O31

1. INTRODUCTION

The Philippine economy is the 36th largest economy in the world, the 12th largest in Asia, and the third largest in the ASEAN. The Philippines contributes 0.18 percent to the world's total gross domestic product (GDP). Its main economic drivers include the service (61.05%), industry (28.89%), and agriculture, forestry, and fishing (AFF) sectors (10.07%). The Philippines is regarded as an emerging economy, according to UNIDO (2020), because of its competitive workforce comprising 65 percent of its population. By the end of 2022, the Philippine population was around 115 million, about a quarter of which depended on agriculture for livelihood.

With rapid urbanization and the younger generation more interested in the service and industry sector, the agriculture sector needs more government support and intervention to create more jobs and opportunities in the rural areas, ensure food security, and reduce hunger and poverty in the country. Based on the Philippine poverty threshold, Mapa (2022) wrote that a family of five requires PHP 12,030 per month for necessities and at least PHP 8,379 to meet basic food requirements. In 2006, around 32.9 percent of the population was poor, meaning one out of four Filipinos were poor. In 2020, the figure was slightly reduced to 30 percent; hence, around 30 million Filipinos remained poor after over a decade. In rural areas, the ratio is expected to be higher since poverty incidence is much higher in rural areas (36%) than in urban areas (13%) (IFAD 2022).

The Philippines is considered one of the leading exporters of pineapple globally (Reinhardt and Rodriguez 2009; Balito 2010; Hossain 2016), which makes the pineapple industry one of the most significant contributors to the country's GDP. In 2021,

the pineapple industry's share in the AFF sector is 7.2 percent. The Philippines exported fresh pineapples worth USD 281 million in 2021, with a total volume of around 546.11 thousand metric tons (Statista 2021). Production grew at an average of 1.2 percent while the acreage remained constant. The lack of growth in the industry is attributed to the high incidence of small fruits (up to 40%), poor cultural management and postharvest practice, and lack of available appropriate storage areas, among others.

Pineapple is a perennial herb in the Bromeliaceae family (Bartholomew 2003; Tewodros et al. 2018). Four varieties thrive in the country, namely: (1) Hawaiian, (2) MD2, (3) Red Spanish, and (4) Queen. Hawaiian and MD2 are produced heavily in Mindanao by giant companies such as DOLE and Del Monte, mainly for export. Red Spanish is popularly grown in Aklan for fiber production. Queen pineapple is primarily produced in South Luzon to address domestic demand.

A tapering shape, deep eyes, and fresh yellow color widely characterize the Queen pineapple variety. It is known for its characteristic aroma, crisp flesh, and sweet juice, and it is popularly served as table fruit or dessert. The fruit contains Vitamin C and A, calcium, phosphorus, fat, sugar, and carbohydrates. It is generally smaller, ranging from 0.7 to 1 kg in medium to large classification (Philippine National Standard 2004), but sweetest at 14 degrees Brix. The average fruit weight without the crown varies from 600–800 grams (g). In addition, it has strong fiber, which is excellent for cloth material and an alternative to animal leather. Pineapple has a high domestic demand and has the potential for an international market niche.

Queen pineapple is a typhoon-resilient crop. It has been one of the primary sources of income for smallholder farmers in rural areas in the Philippines, especially in Camarines Norte, a province in Region V, where typhoons occur around 20 times a year. Despite the production potential of pineapple, low productivity has remained a considerable problem for Queen pineapple farmers for decades.

Previous research focused on enhancing cultural management practices. However, no accurate data can be found as to the existing cost of production for Queen pineapple compared to the cost and income of adopting recommended technologies. Lubis et al. (2014) believed that low productivity in horticulture is mainly due to the inability of the farmers to exploit available technologies, resulting in lower production efficiencies.

This paper aims to assess the economic characteristics of farmers in the study area, determine the productivity level of traditional practices compared to innovative production, and assess the poverty level of pineapple farmers based on their income sources.

2. LITERATURE REVIEW

The economic landscape of the Philippines is characterized by a strong service sector, a significant industrial base and ongoing reliance on agriculture. The country's emerging economic status presents both opportunities and challenges especially in the agriculture sector, which calls for sustainable practices to harness its full potential. The need for increased government intervention in agriculture is underscored by its dual role in job creation and food security.

Poverty remains a critical issue in the Philippines, with the poverty threshold indicating that a family of five requires PHP 12,030 monthly for necessities, and PHP 8,379 for basic food needs. Canlas et al. (2006) noted that in 2006, 32.9% of the population lived in poverty, a figure that slightly decreased to 30% by 2020. This stagnation in poverty reduction highlights systemic issues, particularly in rural areas, where poverty incidence is significantly higher (36%) compared to urban areas (13%) as reported by IFAD (2022).

Research indicates that income levels among pineapple farmers can vary significantly based on farm size, access to markets, and production practices. Many smallholder farmers struggle with low profit margins due to high production costs and limited market access. This contributes to ongoing financial strain among farmers which limit their economic mobility.

The production costs of pineapple farming in the Philippines encompass various factors including land preparation, labor, inputs, and post-harvest handling. Land preparation is a significant initial investment. Labor is a major cost component in pineapple production, given the labor-intensive nature of activities such as planting, weeding, and harvesting.

According to the findings of Balogun, Adewuyi, and Disu (2018), that pineapple production is dominated by farmers who are of active age. The findings imply that, given proper training, pineapple growers can still adopt new technologies. Esiobo and Onubuogo (2014) reported that farmers aged 41–50 are still in active age, more receptive to agricultural innovation, and could withstand the stress and strain involved in agricultural production.

To increase bargaining power, farmers often turned to cooperatives to pool resources and negotiate better prices and avail of government interventions as a group. While the benefits of cooperatives are free training and production loans with low interest, the cooperative manager complained of low payment rates. In the long run, members' share capital and savings are used to pay their loans, and membership becomes null and void. Most respondents lack an appreciation of the benefits of cooperatives and prefer to farm as individual farmers. Falling out of members may also threaten the cooperative's very existence. Dimas, Lyne, and Bailey (2022) cited that despite financial support from various sources, many cooperatives need help to remain viable.

To augment income farmers diversify and adopt mixed cropping practices. Mixed cropping refers to a farming system where multiple crops are grown in a single field simultaneously (CGIAR, 2002). Growing additional crops alongside pineapple provide farmers with multiple source of harvest throughout the year creating diverse income streams. Ryschawy et al. (2019) believed that crop-livestock integration is an agroecological way of farming as it reduces negative environmental impacts and could improve resilience and production efficiency (Stark et al. 2018). In the study area, chicken, swine, and carabao were the usual animals raised while cultivating pineapple. Carabao was used for hauling agri-products and inputs and in land preparation for manual plowing and harrowing. Chicken was raised for meat, primarily for personal consumption, while swine was grown mainly on a backyard basis with 3–5 heads. Crop-livestock integration requires additional capital and labor but increases land productivity by providing added income without expanding the area.

To increase income, farmers are also encourage to transitioned from traditional farming practices and slowly adopt mechanization and other farming technologies. Limiting factors such as lack of access to capital, cultural and social factors, and limited training and low level of education causes poor adoption. In the study of Uematso and Mishra (2010), a lack of formal education hindered technology adoption, especially for smallholder farmers who tend to work off-farm. In rural Ethiopia, the study of Weir (1999) concluded that at least four years of primary schooling can have a significant impact on productivity. The association of the poverty threshold of Queen pineapple farmers to socioeconomic factors, such as education and number of household members, is also similar to the findings of Adekoya (2014) that the chance of being poor is higher among non-educated farmers and farmers with large households.

Improving productivity of farmers requires several strategies and series of training to enhance adoption of modern farming practices. However, a closer look at the micro level may provide detailed insights for deeper understanding and may provide customized solutions similar to the goal of this study. Further policy makers can make more informed decisions leading to better outcomes that are both effective and sustainable

3. DATA AND METHODOLOGY

A survey was conducted from January to March 2021 in Camarines Norte, where 7 percent of the total pineapple production in the country is produced. A total of 96 farmers responded to the survey using a semi-structured questionnaire. Secondary data were gathered from local government unit offices and the Department of Agriculture, RFO 5.

Sample respondents were chosen by location based on the number of pineapple growers in the municipality. Descriptive statistics, such as frequency, percentage, and average, are used to present the socioeconomic characteristics of the respondents.

A partial productivity analysis was used to measure productivity levels to relate input, such as land, labor, and capital, to a single output—productivity. Productivity refers to the amount of added value per unit of input factor. Value added is obtained by subtracting the material costs from the output. Labor productivity was computed by labor input versus output. Labor input is the number of working days put into one cycle of pineapple cultivation multiplied by the wages per day. Labor productivity was generated by dividing the added value by the labor input. The added value refers to the gross income minus variable costs.

Since it takes 14 months to cultivate pineapples, the added value per land area obtained in one cycle of pineapple cultivation was converted to one year's worth. Input capital consists of variable capital and fixed capital. For productivity analysis, the following formulas were used:

Labor Productivity

Labor input = number of working days × average farm wage per day

Added value = gross income – material cost

Labor productivity = added value/labor input

Capital Productivity

Capital input = variable capital + actual fixed capital

Capital productivity = added value/capital input

Land productivity = added value × 12 months/months per cropping

4. FINDINGS AND DISCUSSIONS

4.1. Socioeconomic Condition of Queen Pineapple Farmers

Pineapple farmers in Camarines Norte are mostly smallholders cultivating on a limited scale at an average area of 1.2 ha. Farms are dispersed, and farmers mix pineapple with short-term crops for personal consumption and as a source of added income. There were cooperatives active in the area and an active pineapple farmers' association in most of the municipalities in the province. These associations benefit farmer members through production loans, training on processing, and product development. Pineapple farmers' key challenge is the source of capital in sustaining the long-term cycle of pineapple

cultivation, which can take up to 14 months before harvesting and another four months to get the planting materials from the mother plant.

Both males and females participate in pineapple production (Table 1). However, due to the labor-intensive and time-consuming activities involved in pineapple production, there was more participation by male (68%) than female (32%) farmers. The majority (66%) were 41–60 years old, with a mean age of 48, which is younger than the average age of farmers at 57 years.

Table 1: Socioeconomic Characteristics of Farmers

Variable	Frequency	Percentage	Average
Gender			
Male	65	68	
Female	31	32	
*Age			
21–30 years old	5	5	48
31–40 years old	16	17	
41–50 years old	29	31	
51–60 years old	33	35	
61–70 years old	10	11	
Civil Status			
Single	4	4	
Married	81	85	
Widow	4	4	
Separated	6	6	
Educational Level			
Elementary	29	31	8.5
High School	47	50	
College	16	17	
Masteral	2	2	
Household Size			
1–3	21	24	5
4–6	56	62	
7–9	9	12	
10–12	3	2	
Tenurial Status			
Owned	39	42	-
Tenant	26	28	
Leaseholder	28	30	
Coop Membership			
Member	62	66	-
Non-member			

The mean household size is five persons. The result of this study implies a higher participation of middle-aged farmers than younger and elderly farmers in pineapple cultivation. Most (62%) respondents have an average of 4–6 family members. Coop membership is low at 32 percent. This result implies that the household size in the study area is enough to provide the required family labor for a small parcel of land. Before the pandemic, some households experienced a labor shortage since young family members preferred off-farm jobs in urban areas. During the pandemic, massive termination of contractual works in the cities forced the unemployed to return home and provide assistance in on-farm jobs. However, this movement, which resulted in increased available labor, may be temporary and must be studied if the situation remains after the pandemic.

Most farmers have an average farming experience of 22 years, while the average pineapple cultivation experience is 17 years. Most of these farmers grow coconut prior to planting pineapple. A coconut tree bears fruit after 6–10 years, but the peak of production is at 15–20 years. Respondents have an average land area of 3 ha planted with mixed crops such as coconut, rice, pineapple, and lowland vegetables. Out of 57 percent of the respondents with an area ranging from 2–5 ha, 52 percent allotted 1–2 ha to pineapple cultivation, implying that if one crop is more profitable, expanding the area is also feasible at the expense of low-income crops (Table 2)

Farmer respondents had three types of tenurial status. The first type is landowner, which refers to a person with the legal right to the land by inheritance or deed of sale. The owner can enjoy and dispose of the land without limitations other than those established by law (Article 435). The second type is the tenant, who is entrusted to manage the land while the owner

is either busy or away working in other areas in the Philippines or abroad. Some tenants live on the owner's farm and, depending on the trust and confidence of the owner, may decide which crops to plant. Profit-sharing arrangement varies depending on the agreement. The third type is the leaseholder, which either rents the land for pineapple production or borrows the land in exchange for labor, such as cleaning the land area and doing other farm jobs as payment. Of the 57 percent of the farmers cultivating an area ranging from 2–5 ha, 48 percent were owned, and 24 percent were tenants. The average area cultivated by owner and tenant respondents was larger than the leaseholders. This means these farmers can decide on crop prioritization and adopt new practices. Hence, these groups must be the target for the orientation of innovative production.

Table 2: Tenurial Status of Farmers by Total Land Area

Tenurial Status	Land Area (ha)						%	Average
	-1	1-2	2-3	3-5	5-10	10-		
Owned	2	2	13	13	7	2	42	4.12
Tenant	1	9	4	9	2	1	28	3.02
Leaseholder	9	1	7	8	3	-	30	2.50
Total	12	12	24	30	12	3	100	

4.2. On-Farm and Off-Farm Income of Farmers

The on-farm income of farmers varies based on the farming system used. There were three commonly practiced farming systems in Camarines Norte, namely, (1) single-crop farming, (2) multi-crop farming, and (3) integrated farming with livestock raising. Coconut, combined with other crops planted underneath, is the most dominant crop in the study area.

Single-crop farming refers to a farming system that solely plants pineapple in a production area. However, in this paper, single-crop refers to farmer respondents solely planting pineapple in an open area or under coconut. It implies that some farmers rent or borrow the land on a special arrangement to plant pineapples. Farm activities are solely focused on Queen pineapple production, which includes preparation of inputs and land, planting, fertilizer application, weed control, pest management, application of growth regulators (optional), and harvesting.

On the other hand, mixed cropping refers to a farming system where multiple crops are grown in a single field simultaneously (CGIAR, 2002). In this case, pineapple was planted under coconut while growing other crops. In this study, 44 percent, or almost half of the respondents, preferred a multi-crop farming system. This is similar to the findings of Stark et al. (2018) that the multi-crop farming system accounts for almost half of the world's food production, often in the context of smallholder agriculture. Pineapple is a long-duration crop that can be grown in a rice-based cropping system after rice harvest in Eastern India (Verma et al. 2020). Coconut-based cropping system is also one of the sustainable cropping pattern models to enhance economic viability (Thomas et al. 2018). Other activities are conducted, such as harvesting coconut, de-husking, and hauling to the nearest road.

In an integrated farming system, cropping activities are simultaneously conducted with growing animals, like fattening pigs. Crop-livestock integration refers to a farming system that plants pineapple simultaneously with other crops like coconut, vegetables, rice, and banana while raising animals.

To augment the on-farm and household financial budget, 62 percent of the farmers had off-farm jobs (Figure 1). Off-farm jobs vary by educational status; respondents with college degrees have secured formal jobs as government employees or barangay officials, with an average wage of PHP 600 per day. In comparison, less educated farmers can only engage in informal jobs such as driver, construction worker, and miner, with an average daily wage of PHP 365.

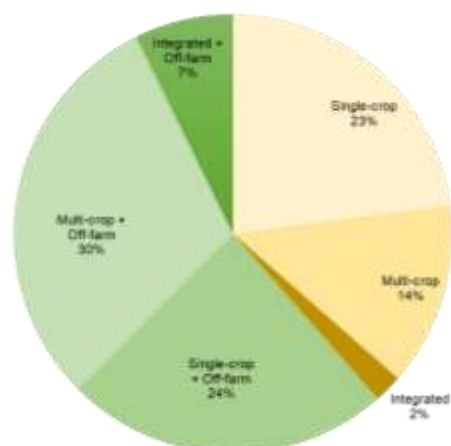
Figure 1: Sources of Income of Queen Pineapple Farmers

Figure 1 shows that aside from farming systems, farmers' sources of income are classified into two: on-farm and off-farm. Those relying solely on on-farm income practice single-crop, multi-crop, or integrated farming systems. This group can provide added hours of labor and focus only on farming but tends to need more capital to sustain the financial requirements of pineapple production. The second group, which combines on-farm and off-farm jobs, also practice either single-crop, multi-crop, or integrated farming system in combination with work outside the farm. When farm activities require additional labor, off-farm income was utilized to pay for hired labor to do farm activities. Further, this group earns more and provides more investment in pineapple cultivation than farmers without off-farm jobs.

The respondents' income sources were on-farm, off-farm, or a combination (Table 3). The first group solely relied on on-farm income using different farming systems (38%), while the second group combined off-farm income and on-farm income from different farming systems (62%). In terms of the farming system, almost half of the farmers use single crop (47%), followed by multi-crop (44%). The least preferred was integrated (9%). In terms of income, those without off-farm jobs have low incomes below the poverty threshold. Only multi-crop and integrated farming systems generated income sufficient for farmers' basic food requirements.

On the other hand, those with off-farm jobs have a higher income, as expected, because of combined sources of income. It can be deduced that this group also has higher capital invested in pineapple cultivation, which can be seen in the on-farm income of the multi-crop and integrated farming systems, which is almost enough for the food basic requirement threshold. Combining on-farm and off-farm income generated an income above the food requirement for a single-crop farming system and above the poverty threshold for a multi-crop and integrated farming system.

Table 3: On-Farm and Off-Farm Average Annual Income per Household Member

Source of Income	Frequency	Average Pineapple Area (ha)	Ave. Farm Income (PHP)	Ave. Off-farm Income (PHP)	Ave. Total Income (PHP)
Without off-farm job					
Single-crop	22	1.23	5,444		5,444
Multi-crop	13	0.95	11,324		11,324
Integrated	2	0.63	16,779		16,779
With off-farm job					
Single-crop	23	1.10	13,524	8,885	20,886
Multi-crop	29	1.24	19,999	14,657	32,083
Integrated	7	1.30	20,399	13,151	33,551
Total/Average	96	1.16	15,633	10,579	23,574

The socioeconomic factors strongly associated with the poverty threshold of Queen pineapple farmers in Camarines Norte were household size, educational attainment, and land area. Expectedly, the number of household members affects the farmers' entire budget for personal and on-farm expenditures. The higher the number of household members, the higher the

financial requirement for basic needs, such as shelter, food, and education, eventually affecting the budget allotted for pineapple production. In effect, higher household expenditures reduce the production capital. The lower the production capital, the less likely farmers will harvest quality fruits and sell them at higher prices. It should be noted, however, that the baseline data used is intended for a household of five. This was then divided into the individual requirement to consider the different household sizes of the respondents. It must be kept in mind that individuals within the household have different needs and expenditures; thus, if one is looking at a holistic view of poverty, it is best to convert the values back to the household level.

Moreover, cross-tabulation of educational level and economic status showed that most respondents with income below the poverty threshold finished elementary and high school. As shown in Table 1, the combined percentage of elementary and high school respondents was 76 percent.

Table 4: Socioeconomic Factors Associated with the Poverty Threshold of Queen Pineapple Farmers

Variable	Fisher's Exact Test	Significance
Age	4.174	0.378
Gender	0.127	1.000
Civil status	1.660	0.487
Educational attainment	10.904	0.022**
Number of household members	14.403	0.003***
Coop membership	2.093	0.383
Tenurial status	2.848	0.610
Years in farming	3.875	0.433
Years in pineapple growing	3.830	0.422
Total land area	1.727	0.454
Pineapple land area	6.553	0.033**

Note: *, **, and *** indicate significance at $p \leq .10$, $p \leq .05$, and $p \leq .01$, respectively

More than half of the respondents planted pineapple on 1–2 ha of land, around 70 percent of whom are living below the poverty threshold. The association of land area with the socioeconomic status of Queen pineapple farmers can imply two things: to maximize productivity, the land area must be expanded, or farmers must adopt innovative production practices.

The cross-tabulation results (Table 5) reflect the socioeconomic factors of the farmers relative to the poverty threshold. It can be noted that the poor farmers living in poverty are those with larger family household sizes using a cultivation area of 1 hectare or less for pineapple and finished elementary or high school. The number of household members affects the overall budget for personal and on-farm needs. To live above the poverty level based on existing income, households must have a maximum of only four members. Meanwhile, if using traditional practice, the pineapple cultivation area must be at least 1.5 ha to generate income above the poverty line. Most farmers who finished elementary or high school live below the poverty line and earn less than the basic food requirements. The data implies that farmers require capability training to improve practical knowledge that can help them increase their income.

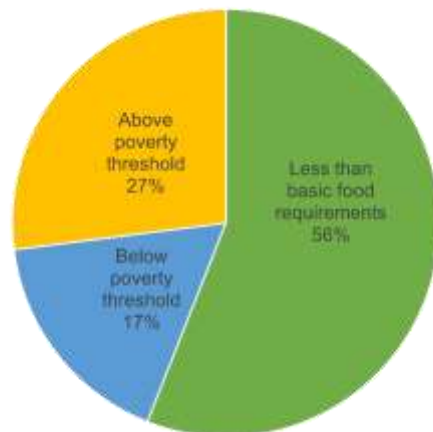
Table 5: Cross-Tabulation of Socioeconomic Factors of the Respondents Relative to Poverty Threshold

Variable	Less than Basic Food Requirements	Less than Poverty Threshold	More than Poverty Threshold
Average household size (persons)	5.5	3.9	3.8
Average pineapple area (ha)	1.07	0.77	1.48
Educational status			
Elementary	17		4
High school	11	8	8
College	8	2	4
Total	36	10	16

The poverty threshold is based on the amount for a family of five members. To calculate the standard amount for families with fewer or more household members, this standard amount was divided by five to calculate the amount per household

member. Thus, the individual poverty threshold in the Philippines in 2022 was PHP 2,406 per month or PHP 28,872 per year, while the individual food requirement is PHP 1,675 per month or PHP 20,110 per year. Multiplying this amount by the number of household members calculated the estimated income per household. As a result of this estimation, 36 (56%) pineapple farmers earned less than the basic food requirements, 11 (17%) earned less than the poverty threshold, and 17 (27%) earned more than the poverty threshold.

Figure 2: Economic Status of Queen Pineapple Farmers based on the Poverty Threshold



4.3. Traditional Production Practices

Pineapple cultivation is a laborious and long-term undertaking. Activities include land preparation, hauling/preparation of planting materials, planting, weed control through herbicide and manual weeding, fertilizer application, fruit induction, harvesting, and marketing. Production practices vary depending on the farmers' exposure to traditional practices, training, and ability to adopt recommended technologies.

Pineapple is considered a drought-tolerant plant. Land preparation is best done from January to September to avoid the heavy rains from October to December. Most farmers use manual preparation by clearing the area of grasses and weeds. If a farmer uses a tractor, plowing the land to eliminate debris follows the clearing activity. Plowing is the initial breaking of the soil, usually in large clods. After two weeks, harrowing will be done to allow the weeds to decompose. Harrowing breaks soil clods, incorporates plant materials, and levels the soil. If the area is idle for a long time and the weeds are thick, the land is harrowed one month after plowing. The most common practice is manual land preparation, clearing all the bushes and weeds using bolo and planting pineapple without tillage.

Asexually-propagated planting materials are the crown, slip, and sucker. Farmers in Camarines Norte mostly use suckers because it takes about 16–18 months from planting to harvest, compared to suckers from the crown, which takes 22–24 months until harvest (Philippine Recommends, 2008). Using non-uniform planting materials can bring about early or late plant maturity, resulting in a high percentage of small fruits and low economic performance. Cooperatives and individual farmers sell uniform-sized suckers at PHP 1.5–3, while uneven-sized suckers are sold at PHP 1 per piece.

The fertilizer application for Queen pineapple is based chiefly on traditional practices or the recommendations of fellow farmers. The most common types of fertilizers used are complete (14-14-14) and urea (46-0-0) at four bags each per hectare (Table 6). Pineapple planting is done based on the farmer's preference regarding plant spacing, open or intercropped areas, alleyways for harvesting, and walking trails for humans and carabaos. Farmers often used the single row at 60 × 30 centimeters (cm) or 100 × 30 cm as the estimated distance between plants.

Weed control can be done manually or by spraying herbicides. Most farmer respondents control weeds using herbicides, and only eight practiced manual weeding. Farmer's application of herbicides varies depending on their budget. Some apply herbicide every three months after planting or at three and seven months after planting. Manual weeding is done as the need arises. The quality and weight of pineapple fruit highly depend on the amount of fertilizer and the application timing.

For soil analysis, extension workers conduct orientation on collecting soil samples and submitting these to the DA Regional Field Office 5 soil laboratory for analysis. Farmers may also refer to the pineapple compendium book distributed through the municipal agriculture offices to pineapple farmers. Soil samples and the soil analysis report may also be submitted to the local municipal agriculture office so that farmers do not need to travel to the regional office. Plants applied with fertilizer recommendation based on soil analysis had 14 percent increased fruit weight and a moderate sweetness of 16 Brix compared to farmers' practice and recommended application for pineapple without soil analysis (Campita and Dipasupil 2020). Hence, if capital is available for the additional cost of fertilizer and labor, applying fertilizer based on the soil analysis result is

recommended. However, despite extension efforts, only some farmers submitted samples or followed the recommended fertilizer application rate. Instead, most used their fellow farmers' recommendations in applying fertilizer.

Table 6. Traditional Production Practices of Queen Pineapple Farmers

Activity	Sample Period	Practice	Problem
Land preparation	Early May	Manual clearing of weeds	Plants are prone to fungal diseases due to plant and weed residue in the soil.
Preparation of planting materials	Early May	Hauling of suckers/sun-drying	Planting all suckers without sorting and eliminating small sizes results in the non-uniform size of fruits.
Planting	Early May	Single spacing based on estimates, usually 100 × 30 cm	Lower number of plants and fruits
Weed control using herbicide	3 months after planting	Herbicide application using a sprayer	Plants compete with weeds while establishing roots, which hinders optimum growth.
Manual weeding	Every 2 months as needed	Manual pulling of weeds using bolo	Weeds are massive and harder to pull out without tillage
Fertilizer application	3 and 7 months after planting	Complete - 1.6 g/plant Urea – applied at 1.6 g/plant	Insufficient amounts and the wrong type of fertilizer limit plant growth
Flower induction	7 months after planting	Apply per plant	Early induction results in a high percentage of small fruits
Harvesting and marketing	13 months after planting	Trader facilitates harvesting	Low profit share

Fruit induction is done between 7–10 months. After seven months of spending money on inputs, financial pressure gets heavy, and farmers often rush to induce the plants and harvest earlier than their natural fruiting schedule. If untreated, insect pests and diseases can cause severe crop losses on Queen pineapple production.

Proper timing is crucial in harvesting to prolong shelf life. For the local market, fruit is harvestable at maturity index one or when the first line of eyes is tinted with yellow. For export, fruits are harvested still green and just about to turn yellow. Queen pineapple is usually harvested at 4.5–5 months after flower induction. Around PHP 130,000 is needed to finance the cost of one hectare of pineapple production. A net income of around PHP 100,000 per cycle equals a monthly income of around PHP 8,333.

The cost of production of Queen pineapple using traditional practices is composed of variable and fixed costs (Table 7). Variable costs comprised planting materials, fertilizer, herbicides, and ethrel for flower induction. Planting materials (60%) and fertilizer (34%) are the major cost drivers for materials. Farmers use suckers as the planting material and typically space pineapple suckers at 100 × 30 cm. Each sucker occupies 0.3 square meters (m²) per plant, with around 33,333 plants per hectare. A typical pineapple area is planted under coconut at irregular spacing. Using the recommended space for coconuts at 10 × 10 meters (m), with each tree occupying 2 × 2 m², a hectare is ideally planted with 100 coconuts at a total area of 400 m². With the remaining space of 9,600 m², 32,000 pineapples can be planted. However, the population of pineapple varies depending on the available suckers and the farmers' budget.

Most of the farmers practiced zero tillage and manually prepared the land by clearing the area of grasses and weeds. After clearing, the suckers are planted using a bolo. Application of fertilizer was often based on information from fellow farmers and/or personal estimates of the farmer. Since 2022, the price of fertilizer increased by 25–30 percent, and farmers reduced dosage (at about 3.2 g per plant) to two applications at 3 and 7 months after planting.

Herbicide application was made at 2 months and 6 months after planting. Farmers apply 2 kg of herbicide (Karmex or Diuron) per hectare at 130 g per sprayer load with 16 liters of water. Manual weeding is done alternately or depending on the budget. Farmers induced pineapple to flower at 7–9 months after planting. Induction is done by adding 5 milliliters (ml) of ethrel and 250 g of urea to 16 liters of water in a sprayer. The solution is applied to the whorl of the plant. Flowering starts after 30 days,

and fruit can be harvested 4–4.5 months after spraying. Hence, if the farmer induced at 9 months, the harvest will be 13 months after planting.

Table 7: Costs of Pineapple Production for a 1-Ha Farm Using Traditional Practices

Item	Quantity	Unit	Price/Unit	Total (PHP)
Variable cost				120,421.93
Materials				70,050.00
Suckers used	30,000	piece	1.50	45,000.00
Fertilizer		bag		21,000.00
Complete	4	bag	2,700	10,800.00
Urea	4	bag	2,550	10,200.00
Herbicide	4	kg	850	3,400.00
Leadthrel	1	liter	650	650.00
Labor				40,289.20
Land preparation	5	man-days	500	2,500.00
Planting	30,000	piece	0.50	15,000.00
Weeding	15	man-days	500	7,500.00
Fertilizer application	6	man-days	500	3,000.00
Herbicide application	4	man-days	500	2,000.00
Transport from farm to road	25,723	piece	0.40	10,289.20
Interest on variable cost*	0.087	14 months		10,082.73
Fixed Cost				8,722.00
Depreciation on Bolo	4	piece	233	932.00
Depreciation on pail	2	piece	117	234.00
Depreciation on Sprayer	2	piece	778	1,556.00
Land Rental	1	ha/cycle	6,000	6,000.00
Total Cost				129,143.93

Note: *Prices of fertilizer were adjusted as of December 2022

The primary cost driver in pineapple production are suckers (35%), fertilizer (16%), and labor (31%). The average labor cost increased from PHP 400 to PHP 500 per day after the pandemic due to inflation. Land rental comprised a considerable portion of the fixed cost at PHP 6,000 per hectare. Farmers prefer to use something other than heavy equipment (i.e., tractors) in land preparation. The fixed cost was limited to small farm tools such as pail, bolo, and sprayer.

The revenue of pineapple farming depends on two things: the number of fruits and their price. Pineapple is resilient to typhoons and has only an average mortality rate of 5 percent unless other problems arise, such as insect and pest infestation, although these are uncommon. In traditional practice, farmers connect to the market via an agent or trader; once the agreement is made, the trader facilitates harvesting the pineapple and other marketing activities until the product reaches the market. Hence, the trader also estimates the sizes and their corresponding prices. The farmer can negotiate during this process, but the decisions mainly rely on traders. Pineapple fruits are not sorted but rather priced based on estimates before harvest. Table 8 shows the number of pineapples harvested in one hectare based on size classification and their corresponding price based on the agreement between trader and farmer, which often takes place two weeks before harvest.

Table 8: Revenue of Pineapple Production Using Traditional Practices

Item	Quantity	Unit	Price/Unit	Total (PHP)
Sales				
Large	20,167	piece	9	181,503.00
Medium	5,556	piece	7	38,892.00
Small	1,667	piece	5	8,335.00

Given Free	556	piece	5	2,780.00
Self-consumption	556	piece	5	2,780.00
Gross income	28,502	piece	-	234,290.00
Net income				100,799.40
Net income per piece				3.54
Added value				156,837.00

4.4. Innovative Production for Pineapple

Innovative production was also analyzed (Table 9). It involved using a tractor for harrowing and plowing, double row plant spacing, fertilizer application based on soil analysis, application of pre-emergence herbicide, and induction of plants at 10 months. The innovative production innovations mentioned here are not new scientific breakthroughs but rather a package of technologies that are already there but need to be used or adopted by most farmers.

Land preparation using a tractor is recommended but not traditionally practiced. In some areas, it may be impossible to mechanize land preparation due to slope and hilly terrain, but there are also areas where it can be done. The tractor is recommended for conducting one-time plowing to break huge chunks of soil and remove weeds. Harrowing twice is recommended to break the soil further into arable land and mix the weeds into the soil for faster decomposition. There should be a two-week break between plowing and harrowing to allow the weeds to decompose. Suckers should be exposed to sunlight to prevent fungal diseases. Suckers with symptoms of diseases or are short and dry should be removed. The site can be laid out using a bamboo stick, plastic straw, tape measure, and bolo.

Table 9: Recommended Production Innovations for Pineapple Farmers

Activity	Period	Practice	Merit
Land preparation	Early to the middle of May	Use a tractor for one-time plowing and two times for harrowing	Improve soil medium to increase yield
Preparation of planting materials	Early to the middle of May	Hauling, sun-drying, and sorting of suckers	Quality planting materials produce bigger fruits
Planting	Middle of May	Use double row spacing at 100×50×30 cm	Increased number of plants
Weed control using herbicides	10 days after planting and 6 and 9 months after planting	Herbicide application using a sprayer	Pre-emergence application minimizes weed competition during plant establishment
Manual weeding	Every 2 months or as needed	Spot weeding	Spot weeding as the need arises after the chemical spray is more economical.
Fertilizer application	1 and 7 months after planting	Complete at 2.85 g/plant	Application of the correct dosage of fertilizer is correlated to an increase in fruit size.
	3, 5, and 7 months after planting	Urea - at 1 g/plant	
	1 and 7 months after planting	Muriate of potash At 2.15 g/plant	
	4 and 10 months after planting	Amotash at 3.2 g/plant	
Flower induction	10 months after planting	apply per plant at 10 MAP	Ensure uniform ripening
Harvesting	14 months after planting	Harvest by 4–6 laborers	Same as traditional

Marketing	14 months after planting	Multiple channels
-----------	--------------------------	-------------------

Recommended spacing is a double row at 100 × 50 × 30 cm. To get the number of planting materials needed, get the length by dividing 10,000 cm (100 m²) by 30 cm to come up with the 333.3 number of hills. Add 100 cm and 50 cm for the width and divide it by 2 to get 75 cm. Then, get the width by dividing 10,000 cm by 75 cm to get the value of 133.33 hills. Then, multiply the value of length and width to get the total number of plants of around 44,443. Allotting 400 m² for coconut, the remaining space of 9,600 m² can be planted with 40,900 pineapples.

Table 10: Costs of Pineapple Production Using Innovative Production

Item	Quantity	Unit	Price/Unit	Total (PHP)
Variable Cost				235,132.31
Materials				111,900.00
Suckers used	40,000	piece	1.5	66,600.00
Fertilizer				34,200.00
Complete	5	bag	2,700	13,500.00
Urea	2	bag	2,550	5,100.00
Muriate of potash	3	bag	2,450	7,350.00
Amotash	5	bag	1,650	8,250.00
Leadthrel	1	liter	800	800.00
Herbicide (diuron)	8	kg	850	6,800.00
Pest control (Iorsban)	1	liter	950	950.00
Face mask	2	set	25	50.00
Boots	3	pairs	500	1,500.00
Gloves	20	piece	50	1,000.00
Labor				80,500.00
Clearing	20	man-day	500	10,000.00
Land preparation				
Tractor rental	1	day	2,000	2,000.00
Operator	1	man-day	500	500.00
Hauling of planting materials	40,000	piece	0.15	6,000.00
Lay outting	5	man-day	500	2,500.00
Planting	40,000	piece	0.50	20,000.00
Weeding	16	man-day	500	8,000.00
Fertilizer application	12	man-day	400	4,800.00
Herbicide application	4	man-day	500	2,000.00
Harvesting	38,000	piece	0.25	9,500.00
Transport from farm to road	38,000	piece	0.40	15,200.00
*Interest on variable cost	0.108	14 months		21,366.15
Fixed cost				8,534.00
Depreciation on bolo	4	piece	200	800.00
Depreciation on pail	4	piece	100	400.00
Depreciation on sprayer	2	piece	667	1,334.00
Land rental	1	ha/cycle	6000.00	6,000.00
Total cost				243,666.31

*Prices of fertilizer were adjusted as of December 2022

Herbicide application can be done four times: 10 days before planting and 3, 6, and 9 months after planting. Manual weeding is done as the need arises. The frequency of weeding proved to control the competition of weeds for nutrients. Fruit induction can be done 10 months after planting, so harvest is at 14 months. The average labor cost per day is PHP 500. Land rental comprised a considerable portion of the fixed cost at PHP 6,000 per hectare.

The advantages of innovative production also come at a cost. Added planting materials, other agriculture inputs, and labor costs increased the production capital requirements to around PHP 250,000.

For fertilizer application, soil sample analysis is recommended. Compared to traditional practice, recommended fertilizer was applied at 1, 3, 4, 5, 7, and 10 months after planting, depending on the type and volume per plant. Similar to traditional practice, the primary cost drivers in applying farm innovations were planting materials (27%), fertilizer (14%), and labor costs (33%).

Applying the recommended innovations enhances the overall harvest quality in terms of size. However, the difference in the degree of sweetness is negligible in the domestic market. On the positive side, good-sized pineapples can be sold to different channels and still command a reasonable price. Traders buy pineapple at a higher price when most of the pineapples are premium in size (Table 11). Pineapples can also be sold at the local trading center or in the cooperative for processing.

Table 11: Revenue of Pineapple Production Using Innovative Production

Sales	Quantity	Unit	Price/Unit	Total (PHP)
Extra large	14,198	piece	15	212,972.97
Large	17,568	piece	13	228,378.38
Medium	4,775	piece	9	42,972.97
Small	1,459	piece	6	8,756.76
Gross income	38,000			493,081.08
Net income				248,080.77
Net income per piece				6.53
Added value				350,987.33

5. PRODUCTIVITY ANALYSIS

Productivity depends on using resources such as land, labor, and capital. The efficient use of these resources is correlated to an increase in productivity. The higher the efficiency, the higher the productivity. In this paper, efficiency is measured by the income from the land for the period used, labor cost per day, and return on capital.

For traditional practice, the labor required for one cycle is 81 man-days and would entail a capital of around PHP 133,422. The combination of these two serves as the input. To measure the output per year, net income is multiplied by the number of months allotted from planting to harvest. Since traditional practices induce plants to flower one month earlier than recommended, the production cycle period is only 13 months from a rental value of PHP 6,000. Land productivity was measured at around PHP 95,000. Labor is valued at PHP 1,893 per day, higher than the daily average wage from an off-farm job. The capital return is 1.14, which means that for every PHP 1 input, there is a return of PHP 1.14 output.

Table 12: Productivity of Traditional and Innovative Production Systems

Production Practice	Traditional	Innovative Production	Difference
Labor (days)	80.58	161.00	80.42
Capital (PHP)	133,422	248,532	115,110
Productivity			
Land (PHP)	95,004.99	213,784.09	118,779.10
Labor (PHP/day)	1,893	2,306	412.34
Capital (PHP)	1.14	1.49	0.35

Using new innovative production in pineapple farming improved productivity. However, the labor and capital input required per hectare of production systems that apply innovations is almost double that of traditional production. Although innovative production needs more labor and capital, it brings higher productivity than traditional production. The land productivity for innovative production for 14 months is more than double the traditional land productivity level at 13 months. Hence, the issue is not land availability but maximizing the productivity of land used for a specific period. However, improvement in labor

productivity may not be significant because innovative production needs more labor input per area. That is, innovative production is a labor-intensive practice. However, labor productivity is satisfactory where farmers' time is paid off more than the average wages they would have from an off-farm job, whether practicing traditional or innovative production. In terms of capital, an added value of PHP 0.35 is good enough for short-term investments or one cycle of pineapple production.

Estimated Income by Production System - Income analysis (Table 13) showed that in traditional pineapple farming, income increases by growing other crops and livestock. Meanwhile, income from planting pineapple under coconut is higher in farms that apply innovative production, even without other crops. This implies that land productivity can be maximized if the land is utilized for intercropping (coconut + pineapple) by applying innovative production for pineapple.

Farmers' decision on the production system to practice, whether single-crop, multi-crop, or integrated, depends on their land area and land tenure status. In the study area, most of the farmers previously planted coconuts before mixing pineapple and other crops like rice and lowland vegetables. Expanding one crop at the expense of another may depend on profitability. Hence, if the farmer observes that one crop generates more income, the rest of the land may be allotted to that crop.

Table 13: Productivity of Traditional and Innovative Production Systems for Pineapple by Cropping System

Production System	Single-crop: Pineapple under Coconut (PHP)	Multi-crop: Pineapple + Coconut + Rice (PHP)	Integrated: Pineapple + Coconut + Rice + Swine (PHP)
Traditional			
Cost	115,633	138,338	193,625
Pineapple	115,633	57,698	57,698
Coconut		13,888	13,888
Rice		66,752	66,752
Swine			55,287
Net Income	91,965	108,337	81,394
Pineapple	91,965	45,982	31,270
Coconut		45,632	11,408
Rice		16,723	16,723
Swine			21,993
Innovative Production			
Cost	202,173	181,727	203,720
Pineapple	202,173	101,087	101,087
Coconut		13,888	13,888
Rice		66,752	66,752
Swine			21,993
Income	206,943	165,826	132,217
Pineapple	206,943	103,472	82,093
Coconut		45,632	11,408
Rice		16,723	16,723
Swine			21,993

To increase income, pineapple farmers may adopt innovative production and allot more area for pineapple cultivation over other crops. The survey showed that from a total area of 3 ha, only 1.6 ha or less is allotted to pineapple cultivation. This is because traditional pineapple farming practices are profitable when combined with other crops. Meanwhile, applying innovative production showed that farmers are better off planting pineapple than other crops, provided the technology package is adopted. Farmers can apply for production loans to finance their financial requirements in pineapple production and rent land for one cycle. Hence, the question of adoption also relies on the availability of credit programs and technical know-how of the farmers, which depends on farmers' awareness level of technologies and/or their decision to adopt the package of technologies.

Estimated Required Production Area - The pineapple cultivation area required for farmers to earn an income above the poverty threshold if they cultivate only pineapple in both traditional production and innovative production is shown in Table 14. This table is calculated based on a standard family size of five members. If the farmer cultivates by traditional production, 1.16 ha is needed to earn an income that meets the basic food requirements and 1.67 ha to earn an income that meets the poverty threshold or above.

Table 14: Estimated Area Required for Pineapple Production

Parameter	Traditional Production	Innovative Production
Net annual income per hectare (PHP)	86,399	212,640
Required area for the basic food requirement (ha)	1.16	0.47
Required area for the Philippine poverty threshold (ha)	1.67	0.68

Note: Basic food requirement and poverty line are calculated for five family members

The average pineapple cultivation area of surveyed farmers was 1.2 ha. Thus, it is clearly difficult for a farmer who cultivates the size of an average pineapple area to earn an income above the basic food requirements using traditional production. Only 16 of the respondent farmers cultivated an area large enough to earn income more than the poverty threshold using traditional production. On the other hand, if a farmer adopts innovative production, he needs only 0.47 ha of pineapple cultivation to earn an income that meets the basic food requirements and 0.68 ha to earn an income that meets the poverty threshold. For most pineapple farmers to escape poverty, innovative production must be adopted.

5. CONCLUSION AND IMPLICATIONS

Socioeconomic characteristics influence how farmers live and make decisions on-farm and off-farm. These decisions translate to farming practices and the adoption of innovations. Higher education, smaller family size, and larger land area mean higher chances of generating income above the poverty threshold. However, around 73 percent of Queen pineapple farmers lived below the poverty threshold, and only 27 percent had better economic conditions. Most poor farmers had low educational attainment, large household size, and less than a hectare of pineapple production area.

Queen pineapple farmers have a moderately high education level and are primarily in middle age. Hence, capacity-building training on production innovations can help farmers understand the technology adoption process. Because most farmers are at an active age, it is also an excellent opportunity to implement production innovations since it involves additional labor, especially in broader cultivation areas.

Cooperative membership must be improved, indicating the need for a campaign on the benefits of cooperatives. Since most respondents are experienced farmers, the challenge is encouraging changes in their production practices by adopting innovations. While the average land area is adequate, it must be maximized to improve farmers' income.

Innovative production increased productivity in terms of land, labor, and capital. However, not all farmers have the capacity to adopt innovative production practices due to limiting factors, such as financial capital, tenurial status, and technical know-how. Innovative production is recommended for those who own the lands or tenants with the authority to decide on crop prioritization and with an average area of at least 0.5–1 hectare allotted to pineapple. To get out of poverty using their traditional practice, a farmer must plant 1.6 ha, which is more than the average farm size. If they adopted innovative production, they would only need to plant 0.68 ha, which is far below the average farm size.

The income level of the traditional pineapple production practice is higher in farms that apply multi-cropping. This indicates that income from pineapple using traditional practices is insufficient, and other crops are needed to increase farm income. However, it can be noted that using production innovations, single-cropping generated an income higher than multi- and integrated farming systems. This implies that production innovations can generate sufficient income without combining it with other crops or growing animals. This way, farmers can consolidate farming capital into pineapple production, generating higher net income than other crops.

Thus, expanding production areas through mixed or integrated cropping or adopting production innovations for single-cropping is recommended. In addition, farmers must regularly seek government assistance/support regarding new technologies and capacity training. The participation and support of private investors in the pineapple industry's value chain should also be encouraged. Finally, extension strategies should be adopted. These include (1) establishing demo/model farms to encourage farmers to adopt innovations, (2) conducting season-long training to improve the skills of farmers, (3) producing a techno guide for cultivating pineapple in the local language, and (4) providing credit programs with low-interest/staggered loan release based on farm activities.

ACKNOWLEDGEMENTS

The authors would like to acknowledge Nagoya University and Nagoya University-Asian Satellite Campus Institute in Japan and the Philippines for scholarship funding and administrative support, the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) for the research fund, and the Department of Agriculture Regional Field Office No. 5 for logistics and administrative support.

REFERENCES

- Adekoya, O.A., (2014). Analysis of farm households poverty status in Ogun States, Nigeria. *Asian Economic and Financial Review*, 4(3), 325–340.
- Balito, L.P., (2010). Philippine Pineapple Industry. *Seventh International Pineapple Symposium*, 902, 53–62.
- Balogun, O, S.A. Adewuyi, and O.R. Disu., (2018). Profitability and technical efficiency of pineapple production in Ogun State, Nigeria. *International Journal of Fruit Science*, 18(1), 1–9.
- Bartholomew, D. P., Paull, R.E, and Rohrbach, K.G. eds., (2003). *The Pineapple: Botany, Production and Uses*. Honolulu, USA: CABI Publishing and University of Hawaii. eISBN: 978-1-78639-331-9.
- Campita, M.C., (2021). *A Compendium on Queen Pineapple Technology Industry and Technology Milestones*. Pili, Camarines Sur: Department of Agriculture, Regional Field Office 5. ISBN 978-621-95648-2-3.
- CGIAR (Consortium of International Agricultural Research Centers), (2002). Multiple cropping could help feed the world. <https://www.cgiar.org/news-events/news/multiple-cropping-could-help-feed-the-world/>
- Dimas, B., Lyne, M., and Bailey, A., (2022). Identifying and addressing institutional problems constraining the financial performance of rice cooperatives in the Philippines. *Asian Journal of Agriculture and Rural Development*, 12(3), 148–156.
- Esiobu, B.S. and Onubuogo G.C., (2014). Socioeconomic analysis of frozen fish marketing in owerri municipal council area, Imo State Nigeria: an economic model approach. *Scholarly Journal of Agricultural Science*, 3(7), 186–199.
- Hossain, M.F., (2016). World pineapple production: an overview. *African Journal of Food, Agriculture, Nutrition and Development*, 16(4), 11444–11456.
- IFAD (International Fund for Agricultural Development), (2022). Philippines. <https://www.ifad.org/en/web/operations/w/country/philippines>
- Lubis, R., Daryanto, A., Tambunan, M. and Purwati, H., (2014). Technical, allocative, and economic efficiency of pineapple production in West Java Province, Indonesia: A DEA Approach. *IOSR Journal of Agriculture and Veterinary Science*, 7(6), 18–23.
- Mapa, CDS., (2022). The proportion of poor Filipinos. Philippine Statistics Authority. <https://psa.gov.ph/statistics/poverty/node/167972>
- Philippine National Standard., (2004). Fresh Fruit Pineapple Specification. PNS/BAFPS 09 ICS 65.020.20. <http://spsissuances.da.gov.ph/attachments/article/793/PNS-BAFPS%2009-2004.pdf>
- Reinhardt, A., and Rodriguez, L.C.V., (2009). Industrial processing of pineapple – trends and perspective. *Acta Horticulturae*, 822, 323–328.
- Ryschawy, J, Moraine, M., Péquignot, M. and Martin, G., (2019). Trade-offs among individual and collective performances related to crop–livestock integration among farms: a case study in Southwestern France. *Organic Agriculture*, 9, 399–416. <https://doi.org/10.1007/s13165-018-0237-7>
- Stark, Fabien, Eliel González-García, Livia Navegantes, Taymer Miranda, René Pocard-Chapuis, Harry Archimède, and Charles-Henri Moulin. (2018). Crop-livestock integration determines the agroecological performance of mixed farming systems in Latino-Caribbean Farms. *Agronomy for Sustainable Development*, 38, 1–11. <https://doi.org/10.1007/s13593-017-0479-x>
- Statista., (2021). The Philippines – Statistics and Facts. <https://www.statista.com/topics/3914/the-philippines/#topicOverview>
- Tewodros M., Mesfin, S., Getachew, W., Ashenafi, A., and Neim, S., (2018). effect of inorganic n and p fertilizers on fruit yield and yield components of pineapple (*Ananas comosus* Merr L. Var. Smooth Cayenne) at Jimma, Southwest Ethiopia. *Agrotechnology*, 7, 178. <http://doi.org/10.4172/2168-9881.1000178>
- Thomas, G.V., Krishnakumar, V., Dhanapal, R., and Reddy, D.V.S., (2018). Agro-management Practices for Sustainable Coconut Production. In *The Coconut Palm (Cocos nucifera L.) Research and Development Perspectives* (pp. 227–322) edited by K.U.K. Nampoothiri, V. Krishnakumar, P.K. Thampan, and M. Achuthan Nair. Singapore: Springer, 2019.
- Uematsu, H., and Mishra, A., (2010). Can Education Be a Barrier to Technology Adoption? Selected Paper prepared for presentation at the Agricultural & Applied Economics Association 2010 AAEA, CAES, & WAEA Joint Annual Meeting, Denver, Colorado, 25–27, 2010.
- UNIDO (United Nations Industrial Development Organization), (2020). Annual Report 2020. UNIDO.
- Verma, O.P., Roychowdhury, S., Rautaray, S.K., Raychaudhuri M., Antony, E., Ambast, S.K., and Brahmanand P.S., (2020). Fitting Pineapple (*Ananas comosus* L.) with Rainfed Rice in the Cropping Sequence in Eastern India. *National Academy Science Letters*, 43, 121–124.
- Weir, S., (1999). *The Effects of Education on Farmer Productivity in Rural Ethiopia*. Oxford, UK: Center for the Study of African Economies, Department of Economics, University of Oxford.