E-ISSN 2619-9254

NUMBER 96 • JUNE 2024

ISTANBUL MANAGEMENT JOURNAL

İSTANBUL ÜNİVERSİTESİ YAYINEVİ

İSTANBUL UNIVERSITY PRESS

Indexing and Abstracting

TÜBİTAK-ULAKBİM TR Index
DOAJ
RePEc IDEAS
RePEc EconPapers
EBSCO Business Source Elite
EBSCO Business Source Ultimate
EBSCO Central & Eastern European Academic Source
ProQuest Central
SOBİAD

Owner
Prof. Dr. Ali HEPŞEN
Istanbul University, Faculty of Business Administration, Istanbul, Turkiye

Responsible Manager
Prof. Dr. Ali HEPŞEN
Istanbul University, Faculty of Business Administration, Istanbul, Turkiye

Correspondence Address
Istanbul University, Faculty of Business Administration, Institute of Business Economics,
Avcılar, İstanbul, Turkiye
Phone : +90 (212) 440 00 00
E-mail: imj@istanbul.edu.tr
https://iupress.istanbul.edu.tr/en/journal/imj/home
https://dergipark.org.tr/tr/pub/imj

Publisher
İstanbul University Press
İstanbul University Central Campus,
34452 Beyazıt, Fatih, Istanbul, Turkiye
Phone: +90 (212) 440 00 00

The publication language of the journal is English.

This is a scholarly, international, peer-reviewed and open-access journal published biannually in June and December.

Publication Type: Periodical

İSTANBUL UNIVERSITY PRESS

EDITORIAL MANAGEMENT BOARD

İSTANBUL UNIVERSITY PRESS

EDITORIAL BOARD

İSTANBUL UNIVERSITY PRESS

CONTENTS

RESEARCH ARTICLES

Istanbul Management Journal
IMJ 96, 2024, 1–16
DOI: 10.26650/imj.2024.96.1361480

RESEARCH ARTICLE

A Human-Centered Digital Transformation: A Bibliometric Analysis of Society 5.0 and Industry 5.0

Abdullah Zübeyr Akman[1], Meral Erdirençelebi[2]

[1]Dr. Necmettin Erbakan University, Ereğli Kemal Akman Vocational School, Department of Finance and Banking, Konya, Türkiye
[2]Assoc. Prof. Necmettin Erbakan University, Faculty of Applied Sciences, Department of Banking, Konya, Türkiye

ABSTRACT
The concepts of Society 5.0 (S5.0) and Industry 5.0 (I5.0) have emerged in recent years as part of the digital transformation landscape, influenced by the advent of Industry 4.0. S5.0 represents a smart society approach rooted in digital transformation, originating in Japan, while I5.0 stems from European studies. This study explores the evolving research landscape surrounding S5.0 and I5.0 by conducting a bibliometric analysis using the Web of Science database, thereby illuminating potential avenues for future studies. The analysis includes studies in which both concepts are keywords, revealing an increasing trend in awareness, scholarly output, and citation counts over time. Notably, Japan and China emerged as prominent contributors, with Nahavandi S. (2019) identified as the most cited author. Engineering emerges as the researched field in connection with these concepts. Furthermore, it becomes evident that S5.0 and I5.0 are closely linked to terms such as artificial intelligence, digital transformation, Industry 4.0, internet of things, sustainability, machine learning, and Economy 5.0/Education 5.0. It is anticipated that these concepts will assume a more comprehensive role in the business landscape, driven by technological advancements and social developments in the coming years.

Keywords: Society 5.0, Industry 5.0, Bibliometric Analysis, VOSviewer, R Studio
JEL Code: M10, M15, O32

Introduction

Since the inception of the first industrial revolution, technological advancements have been abundant, shaping the path of both individuals and societies. Notably, the advent of the Industry 4.0 revolution has ushered in new opportunities, particularly in manufacturing and productivity. However, criticisms have emerged regarding Industry 4.0's exclusive focus on digital technologies within the sphere of manufacturing and productivity (Ghobakhloo, 2020). In response, a recent assertion advocated the use of digital technologies for the benefit of humanity (Harayama, 2018).

The focal point of discussion in this study is Society 5.0 (S5.0). S5.0 is a conceptual framework aimed at harnessing digital technologies to benefit across a spectrum of areas ranging from education and healthcare to economy and governmental institutions, thereby facilitating the emergence of a highly sophisticated society structure. Rapid and substantial advancements in communication and information technologies have created new concepts. Innovations such as artificial intelligence (AI), the Internet of Things (IoT), robotics, cloud computing, and augmented reality have profoundly impacted both social structures and business processes. Consequently, a new social structure, referred to as S5.0 or the "super-smart society," is gradually unfolding in the 21st century. This framework is rooted in the evolutionary path of preceding society models, which are denoted as Society 1.0 through 4.0. Society 1.0 refers to a hunter-gatherer society, Society 2.0 corresponds to an agricultural society, Society 3.0 represents the industrial era, and Society 4.0 signifies the information society. Each societal iteration emerges due to innovations and transformations within the previous social structure. Society 4.0, often referred to as the information society, is built on interconnected computer networks, facilitating global information accessibility. This interconnectedness has significantly eased worldwide information access, underscoring the paramount of "knowledge and its dissemination" within this social paradigm. The genesis of S5.0 is anchored in the endeavor to enhance human welfare and expand the realm of comfort in human life. The effort to establish a balance between the virtual (digital) domain and the physical world, coupled with the quest for resolving challenges faced by

Corresponding Author: Abdullah Zübeyr Akman **E-mail:** abdullahzubeyrakman@gmail.com
Submitted: 16.09.2023 • **Revision Requested:** 27.10.2023 • **Last Revision Received:** 11.12.2023 • **Accepted:** 13.03.2024

societies with aging populations, particularly prominent in Japan, has expedited the formation of this societal structure (Akman, 2023).

The concept of Industry 5.0 (I5.0) has been divided into sustainable, resilient, and human-centric categories by the European Commission. I5.0 represents a forward-thinking paradigm for the future of the industry, aimed at fostering a human-centric, sustainable, and resilient manufacturing and productivity system (Breque et al., 2021). It offers a visionary perspective on the evolving path of the industry landscape. The I5.0 framework promotes the agility and adaptability of systems through the incorporation of flexible and adaptive technologies (Huang et al., 2022). The concept of S5.0 or I5.0 stands as one whose merits and demerits are yet to be discerned, owing to its novelty as a social construct. In fact, initial academic studies reveal a tendency to use these terms interchangeably. The intersection of interrelatedness of both structures emerging from digital transformation has only recently begun to take shape. Consequently, this study has been undertaken to examine recent research in the literature concerning S5.0 and I5.0.

Since the concepts of S5.0 and I5.0 remain unclear, this article addresses the following questions:

- What constitutes S5.0?
- What defines I5.0?
- What differentiates S5.0 from I5.0?
- What underlying principles do S5.0 and I5.0 share?

To achieve this objective, an analysis of academic studies concerning S5.0 and I5.0 was conducted using the Web of Science (WoS) database, employing bibliometric analysis techniques.

Theoretical Background

What Constitutes Society 5.0?

The concept of S5.0 has garnered increased attention in recent years across various fields, including management, education, health, and industries such as business, economy, energy, and tourism. This emergence is attributed to various factors, including the COVID-19 pandemic, natural disasters, and the shift from abundant to scarce manufacturing and productivity resources, prompting a redirection of focus from efficiency and effectiveness to sustainability within the corporate sector. Sustainability, underscored by the imperative of a habitable planet, lies at the core of S5.0, offering a framework to address social and environmental challenges (Duman, 2022). Central to the essence of S5.0 is the notion of "technology for society" (Er et al., 2021), signifying a concerted effort to leverage technological advancements for societal benefit.

Unlike historical shifts and renaming of societies occurring over extended periods, contemporary society constructions witness more rapid transformations. Technology, an inherent aspect of social evolution, plays a crucial role in catalyzing social changes through successive industrial revolutions. In the context of aggregate growth and economic development, technology assumes a crucial position, serving as the primary force influencing the path of the corporate world in the current era (Dawson & Andriopoulos, 2009).

S5.0, often referred to as the "super-smart society," encompasses a model in which the impacts of digitalization and AI on social processes are comprehensively evaluated. It embodies a concerted endeavor to achieve the maximum level of triple interaction among humans, machines, and robots, thereby aiming for collective growth and development (Deguchi et al., 2020). This vision of S5.0 delineates a future society characterized by integrating a diverse array of new technologies across all sectors and social activities. It envisions not only economic developments, particularly those aligned with the Sustainable Development Goals outlined by the United Nations but also the provision of solutions to prevailing societal challenges (Keidanren, 2016). In other words, S5.0 entails the pervasive utilization of digital technologies across all areas, such as education, healthcare, and the economy, while prioritizing the common good. Consequently, it emerges as a conceptual framework aimed at creating a super-smart society. Japan, a vanguard of technological innovation, stands as an early proponent and adopter of the philosophy underpinning a super-smart society (Mavrodieva & Shaw, 2020). The Japanese government defines S5.0 as a human-centered society that can balance economic progress with solving social problems using a system that integrates the virtual and physical worlds (Yulianto, 2021).

What Defines Industry 5.0?

I5.0 represents a future-looking industrial concept characterized by human-centered, flexible, and sustainable manufacturing and productivity systems and services, aiming to transcend the limitations posed by Industry 4.0 (Breque et al., 2021; Leng et al., 2022). The European Commission introduced "I5.0: Towards a Sustainable, People-Centered, and Resilient European Industry" on January 4, 2021, following collaborative workshops with stakeholders (Breque et al., 2021). This seminal report advocates for the reevaluation of companies' roles and functions within society, emphasizing three fundamental values for I5.0: human-centeredness, sustainability, and resilience (Xu et al., 2021).

Unlike its predecessor, Industry 4.0, I5.0 places people above automation, prioritizing humanity in its operations (Theorin et al., 2017). With the framework of I5.0, the hierarchical order is distinctly delineated: people take precedence, followed by processes, with technology occupying a subordinate position. This human-centric approach underscores the principle that even the most advanced technologies should not supersede human welfare (Fukuyama, 2018). Notably, I5.0 includes unmanned systems designed to augment human capabilities, collectively referred to as unmanned technologies. Using the foundations laid by Industry 4.0, I5.0 harnesses smart machines to streamline processes and enhance efficiency, thereby optimizing the contributions of skilled employees (Ruiz-De-La-Torre et al., 2022). In contrast to the productivity- and efficiency-centric ethos of Industry 4.0, I5.0 embraces the ideals of "smart" and "sustainability." This shift is evidenced by the adoption of terms such as "smart" and "sustainability" to characterize societal development within I5.0, transcending traditional business paradigms (e.g., smart tourism and agriculture) (Carayannis & Morawska-Jancelewicz, 2022; Mourtzis et al., 2023). Consequently, I5.0 serves as more than a mere industrial evolution; it emerges as a catalyst for societal advancement, epitomizing the ethos of a super-smart society akin to S5.0.

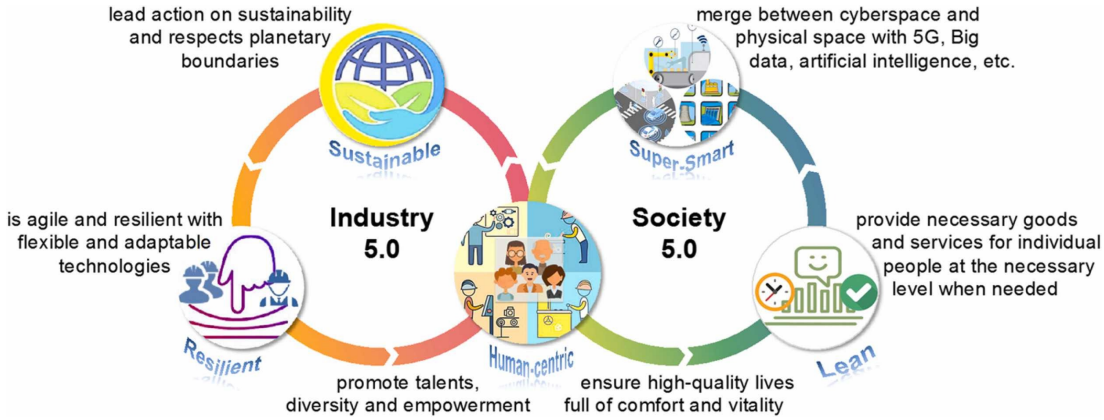

Figure 1. The relationship between I5.0 and S5.0

Source: (Huang, et al. 2022).

As shown in Figure 1, both S5.0 and I5.0 exhibit a strong orientation toward people. In I5.0, for instance, the integration of advanced technology serves to enhance employee skills while actively involving them in business processes, thus placing individuals at the forefront through both internal and external customer-centric approaches. Similarly, S5.0, like its industrial counterparts, revolves around the creation of value, underscoring a shared emphasis on human-centricity (Huang et al., 2022). Moreover, flexibility stands out as a key element in both paradigms. While I5.0. underscores the necessity of flexibility across all business processes, S5.0 advocates for structural adaptability to ensure human comfort and convenience. Furthermore, both I5.0 and S5.0 are profoundly influenced by technological advancements, with innovation serving as the driving force behind their developments (Huang et al., 2022). In addition, ecological sustainability emerges as a prominent focus area for both contracts, reflecting a shared commitment to environmental stewardship.

Given the novelty of these concepts, the literature on these subjects remains relatively limited, predominantly comprising theoretical articles and empirical studies. Below are some examples of studies in the literature addressing these emerging paradigms.

Gladden (2019) adopted an anthropological and posthumanist perspective in their analysis of S5.0, utilizing secondary data. The author delves into the position of S5.0 members and proposes the emergence of two distinct human types: technological and nontechnological. This study elucidates how the formation of human types in S5.0 differs from those observed in the transition from Society 1.0 to 4.0, delineating six distinct categories: "(1) 'natural' biological human beings, (2) artificially augmented human beings, (3) metahuman, (4) Epihuman, (5) parahuman, and (6) nonhuman beings."

Serpa and Ferreira (2019) examined the relationship between S5.0 and sustainable digital innovations within the realm of social processes. Employing document analysis, this study examined relevant studies across various databases, yielding significant insights. Key findings highlight the emergence of significantly new technologies associated with S5.0, the identification of a digital ecosystem, and the elucidation of the intricate relationship between S5.0, sustainability, and innovation, particularly within the context of digital social innovation.

Potočan et al. (2020) sought to elucidate how S5.0 reconciles with Industry 4.0 and proposed a Corporate Social Responsibility (CSR) model aimed at addressing economic and social problems. Innovation emerged as a central theme in their study, with a

focus on using advanced technology for responsible economic growth within the framework of S5.0. This study advocates for the integration of environmental, social, and economic dimensions into CSR models in alignment with the principles of S5.0, aiming to address social issues at the local level.

In a related vein, Eren (2020) explores the concepts of S5.0 and Education 5.0 within the digital world. This study underscores the significance of Education 5.0 in the digital age for both students and teachers, emphasizing the transformative role of technology in the educational sector. Central to the discussion is the vital role of education in nurturing informed and knowledgeable individuals, which is a prerequisite for the realization of S5.0. This study highlights the multifaceted importance of education from various perspectives.

Saracel and Aksoy (2020) offer a comprehensive overview of S5.0, delving into the historical context of industrial revolutions and elucidating the societal evolution leading to S5.0. They underscore the imperative of integrating technology into human life within this framework, highlighting the increasing significance and application scope of areas such as AI, IoT, education, digitalization processes, and the evolving work environment due to technological advancements.

Deguchi et al. (2020) asserted that S5.0 will give rise to cyber-physical areas, emphasizing its character as a data-driven and super-smart society marked by frequent technological developments.

Carayannis et al. (2020) attempted to connect fusion energy with S5.0 and I5.0 within the energy sector, advocating for global research and development initiatives in fusion energy to harness its potential significance on a global scale.

Holroyd (2020) examines the relationship between technological innovation and the super-smart society envisioned by S5.0, particularly focusing on Japan's conceptual background, logic, policies, and programs associated with S5.0. This study underscores the formation of a super-smart society, particularly through national innovation strategies, where technological advancements take center stage.

In his study, Arı (2021) evaluates S5.0 from different perspectives, offering insights into the instruments and potential outcomes integral to its realization. He views S5.0 as an extension of Industry 4.0, portraying it as an approach aimed at enhancing people's quality of life.

Their study is grounded on the Quintuple Helix Model (QHM), a framework designed to describe the collective interaction among universities, government, industry, the environment, and civil society in knowledge creation (Carayannis & Campbell, 2009; Carayannis & Campbell, 2014), Carayannis and Morawska-Jancelewicz (2022) highlight the transformative impact of digitalization on universities. They argue that integrating the principles of S5.0 and I5.0 into university strategies and policies holds the key to maximizing the benefits of digital transformation for both academia and society at large. Furthermore, they emphasize that such integration can engender sustainable policies.

In a similar vein, Grabowska et al. (2022) found a strong link between I5.0 and Industry 4.0, with an increasing number of studies. In addition, the I5.0 concept is closely related to sustainability and unmanned factories. Echoing this perspective, Dautaj and Rossi (2022) delved into the intertwined dynamics of S5.0 and I5.0, prompting a comprehensive examination of 170 articles sourced from the Scopus database. Their bibliometric analysis scrutinizes the differences and similarities between S5.0 and I5.0, shedding light on their interplay and implications.

Meanwhile, Lin and Xie (2023) ascertain in their investigation that digital transformation catalyzes innovation, exerting a pronounced influence on various sections. Notably, their findings reveal that state-owned energy enterprises stand to reap greater benefits from digitalization than their counterparts in other industries. The emergent sub-dimensions of S5.0, derived from extant literature, include key aspects such as sustainability, agility, human-centricity, innovation, social innovation, productivity, and awareness. Similarly, the sub-dimensions of I5.0 revolve around a human-centric perspective, resilience, and sustainability (Akman, 2023). Considering all the studies in the literature, it becomes clear that both S5.0 and I5.0 are human-centric technological transformations, emphasizing that technological advancements should invariably serve the betterment of humanity.

Materials and Methods

Bibliometric analysis stands as a sophisticated quantitative tool that is instrumental in extracting the behavior and dynamics aspects of a knowledge domain, thereby serving as a cornerstone in literature review methodologies (Kapoor et al., 2018). This study sheds light on the research conducted on the concepts of S5.0 and I5.0 while fostering a bibliometric perspective within this scope. To comprehensively depict the evolving trends and potential research avenues within this subject area, bibliometric and network visualization methodologies were deployed to study the relationship between articles and keywords (Marchiori & Franco, 2020). The analysis delved into various dimensions, including the contributions of journals, organizations, and nations, as well as publication dynamics, significant developments in the field of study, prominent scholars and collaborations, and prevailing trends (Us et al., 2023).

Notably, bibliometric analysis offers the distinct advantage of circumventing the subjective biases inherent in traditional literature

reviews (Della et al., 2019). To execute the bibliometric analysis, the bibliometric R package and Visualization of Similarities (VOSviewer) version 1.6.18 software were employed. The process commenced with systematic search, collection, and preprocessing of publications pertinent to the research subject. Subsequently, the collected data underwent rigorous analysis and visualization using a variety of bibliometric techniques. As outlined by van Eck and Waltman (2009), scientometric exploration entailed the creation of visualizations including density, keyword distribution, and clusters.

During the literature review, a structured three-step research approach known as PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) was employed, a methodology also used by esteemed scholars such as Chandra and Walker (2019), Dabić et al. (2020), and Palumbo et al. (2021). These three steps comprise: i) data collection: selecting studies published in reputable scientific journals indexed in the WoS database; ii) data cleaning: meticulously reviewing the titles and abstracts of the selected studies and excluding those not suitable in terms of content; and iii) primary analysis: conducting an in-depth examination of the included studies within the scope of the study objective (Roblek et al., 2021).

For this study, searches within the WoS database were conducted using the keywords "TITLE-ABS-KEY 'S5.0' or 'I5.0'." The search parameters included all scientific subjects, with "all language" selected as the search language, "all" selected as the source type, and "article" specified as the document type. The data obtained within the framework were analyzed using VOSviewer version 1.6.18 software (van Eck & Waltman, 2022) in conjunction with RStudio software (Guleria & Kaur, 2021). VOSviewer provides a variety of intuitive visualizations for evaluating bibliometric maps (Geng et al., 2020), thereby facilitating a clear understanding of the outcomes (Abdollahi et al., 2021). Moreover, the document type was restricted to articles, given their focus on research and statistical applications. Within the article type, both research and review articles were included. The methodological process of this study is shown in Figure 2.

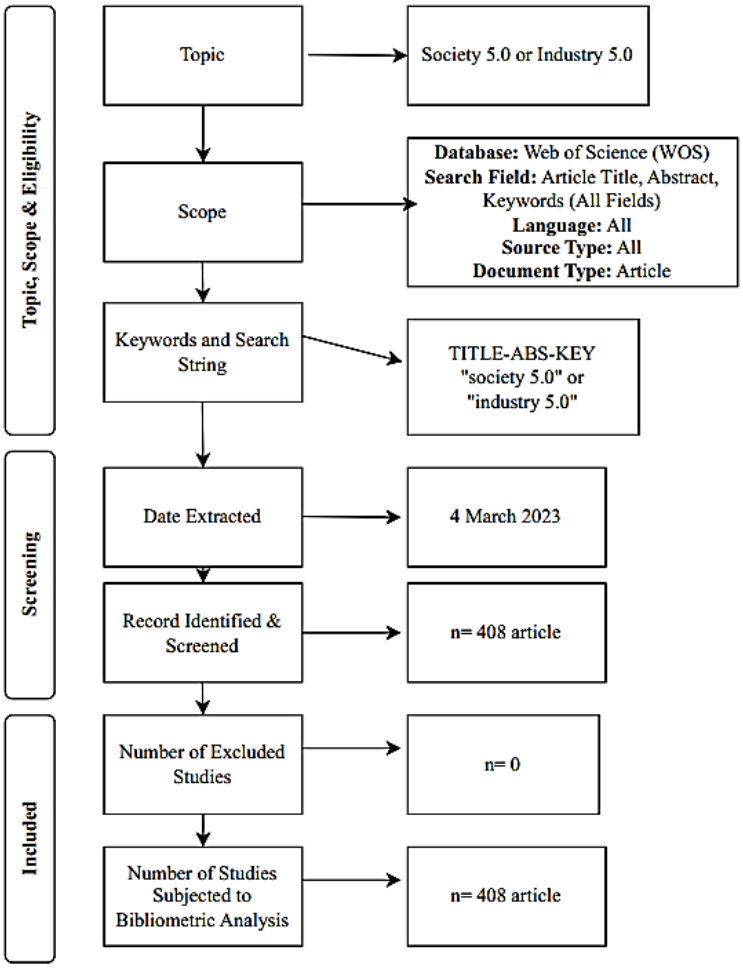

Figure 2. Bibliometric analysis process using the PRISMA method

Source: (Reproduced by the author using Shahidan et al., 2021).

Following the PRISMA method, the methodological framework of the study involved a search process, culminating in the

identification of a total of 408 pertinent studies concerning the concepts of S5.0 and I5.0. Subsequently, the study endeavored to address the following questions within the scope of the study:

Q1: What is the general landscape of S5.0 and I5.0 studies?
Q2: How have S5.0 and I5.0 studies evolved over the years?
Q3: What are the demographics in terms of the number of countries, authors, and citations in S5.0 and I5.0?
Q4: What are the emergent visual representations depicting relationships within the realms of S5.0 and I5.0?
Q5: What projections can be made regarding the future trajectory of relationships and concepts pertaining to S5.0 and I5.0?
Q6: What are the patterns of worldwide collaborations concerning S5.0 and I5.0?
Q7: What is the anticipated trajectory of S5.0 and I5.0 research and which concepts are most salient in this regard?

Findings

The findings and visuals obtained within the study's scope are presented below, adhering to the following sequence: initial numerical graphs precede Rstudio results, followed by visual results obtained from the Vosviewer version 1.6.18 software. The study includes a comprehensive analysis of the most studied year, source, country, document, and author information. In addition, included the most explored field, keyword analysis, co-authorship (author and country), Cluster Analysis of Concepts, Three-field Plot, Countries' Collaboration World Map, and Thematic Map visualizations.

Number of Studies and Citations by Years

A total of 408 studies have been published in the WoS database on the topics of S5.0 and I5.0 in the past seven years. Figure 3 presents the numbers of studies and citation counts by year related to these topics. The first studies on both S5.0 and I5.0 emerged in 2016. Over the years, there has been a consistent increase in the number of studies and citations related to these topics. The number of studies, which was only one in 2016, has shown an upward trend in recent years. In particular, in 2022, 220 studies were conducted, making a significant increase. Similarly, the number of citations has been steadily rising, with 2145 citations realized in 2022. In total, the 408 studies were cited 2633 times, with 2447 citations occurring without self-citation. Additionally, 3926 citations were provided, with 3299 citations given without self-citation. On average, there were 9.62 citations per study. The H-index for this dataset was 30. Overall, these findings indicate a growing interest in and study of both concepts over the years. There has been a notable surge in studies on these concepts, particularly since 2020.

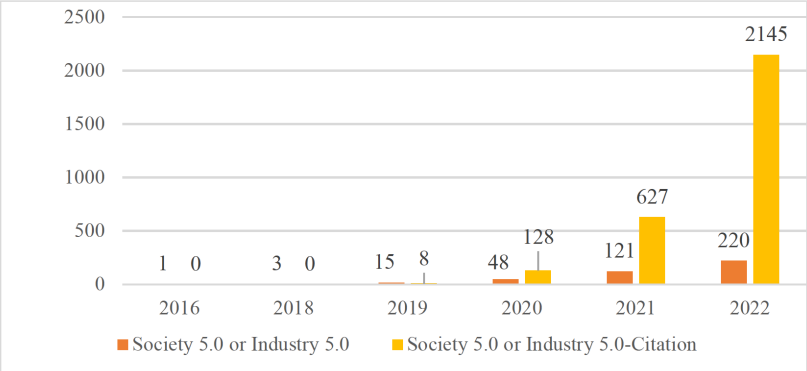

Figure 3. Number of publications and citations by years

Figure 4 shows the most widely cited references for both S5.0 and I5.0. Prominent journals include Sustainability (with 31 articles), Sensors (with 16 articles), IEEE Access (with 14 articles), Applied Sciences-Basel (with 12 articles), and IEEE Transactions on Industrial Informatics (also with 12 articles).

Results by Country

Figure 5 illustrates the number of studies conducted by authors based on their countries, either independently or in collaboration with authors from other countries. Understanding national and international collaborations is crucial for advancing science, as cooperation within the international community plays a crucial role in scientific advancement (Khan et al., 2022). Scientific cooperation stands as one of the most significant elements in facilitating the participation of both developing and developed countries in the research spectrum. In terms of the ranking by Corresponding Author's Countries, Japan secured the top position

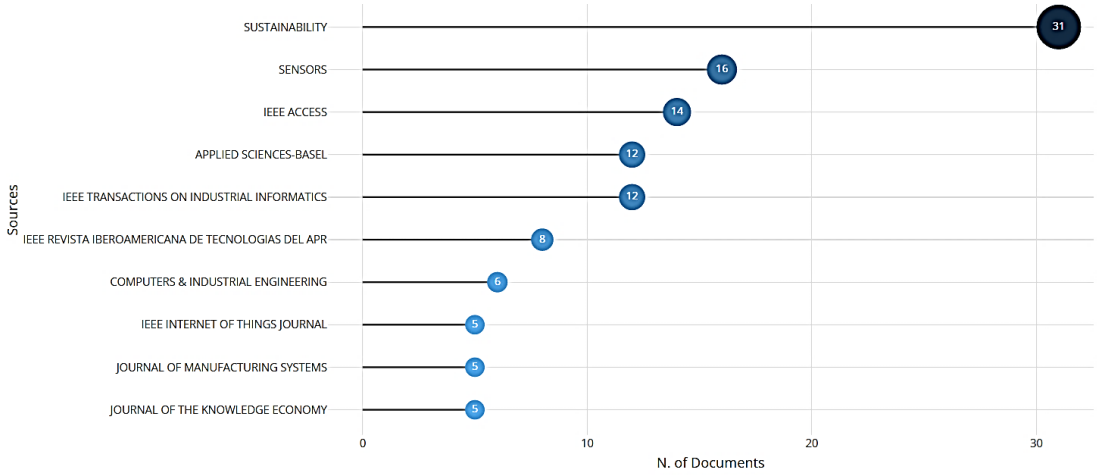

Figure 4. Sources with the most widely cited references for both S5.0 and I5.0

with 94 articles, followed by China with 34 articles, Italy with 24 articles, and India with 20 articles. When considering Countries' Scientific Production, Japan leads with 255 articles, followed by China with 106 articles, India with 84 articles, Italy with 64 articles, and the United States with 53 articles. The leading contributors to articles in the fields of S5.0 or I5.0 are Japan, China, Italy, India, and the United States. The prevalence of S5.0 studies in Japan is understandable, given that it is the country where the S5.0 concept originated (Keidanren, 2016). Notably, China, Japan, and the United States emerged as the most cooperative countries. Meanwhile, Japan, Italy, and India stand out as the countries with the highest individual contributions to publications.

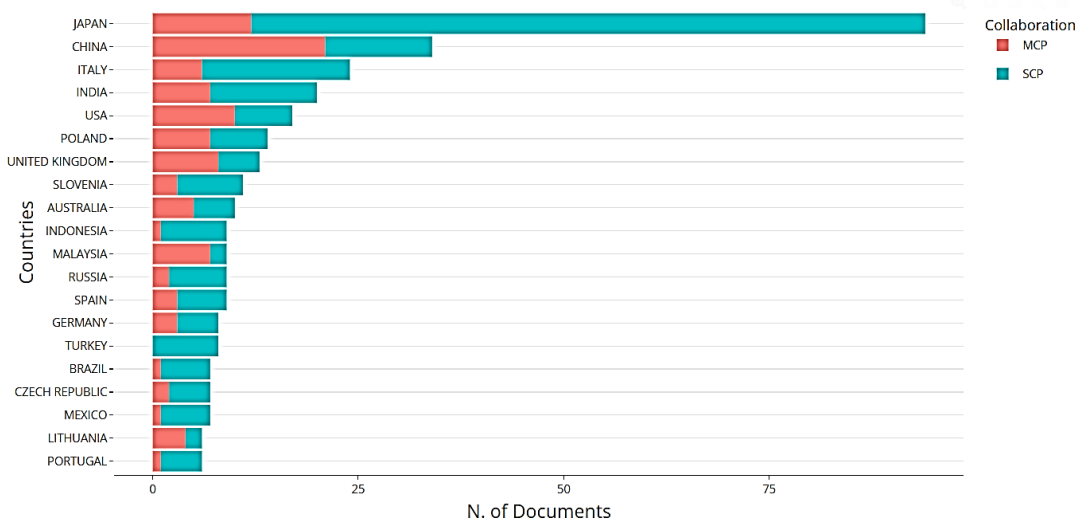

Figure 5. Corresponding author's countries

***MCP:** Multiple Country Publications, **SCP:** Single Country Publications

In Figure 6, the issue is addressed in terms of the number of citations to studies across various countries. Notably, the countries with the highest number of citations are China (466 citations), Japan (460 citations), the United States (369 citations), Australia (368 citations), and Italy (314 citations). It is evident that China and Japan stand out as pioneers in these concepts, as reflected in both their innovative approaches and the substantial number of citations they have accumulated.

Most Global Cited Documents

The most cited authors and their works are shown in Figure 7, these include: Nahavandi S. (2019 - 244 citations), Maddikunta P. (2022 - 202 citations), Xu X. (2021 - 179 citations), Longo F. (2020 - 96 citations), and Fukuda K. (2020 - 87 citations). The first four rows are associated with the I5.0 concept, whereas the fifth row is related to the S5.0 concept. More studies and citations on both S5.0 and I5.0 are expected in the future (Dautaj & Rossi, 2022).

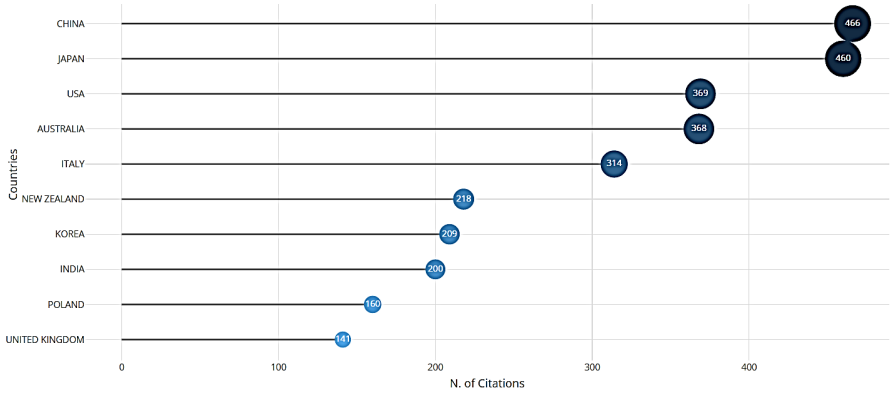

Figure 6. Most cited countries

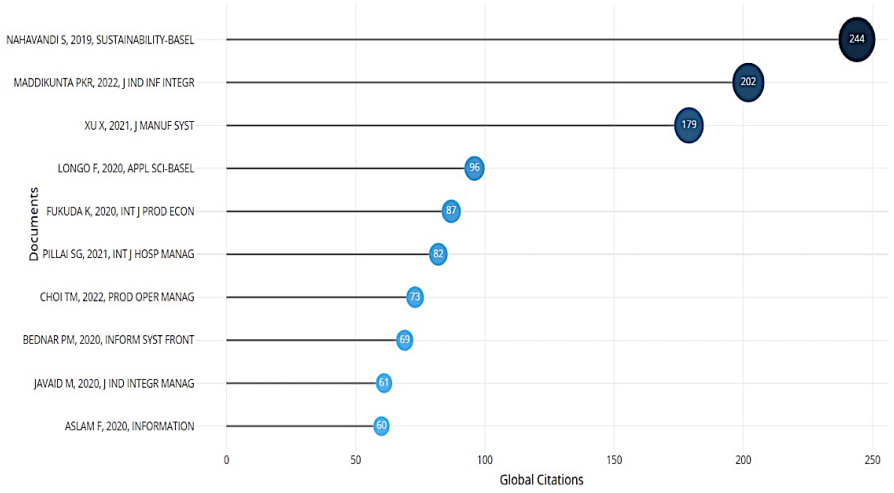

Figure 7. Most globally cited documents

Table 1 lists the most cited studies related to the concepts given. Notably, the foremost cited works are Nahavandi (2019, 244 TC, 48.80 TC per Year), Maddikunta et al. (2022, 202 TC, 101.00 TC per Year), and Xu et al. (2021, 179 TC, 59.67 TC per Year).

Table 1. Most cited documents

No.	Authors	Articles	TC	TC per Year
1	Nahavandi (2019)	"Industry 5.0-A Human-Centric Solution"	244	48.80
2	Maddikunta et al. (2022)	"Industry 5.0: A survey on enabling technologies and potential applications"	202	101.00
3	Xu et al. (2021)	"Industry 4.0 and Industry 5.0-Inception, conception and perception"	179	59.67
4	Longo et al. (2020)	"Value-Oriented and Ethical Technology Engineering in Industry 5.0: A Human-Centric Perspective for the Design of the Factory of the Future"	96	24.00
5	Fukuda (2020)	"Science, technology and innovation ecosystem transformation toward society 5.0"	87	21.75
6	Pillai et al. (2021)	"COVID-19 and hospitality 5.0: Redefining hospitality operations"	82	27.33
7	Choi et al. (2022)	"Disruptive Technologies and Operations Management in the Industry 4.0 Era and Beyond"	73	36.50
8	Bednar and Welch (2020)	"Socio-Technical Perspectives on Smart Working: Creating Meaningful and Sustainable Systems"	69	17.25
9	Javaid et al. (2020)	"Industry 5.0: Potential Applications in COVID-19"	61	15.25
10	Aslam et al. (2020)	"Innovation in the Era of IoT and Industry 5.0: Absolute Innovation Management (AIM) Framework"	60	15.00

Source: Generated by the Author.

Authors with the Most Studies

The ranking of authors with the highest number of studies on the concepts in the literature is shown in Table 2. Accordingly, the sequence of the authors who have conducted the most studies on the subject is as follows: Miyaji A. (13 articles), Noda S. (8 articles), De Zoysa M. (7 articles), Inoue T. (7 articles), and Ishizaki K. (7 articles).

Table 2. Authors with the most studies

No.	Authors	Record Count	% of 408
1	Miyaji A.	13	3.17%
2	Noda S.	8	1.96%
3	De Zoysa M.	7	1.72%
4	Inoue T.	7	1.72%
5	Ishizaki K.	7	1.72%
6	Carayannis E.G.	6	1.47%
7	Ishiguro H.	6	1.47%
8	Nakagawa Y.O.	6	1.47%
9	Endoh T.	5	1.23%
10	Gelleta J.	5	1.23%

Areas with the Most Studies

The fields with the highest number of studies related to the concepts are shown in Figure 8. Within the literature, a significant number of studies on the concepts were conducted in the following fields: “148 studies in Engineering, 121 in Computer Science, 52 in Science Technology Other Topics, 47 in Business Economics, and 39 in Environmental Sciences Ecology.” It is evident that there is greater interest in the concepts from engineering fields, whereas the interest in business economics fields has yet to reach the desired level.

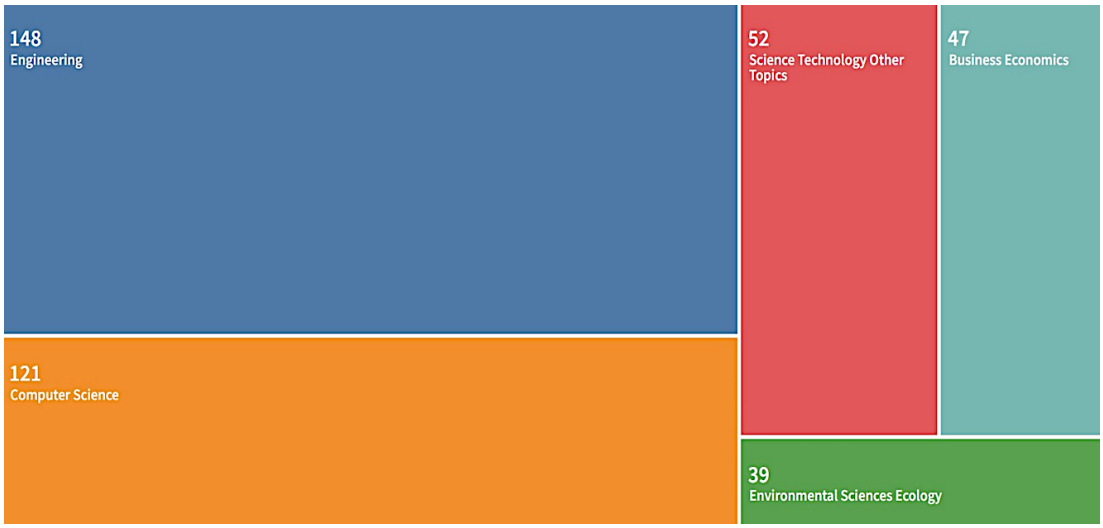

Figure 8. The most studied areas related to concepts

Analytics and Network Visualizations

Citation analysis, bibliometric analysis, co-citation analysis, co-authorship analysis, and keyword analysis stand out as some of the most often used analysis techniques in bibliometric research, often facilitated by Vosviewer 1.6.18 software. Notably, bibliometric and keyword analysis emerges as the most frequently utilized method. Below are all the evaluations conducted in accordance with these analyses.

Keywords/Co-occurrence Analysis

Within the scope of the study, Figure 9 illustrates the most preferred keyword group by authors in the literature, with a thorough keyword analysis conducted. Notably, the keywords "S5.0, I5.0, Industry 4.0, and AI" emerge as the most frequently used. The prominence of the concept of S5.0, ranking first, indicates a greater prevalence of studies related to this topic compared to others. Furthermore, a temporal analysis revealed that early studies predominantly revolved around S5.0, I5.0, and Industry 4.0. However, in subsequent years, the focus shifted toward topics such as industries, smart manufacturing, smart cities, IoT, digital transformation, security, and other related topics.

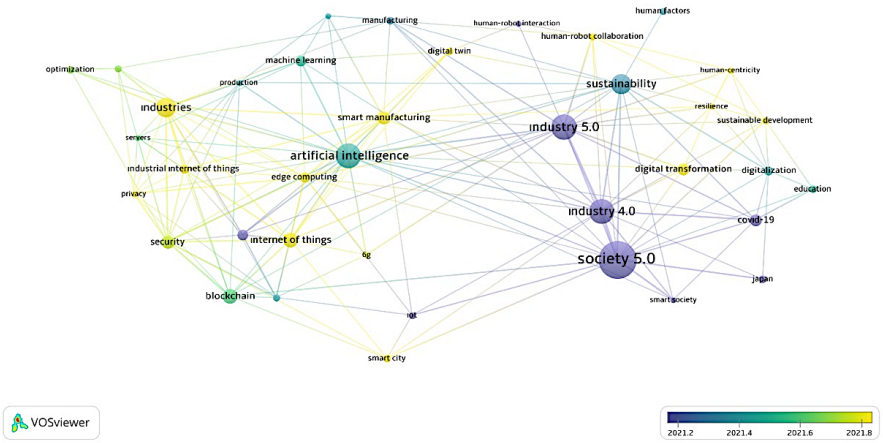

Figure 9. Keywords Related to the Concepts of S5.0 and I5.0

Co-authorship Analysis

In Figure 10, a co-authorship analysis was conducted to examine the collaboration patterns among authors. The collaborations were categorized into four different groups. Notably, the prominent author in the red group is Wang, Lihui; the prominent authors in the blue group are Wang, Baicun and Zheng, Pai; the prominent authors in the green group are Sha, Weinan, and Liu, Qiang; and the prominent author in the yellow group is Mourtzis, Dimitris.

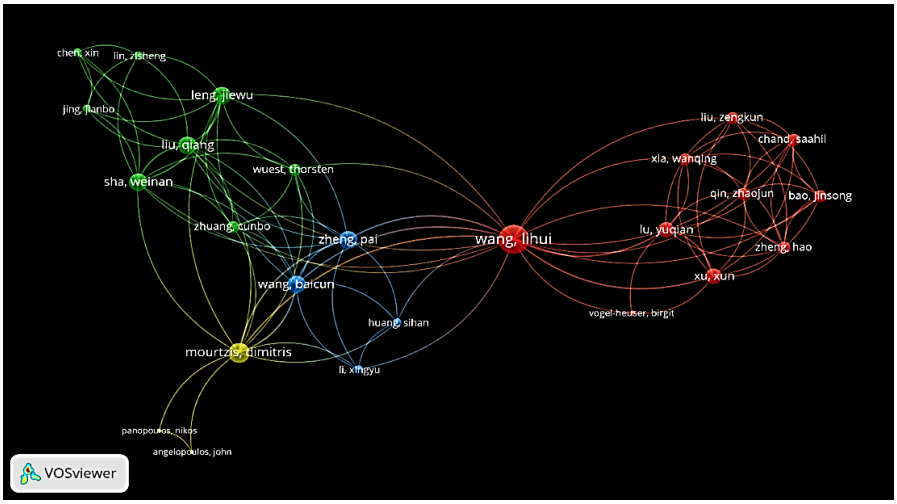

Figure 10. Co-authorship-authors

Within the scope of this study, Figure 11 illustrates the co-authorship country visualization. Notably, countries such as Japan, China, India, the United States, and Italy prominently emerged in terms of author collaborations. This observation underscores their active involvement in international research collaborations within the studied domain.

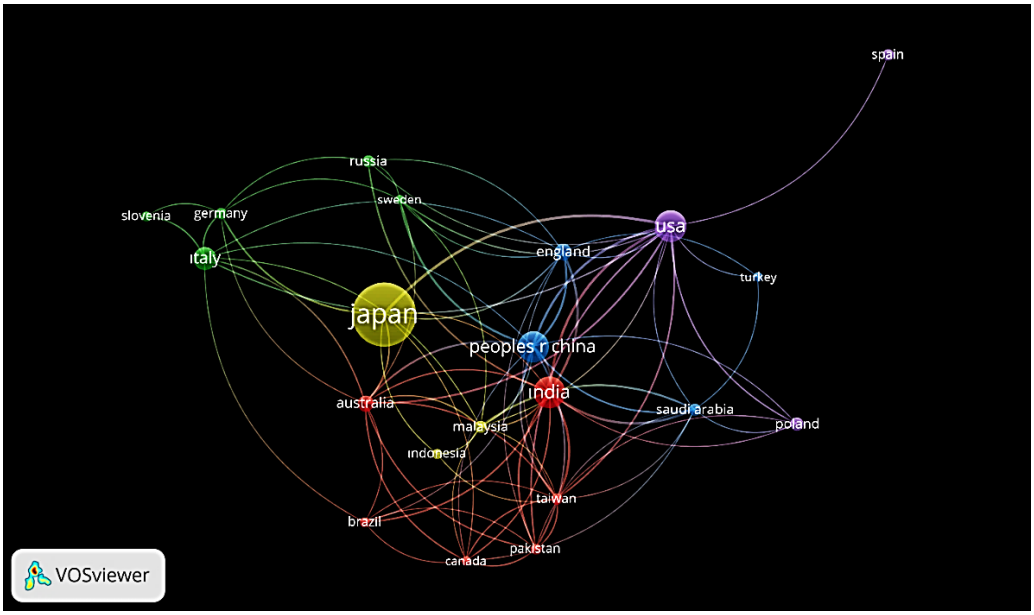

Figure 11. Co-authorship-country

Citation Analysis

In Figure 12, the most cited authors are depicted, and categorized into three groups: green, red, and blue. Notably, the prominent authors within these groups are as follows: Carayannis, Elias; Wang, Lihui; Xu, Xun; Lu, Yuqian; Haleem, Abid.

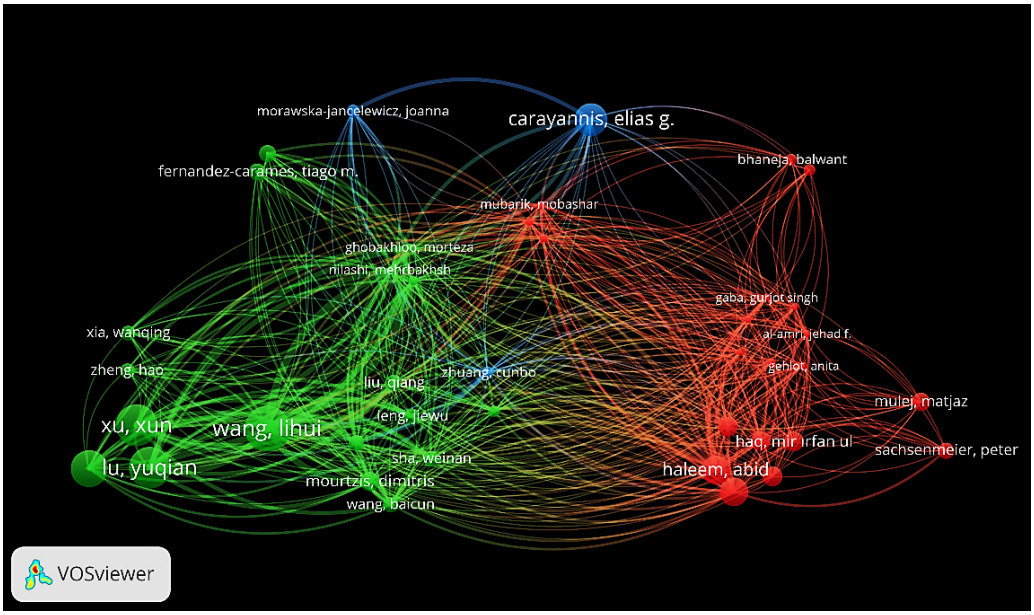

Figure 12. Citation-authors

Conceptual Structure Map

Figure 13 delineates three distinct sets of S5.0 and I5.0 categories along with their corresponding variables. Within this context, multiple vertical and horizontal dimensions are analyzed in the conceptual map. Specifically, the green group represents an energy- and information-intensive cluster. The red group is predominantly focused on management, Industry 4.0, digital transformation, and digital technologies. On the other hand, the blue group is centered around cyber-physical systems and sustainability.

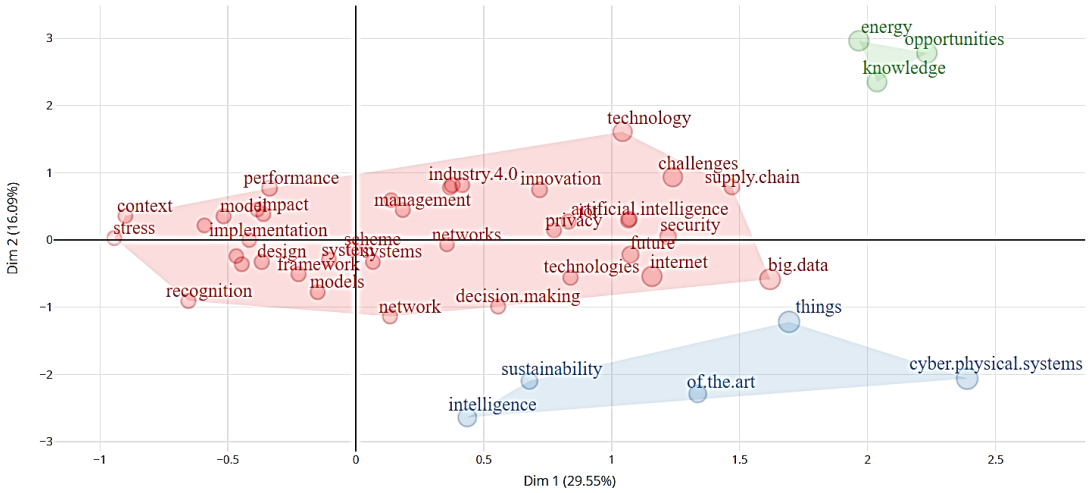

Figure 13. Cluster Analysis of Concepts

A Three-field Plot

Figure 14 presents a three-field plot analysis, where key terms are depicted on the left side, followed by countries in the middle, and the most referenced works on the right. According to the figure, the concept of S5.0 is primarily associated with Japan, with the most connected author being Shiroishi (2018). Conversely, the concept of I5.0 is strongly linked to China, with the most connected authors being Nahavandi (2019) and Özdemir (2018). Additionally, other notable concepts include AI, sustainability, and Industry 4.0. Among the top countries mentioned are China, India, Japan, and the United States. Remarkable cited authors include Nahavandi (2019), Özdemir (2018), Fukuyama (2018), and Shiroishi (2018).

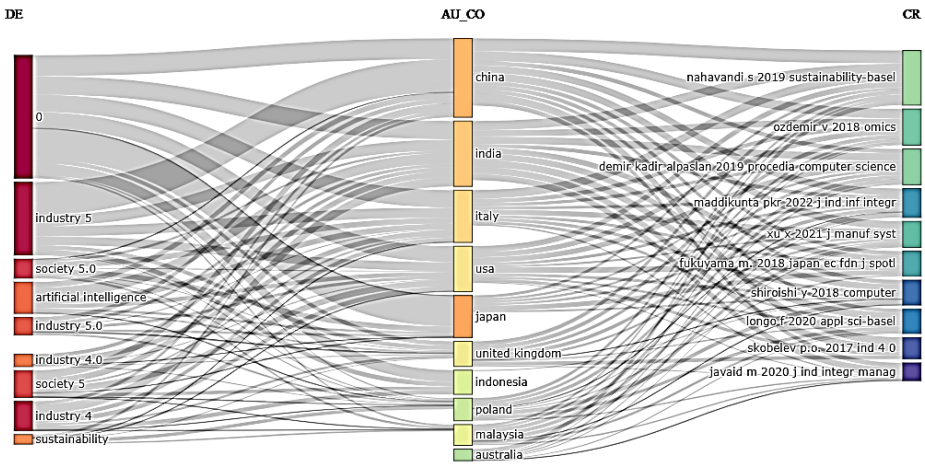

Figure 14. Three-field Plot

Thematic Map

Thematic mapping, as illustrated in Figure 15, facilitates the visualization of four different theme typologies: “niche themes, motor themes, emerging or declining themes, and basic themes” (Caust and Vecco, 2017). This categorization is based on the authors’ keywords. Niche themes represent themes with high intensity but insignificant external links, hence possessing limited importance for the field (low centrality). Emerging or declining themes encapsulate topics of either emerging or declining significance. Motor themes are characterized by both high centrality and intensity, signifying their crucial role within the field. Basic themes, on the other hand, denote core and cross-cutting themes, relating to general topics that cut across various research

areas within the field (Della Corte et al., 2019). According to Figure 15, the identified motor themes include I4.0-5.0, S5.0, AI, and IoT. Niche themes are logistics and technology. The basic themes are S5.0, I45.0-5.0, sustainability, and digital transformation.

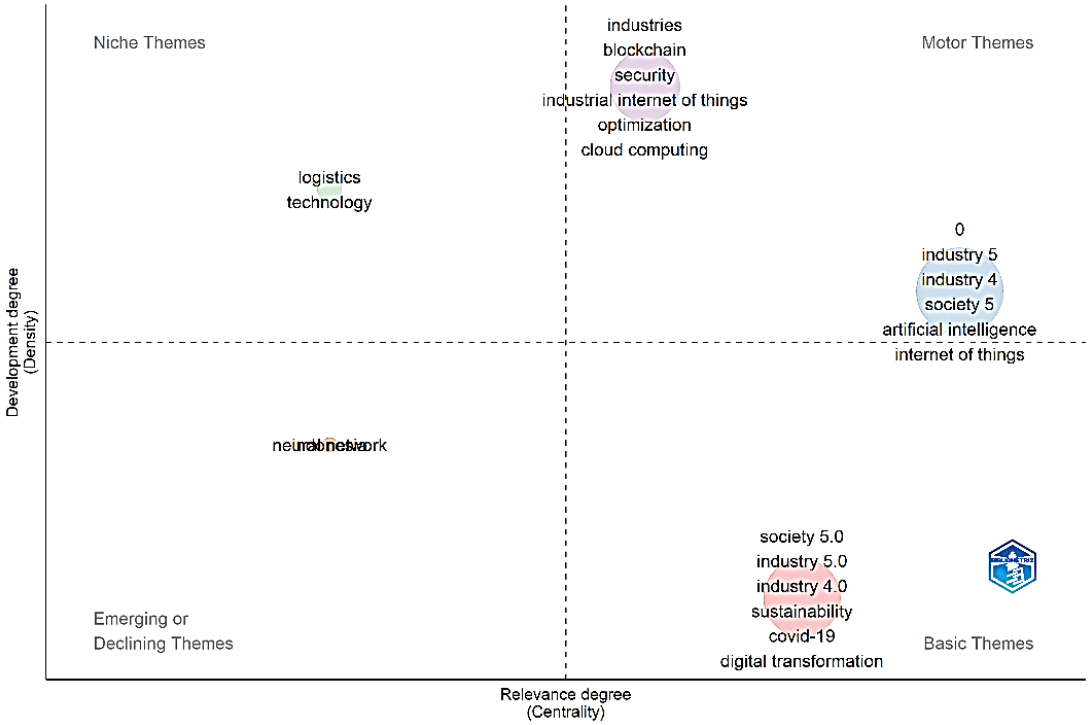

Figure 15. Thematic map

Conclusion

Bibliometric studies serve as guiding tools for researchers interested in a particular field, providing valuable insights and knowledge about concepts and their future trends. The importance of bibliometric research has been increasingly recognized in recent years. Consequently, this study takes a combined look at the S5.0 and I5.0 concepts, revealing a map or visualization of these concepts.

Researchers and practitioners agree that societies' knowledge, competencies, and skills are becoming increasingly valuable, indicating a move to the next stage of progress. While the concept of I4.0 is widely accepted and continuously advanced, its successor "I5.0" has not yet been embraced by all organizations since its introduction (Sułkowski et al., 2021). Indeed, S5.0 has emerged as a concept that aims to reconcile economic advancement by addressing societal challenges through a robust integration of the cyber-physical realm. Moreover, Sułkowski et al. (2021) introduced the notion of Economy 5.0, which pertains to the collaborative efforts of society and individuals in the realms of innovation, creativity, and competitiveness to identify distinctive approaches for value creation within economic structures.

The PRISMA method was employed as the bibliometric analysis procedure for the purposes of this study. A total of 408 articles were included in the study's scope after the WoS database using the S5.0 and I5.0 search criteria. The survey only covered works written in English. RStudio software and VOSviewer version 1.6.18 software were used to analyze and display the data.

Alongside the concept of S5.0 and I5.0, the notion of Economy 5.0 (Sułkowski et al., 2021) has also been defined. I5.0 signifies the progression of economic developments alongside digital technologies. At this point, it becomes imperative for concepts such as Economy 5.0 to evolve concurrently with S5.0 and I5.0. Moreover, in addition to S5.0 and I5.0, emerging concepts such as Education 5.0 (Eren, 2020; Er et al., 2021; Togo & Gandidzanwa, 2021) and Logistics 5.0 (Trstenjak, Opetuk, Đukić & Cajner, 2022) have begun to surface. With the evolution of these concepts, the business landscape will witness changes and transformations. In this context, it is crucial to augment studies on both S5.0 and I5.0 concepts and unveil their reflections in the business world. Consequently, the demands and expectations of customers will evolve due to the development of digital technologies. Furthermore, businesses will undergo shifts in their responsibilities toward both their employees and society, engaging in production and service activities while prioritizing environmental preservation. Moreover, businesses often encounter concepts such as sustainability, education, healthcare, elderly care, and environmental conservation, thereby aiming to mitigate environmental pollution.

The limitations of this research include the sole reliance on data from the WoS database and the focus solely on articles. As

a recommendation for future studies, concluding new bibliometric analyses in languages other than English would enrich the languages, especially in countries like Japan, China, and India, which contribute significantly to publications on the subject matter.

Peer Review: Externally peer-reviewed.
Author Contributions: Conception/Design of Study- A.Z.A., M.E.; Data Acquisition- A.Z.A.; Data Analysis/Interpretation- A.Z.A.; Drafting Manuscript- A.Z.A., M.E.; Critical Revision of Manuscript- A.Z.A., M.E.; Final Approval and Accountability- A.Z.A., M.E.
Conflict of Interest: Authors declared no conflict of interest.
Financial Disclosure: Authors declared no financial support.

ORCID:

Abdullah Zübeyr Akman 0000-0001-6392-1884
Meral Erdirençelebi 0000-0002-7705-6067

REFERENCES

Abdollahi, A., Rejeb, K., Rejeb, A., Mostafa, M.M. & Zailani, S. (2021). Wireless Sensor Networks in Agriculture: Insights From Bibliometric Analysis, *Sustainability, 13*(21), 1-22. https://doi.org/10.3390/su132112011

Akman A. Z. (2023). The Role of the Interaction Between Digital Transformation and Organizational Culture in Society 5.0 Structuring: A Field Study, *Doctoral Thesis*. Necmettin Erbakan University Institute of Social Sciences, Konya.

Arı, E. S. (2021). Super Smart Society: Society 5.0. *Dokuz Eylul University the Journal of Graduate School of Social Sciences, 23*(1), 455-479. http://dx.doi.org/10.16953/deusosbil.808359

Breque M., De Nul L. & Petridis A. (2021). Industry 5.0: Towards A Sustainable, Humancentric and Resilient European Industry. Publications Office of the European Union.

Carayannis E.G. & Campbell, D.F.J. (2009). Mode 3 and Quadruple Helix: Toward a 21st century fractal innovation ecosystem. International Journal of Technology Management, 46, (3/4), 201-234. http://doi:10.1504/IJTM.2009.023374.

Carayannis, E.G. & Campbell, D.F.J. (2014). Developed democracies versus emerging authocracies: Arts, democracy, and innovation in Quadruple Helix Innovation systems. *Journal of Innovation and Entrepreneurship*, 3, 1-12. http://doi:10.1186/S13731-014-0012-2.

Carayannis E. G., Draper J. & Bhaneja B. (2020). Towards Fusion Energy in The Industry 5.0 and Society 5.0 Context: Call for a Global Commission for Urgent Action on Fusion Energy. *Journal of the Knowledge Economy, 12*(4), 1891-1904. https://doi.org/10.1007/s13132-020-00695-5

Carayannis, Elias G. & Morawska-Jancelewicz, J. (2022). The Futures of Europe: Society 5.0 and Industry 5.0 as Driving Forces of Future Universities. *Journal of the Knowledge Economy, 13*, 1-27. https://doi.org/10.1007/s13132-021-00854-2

Caust, J. & Vecco, M. (2017). Is UNESCO World Heritage Recognition a Blessing or Burden? Evidence from Developing Asian Countries. *Journal of Cultural Heritage, 27*, 1-9. https://doi.org/10.1016/j.culher.2017.02.004

Chandra, Y. & Walker, R. M. (2019). How Does A Seminal Article in Public Administration Diffuse and Influence the Field? Bibliometric Methods and the Case of Hood's "A Public Management for All Seasons?". *International Public Management Journal, Vol. 22*(5), 712-742. https://doi.org/10.1080/10967494.2018.1498817

Dabić, M., Vlačić, B., Paul, J., Dana, L. P., Sahasranamam, S. & Glinka, B. (2020). Immigrant Entrepreneurship: A Review and Research Agenda. *Journal of Business Research, 113*, 25-38. https://doi.org/10.1016/j.jbusres.2020.03.013

Dawson P. & Andriopoulos C. (2009). *Managing change, creativity and innovation.* England, Sage Publications Limited.

Dautaj M & Rossi M. (2022). Towards a New Society: Solving the Dilemma Between Society 5.0 and Industry 5.0 In 18th IFIP International Conference, O. Canciglieri Junior et al. (Eds.): PLM 2021 (pp. 523-536).

Deguchi A., Hirai C., Matsuoka H., Nakano T., Oshima K., Tai M. & Tani S. (2020). What is society 5.0?. In Society 5.0: *A People-centric Super-smart Society* (First Edit, 1-188), Springer Open. https://doi.org/10.1007/978-981-15-2989-4_9

Della Corte, V., Del Gaudio, G., Sepe, F. & Sciarelli, F. (2019). Sustainable tourism in the open innovation realm: A bibliometric analysis. *Sustainability, 11*(21), 1-18. https://doi.org/10.3390/su11216114

Duman, M. Ç. (2022). Society 5.0: Human-focused digital transformation, *Journal of Social Policy Conferences, 82*, 309-336. https://doi.org/10.26650/jspc.2022.82.1008072

Er H., Turan S. & Kaymakçı S. (2021). Evaluation of the development of the society 5.0 process and its impact on education. *Adiyaman University Journal of Social Sciences, 14*(39), 27-66. https://doi.org/10.14520/adyusbd.993699

Eren, Z. (2020). Toplum 5.0 ve dijital dünyada toplumsal dönüşüm ve eğitim 5.0. D. Akçay & E. Efe (Eds.), In *Digital Transformation and Processes* (pp.169-206).

Fukuyama, M. (2018). Society 5.0: Aiming for a new human-centered society. *Special Article, Jpn. Spotlight, 27*, 47-50.

Geng, D., Feng, Y. & Zhu, Q. (2020). Sustainable design for users: a literature review and bibliometric analysis. *Environ. Sci. Pollut. Res., 27*(24), 29824-29836. https://doi. org/10.1007/s11356-020-09283-1

Ghobakhloo, M. (2020). Industry 4.0, digitization, and opportunities for sustainability. *Journal of Cleaner Production, 252*, 1-21. https://doi.org/10.1016/j.jclepro.2019.119869

Gladden, M. E. (2019). Who will be the members of Society 5.0? Towards an anthropology of technologically posthumanized future societies. *Social Sciences MDPI, 8*(5), 1-39. https://doi.org/10.3390/socsci8050148

Grabowska, S., Saniuk, S. & Gajdzik, B. (2022). Industry 5.0: Improving humanization and sustainability of Industry 4.0, Scientometrics, *127*(6), 3117-3144. https://doi.org/10.1007/s11192-022-04370-1

Guleria, D. & Kaur, G. (2021). Bibliometric analysis of ecopreneurship using VOSviewer and RStudio Bibliometrix, 1989–2019. Library Hi Tech, 39(4), 1001-1024. https://doi.org/10.1108/LHT-09-2020-0218

Harayama, Y. (2018). Society 5.0: Aiming for a new human-centered society. Japan's science and technology policies for addressing global social challenges. *Hitachi Review, 66*(6), 556-557.

Holroyd, C. (2020). "Technological innovation and building a 'Super Smart' society: Japan's vision of society 5.0", *Journal of Asian Public Policy*, 1-14.

Huang, S., Wang, B., Li, X., Zheng, P., Mourtzis, D. & Wang, L. (2022). Industry 5.0 and Society 5.0-Comparison, complementation and co-evolution. *Journal of Manufacturing Systems*, 64, 424-428. https://doi.org/10.1016/j.jmsy.2022.07.010

Kapoor, K.K., Tamilmani, K., Rana, N.P., Patil, P., Dwivedi, Y.K. & Nerur, S. (2018). Advances in social media research: Past, present and future. *Inf. Syst. Front., 20*, 531-558. https://doi.org/10.1007/s10796-017-9810-y

Keidanren (Japan Business Federation) (2016). Toward realization of the new economy and society. reform of the economy and society by the deepening of Society 5.0, *Keidanren Publisher*, Tokyo.

Khan, U., Khan, H. U., Iqbal, S., & Munir, H. (2022). Four Decades of Image Processing: A Bibliometric Analysis. *Library Hi Tech*, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/LHT-10-2021-0351

Leng, J., Sha, W., Wang, B., Zheng, P., Zhuang, C., Liu, Q., ... & Wang, L. (2022). Industry 5.0: Prospect and retrospect. *Journal of Manufacturing Systems, 65*, 279-295. https://doi.org/10.1016/j.jmsy.2022.09.017

Lin, B. & Xie Y., (2023). Does digital transformation improve the operational efficiency of Chinese power enterprises?, Utilities Policy, *82*, 1-11. https://doi.org/10.1016/j.jup.2023.101542

Mavrodieva, A.V. & Shaw R., (2020). Disaster and climate change issues in Japan's society 5.0-a discussion. *Sustainability, 12*(5), 1-17. https://doi.org/10.3390/su12051893

Marchiori, D. & Franco, M., (2020). Knowledge transfer in the context of interorganizational networks: Foundations and intellectual structures. *J. Innov. Knowl., 5*, 130-139. https://doi.org/10.1016/j.jik.2019.02.001

Mourtzis, D., Angelopoulos, J. & Panopoulos, N., (2023). The future of the human–machine interface (HMI) in Society 5.0. *Future Internet, 15*(5), 1-25. https://doi.org/10.3390/fi15050162

Palumbo, R., Manesh, M. F., Pellegrini, M., Caputo, A. & Flamini, G., (2021). Organising a sustainable smart urban ecosystem: Perspectives and insights from a bibliometric analysis and literature review. *Journal of Cleaner Production, 297*, 1-15. https://doi.org/10.1016/j.jclepro.2021.126622

Potočan, V., Matjaž M. & Nedelko Z. (2020). Society 5.0: Balancing of Industry 4.0, economic advancement and social problems. *Kybernetes, 50*(3) 794-811. https://doi.org/10.1108/K-12-2019-0858

Roblek, V., Meško, M. & Podbregar, I. (2021). Mapping of the emergence of Society 5.0: A bibliometric analysis. *Organizacija, 54*(4), 293-305. https://doi.org/10.2478/orga-2021-0020

Ruiz-De-La-Torre, A., Rio-Belver, R. M., Guevara-Ramirez, W. & Merlo, C. (2022). Industry 5.0 and human-centered approach: Bibliometric review. In *The International Conference on Industrial Engineering and Industrial Management* (pp. 402-408). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-27915-7_71

Saracel, N. & Aksoy I. (2020). Society 5.0: Super smart society. *Social Sciences Research Journal* (SSRJ), 9(2), 26-34.

Serpa, S. & Ferreira, C. M. (2019). Society 5.0 and sustainability digital innovations: A social process. *Journal of Organizational Culture, Communications and Conflict, 2*, 1-14.

Shahidan, N. H., Latiff, A. S. A. & Wahab, S. A. (2021). Moving towards Society 5.0: A bibliometric and visualization analysis. In *Society 5.0: First International Conference, Society 5.0 2021*, Revised Selected Papers 1 (pp. 93-104). Springer International Publishing.

Sułkowski, Ł., Kolasińska-Morawska, K., Seliga, R. & Morawski, P. (2021). Smart learning technologization in the Economy 5.0-the polish perspective. *Applied Sciences*, 11, 1-19. https://doi.org/10.3390/app11115261

Theorin, A., Bengtsson, K., Provost, J., Lieder, M., Johnsson, C., Lundholm, T. & Lennartson, B. (2017). An event-driven manufacturing information system architecture for Industry 4.0. *International Journal of Production Research, 55*, 1297-1311. https://doi.org/10.1080/00207543.2016.1201604

Togo, M. & Gandidzanwa, C. P. (2021). The role of Education 5.0 in accelerating the implementation of SDGs and challenges encountered at the University of Zimbabwe. *International journal of Sustainability in Higher Education, 22*(7), 1520-1535. https://doi.org/10.1108/IJSHE-05-2020-0158

Trstenjak, M., Opetuk, T., Đukić, G. & Cajner, H. (2022). Logistics 5.0 implementation model based on decision support systems, Sustainability, *14*(11), pp 1-19. https://doi.org/10.3390/su14116514

Us, Y., Pimonenko, T. & Lyulyov, O. (2023). Corporate social responsibility and renewable energy development for the green brand within SDGs: A meta-analytic review. *Energies, 16*(5), 1-18. https://doi.org/10.3390/en16052335

Van Eck N. & Waltman L. (2009) Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics, 84*(2), 523-538. 10.1007/s11192-009-0146-3

Xu, X., Lu, Y., Vogel-Heuser, B. & Wang, L. (2021). Industry 4.0 and Industry 5.0-Inception, conception and perception. *Journal of Manufacturing*

Systems, 61, 530-535. https://doi.org/10.1016/j.jmsy.2021.10.006

Yulianto, M. M. (2021). The needs of training to improve teacher competence in preparing Society 5.0. *Technium Social Sciences Journal, 20*(1), 275-286.

How to cite this article

Akman, A.Z., Erdirençelebi, M. (2024). A human-centered digital transformation: a bibliometric analysis of society 5.0 and industry 5.0. *Istanbul Management Journal*, 96, 1-16. http://doi.org/10.26650/imj.2024.96.1361480

Istanbul Management Journal
IMJ 96, 2024, 17–31
DOI: 10.26650/imj.2024.1373175

RESEARCH ARTICLE

Modernization of Institutional and Economic Management Tools for Environmental Safety of Enterprises

Arthur Amber[1]

[1]PhD Student Private Higher Educational Establishment "European University", Kyiv, Ukraine

ABSTRACT

This study investigates the institutional and economic mechanisms employed for managing the environmental safety of enterprises in Ukraine and the European Union. Choosing Ukraine as the central focus of this study is deliberate and based on multiple considerations. Ukrainian businesses encounter distinct environmental obstacles due to the country's unique institutional and economic frameworks. Article enhancements to these mechanisms within the Ukrainian context, leveraging the EU's experience. The goal is to promote the development of more efficient systems for environmental safety management at enterprises, with an orientation towards sustainable development.

The research's methodological framework is meticulously constructed to be both exhaustive and multidimensional, facilitating a thorough and rigorous investigation of the research subject. This study also integrates synthesis, deduction, logical reasoning, and generalisation to augment the depth and scope of the research outcomes.

This study measures to enhance the effectiveness of environmental management systems. These measures include the formulation of an Environmental Safety Code and the Progressive Environmental Management System (PEMS), as well as the creation of an independent Environmental Impact Assessment Authority (EIAA). This study also investigates the potential application of AI in automating the analysis and evaluation of environmental impact scenarios. It proposes the establishment of an Intelligent Environmental Monitoring System (IEMS). Furthermore, the research discusses different types of taxes that could alleviate the adverse environmental effects of businesses. It recommends channelling funds from green bonds into the banking system for green loans or setting up a specialised green investment bank. These measures could incentivize businesses to adopt eco-friendly technologies. This study offers valuable insights for enhancing environmental safety management in businesses and provides practical suggestions for policymakers and business leaders.

Keywords: Security, State Security, Environmental Safety, Environmental Management, Environmental Impact Assessment, Artificial Intelligence (AI), Environmental Monitoring System (IEMS).
JEL Code: Q5, L5, M1

Introduction

The increasing global environmental challenges have made it clear that traditional methods of managing environmental safety at enterprises are no longer sufficient to meet the demands of the 21st century. As such, modernisation of existing regulations has become a key aspect of effective management and should be carried out alongside the development and implementation of institutional and economic tools.

Institutional and economic instruments not only involve more stakeholders but also contribute to the conservation of natural resources, reduction of pollution, and improvement of quality of life. Their modernisation allows for the adaptation of environmental safety management at enterprises to rapidly changing societal conditions and facilitates the exploration of new problem-solving approaches. The synergistic combination of old and new methods promotes positive shifts in sustainable development and aids in preserving our planet for future generations.

Numerous scholars have researched various aspects of theoretical, methodological, and practical tools for the institutional and economic management of environmental safety.

Corresponding Author: Arthur Amber **E-mail:** arthur.amber.ua@gmail.com
Submitted: 09.10.2023 • **Revision Requested:** 04.12.2023 • **Last Revision Received:** 17.12.2023 • **Accepted:** 06.05.2024

Tomlinson and Atkinson (1987) conducted a literature review focussing on predictive technique audits, a type of audit with a significant role in improving environmental impact assessment practise (Tomlinson &Atkinson, 1987).

Sandle provides a practical approach to environmental monitoring by explaining the development of an environmental programme, the use of risk management, monitoring microbiology laboratories, microbial control strategies, and designing and implementing a control programme (Sandle, 2017).

Scotford discusses the challenges and importance of environmental legislation in Oxford Academic Journal (Scotford, 2021).

White et al. discussed how past experiments can improve environmental monitoring by illustrating non-random resampling in determining the optimal length and frequency of monitoring programmes to assess species trends (White et al., 2021).

Suprava et al. reviewed the evolution of environmental monitoring systems that incorporate IoT technology and sophisticated sensor modules (Suprava et al., 2022).

Brunelli discusses the current trends and challenges in the practical application of environmental audits in Central Asian countries (Brunelli, 2022).

The study has been conducted by M. Frey examined the impact of the carbon tax on Ukraine's economy. According to the results of this study, a tax rate of 3.46 US dollars per tonne of CO_2 will lead to a 22% reduction in GHG emissions. Furthermore, the use of funds generated from the carbon tax, combined with reductions in other taxes, will contribute to a 0.1% increase in GDP (Frey, 2015).

V. Kozyuk conducted a comparative analysis of the dynamics of the growth rates of gross environmental taxes (GET) and taxes on CO_2 and greenhouse gases in Europe. The analysis results revealed that the growth rates of GET significantly exceed the rates of reduction in harmful emissions. This indicates that environmental taxes primarily serve a fiscal function rather than a regulatory one (V. Kozyuk, 2019).

Kölbel et al. reviewed how sustainable investing contributes to societal goals. They distinguished three impact mechanisms: shareholder engagement, capital allocation, and indirect impacts. They concluded that the impact of shareholder engagement is well supported in the literature, the impact of capital allocation is only partially supported, and indirect impacts lack empirical support. Their results indicate that investors who seek impact should pursue shareholder engagement throughout their portfolio, allocate capital to sustainable companies whose growth is limited by external financing conditions, and screen out companies based on the absence of specific ESG practises that can be adopted at reasonable costs (Kölbel et al., 2019).

A. Zatti analyzes environmental taxes in Italy. The research revealed that although these taxes were expected to contribute to environmental improvement, this is not always the case in practise (Zatti, 2020).

Mok et al. conducted a multidisciplinary literature review on the green bond market, which is a financial product used to facilitate climate finance investments. They situate the green bond market within the development of climate finance by outlining the role of scientific research in developing green bond guidelines and standards. They examined this trend from an anthropological and economic-history approach, before delving into policy research emerging in the fields of climate finance and green bonds. This provided the context for an analysis of the rapidly growing body of legal research on the green bond market, including a reflection on the legal ramifications of a pricing difference between vanilla and green bonds (Mok et al., 2020).

Muhammad et al. conducted a systematic literature review that examined public acceptance of an environmental tax. Their analysis indicates that people are more supportive when they are well informed about a policy's effectiveness and the policy content, particularly the use of revenue; have high trust in the government; have a positive attitude towards protecting the environment; perceive the policy is fair in terms of cost distribution and social sharing; and are concerned about climate change (Muhammad et al., 2021).

Research conducted by a group of scientists under the leadership of Jules-Eric Tchapchet-Tchouto studies the impact of environmental taxes on economic growth in European countries. According to the findings of this study, increasing environmental taxes as part of any tax reform contributes to accelerated economic growth. However, it should be noted that low-income countries have a more significant negative impact than high- and middle-income countries (Tchapchet-Tchouto, 2021).

Bashir et al. conducted a bibliometric and systematic literature review of environmental tax publications. Their analysis of abstracts and keywords revealed that climate change, environmental taxes, double dividends, carbon tax, and environmental pollution are hotspots within the academic literature. They believe that research collaboration between developed and developing nations and further coordination among environmental agencies such as the IEA and IPCC will enhance the effectiveness of environmental reforms (Bashir et al., 2021).

Despite numerous studies in the field of institutional and economic instruments, many questions regarding the modernization

of instruments remain unresolved. Therefore, continued research in this direction is critically important for achieving a balance between economic development and environmental protection.

Presentation of the Main Research Material

After Ukraine declared its sovereignty and independence, a new stage of legislation began in the country, including the improvement of the legal framework for environmental protection, which had been developed over many years.

The foundational principles and objectives of Ukraine's state environmental policy are outlined in the fundamental legislative act – the Law of Ukraine "On Environmental Protection" (1991). This law establishes that the purpose of environmental legislation is to regulate relations in the field of conservation, use, and restoration of natural resources, ensure environmental safety, prevent and eliminate the negative impact of economic and other activities on the natural environment, and preserve natural resources, genetic resources of wildlife, landscapes, and other natural complexes, as well as unique territories and natural objects associated with historical and cultural heritage.

Based on the analysis of the Law of Ukraine "On Environmental Protection" (1991), the following classification of environmental safety management tools can be identified (Table 1):

Table 1. Classification of State Regulation Instruments for the Environmental Activities of Enterprises

Regulatory Tools	Basic Components
Legislative	Ukrainian laws in the field of environmental protection
	Ukrainian codes
	International agreements in the field of environmental protection
	National strategies in the field of environmental protection
	Resolutions and decisions in the field of environmental protection
Administrative	State Standards in the field of environmental protection
	Norms in the field of environmental protection
	Limits on the use of natural resources
	Limits on emissions of pollutants
	Monitoring, reporting, and verification of greenhouse gas emissions
	Environmental audit
	Environmental impact assessment
	Strategic environmental assessment
Fiscal	Environmental tax
	Rent for the use of natural resources
	Fines for environmental violations
Financial	Compensation for damage caused by violations of environmental laws
	State funding for environmental protection measures
	Environmental insurance

It is worth noting that the effectiveness of regulatory instruments for environmental conservation in enterprises is closely tied to complex socio-economic and socio-political processes within the state. Temporary loss of control over certain territories, armed conflicts, economic crises, and the loss of a significant number of mining, metallurgical, and chemical enterprises in Donbas and Crimea have shaped the development of environmental policy in unique ways. On the one hand, these events led to a significant

reduction in the emissions of harmful substances and industrial waste production. In addition, they constrained the budgetary resources available for implementing the planned measures under the National Environmental Protection Action Plan.

Regulatory and Legal Tools for Managing Environmental Safety of Enterprises

Regulatory and legal instruments establish the legal foundation for environmental quality management, establish normative connexions with various mechanisms within this system, and regulate societal relations while considering the optimal balance between environmental and economic interests in the socioeconomic development of society. Their strategic purpose lies in reducing the risk of harm to the environment and human health, limiting or discontinuing economic activities that harm ecosystems and the environment, and implementing the most effective methods of management and natural resource based on unified ecological-economic standards, indicators, norms, and requirements.

Ukraine's signing of the Association Agreement with the European Union on September 16, 2014, represents a significant milestone in the country's development and the establishment of close ties with the community of European nations. This historic moment underscores Ukraine unwavering commitment to reforms, modernisation, and alignment with EU standards, which contribute to the strengthening of democracy, human rights, and economic development.

According to Annexe XXX to the Association Agreement (2014), Ukraine is obligated to bring its legislation in the field of environmental protection in line with 26 directives and 3 EU regulations in the following areas:

- Environmental management and integration of environmental policies into other sectoral policies.
- Air quality.
- Waste and resource management.
- Water quality and water resource management, including marine environments.
- Nature conservation.
- Industrial pollution and technological hazards.
- Climate change and ozone layer protection.
- Genetically modified organisms.

As of 2023, according to the Reports on the Implementation of the Association Agreement between Ukraine and the European Union for the period from 2014 to 2022, Ukraine has achieved 77% of the commitments in the "Environment" sector outlined in Section V, "Economic and Sectoral Cooperation," of the Association Agreement.

Simultaneously, according to the analytical report of the European Commission on Ukraine's ability to fulfil the conditions for EU membership, as of February 2023, Ukraine has received a score of 1 in the harmonisation of environmental legislation, corresponding to the "initial level of preparedness." It is worth noting that this assessment applies not only to the 29 directives and regulations listed in Appendix XXX of the Association Agreement but also to the requirement of implementing all acts of the acquit communautaire in the field of environment and climate change for full EU membership, which includes approximately 200 acts, encompassing not only secondary legislation (directives and regulations) but also policies.

Analysing the environmental legislation of the European Union, it should be emphasized that it is built on the principle of codification, which allows for the unity and consistency of the legislation while simplifying its application and interpretation. For example, the Environmental Code of Sweden replaced 15 legal acts, and environmental quality standards define impact levels and should specify the following:

- Maximum or minimum presence of chemical products or biotechnical organisms in soil, surface waters, groundwater, air, or the surrounding environment.
- Maximum levels of noise, vibration, light, radiation, or similar impacts.
- Maximum or minimum levels or values of water level or flow in aquatic systems, watercourses, groundwater, or their components.

In Ukraine, these issues are regulated by legislative acts from various sectors, including the "Law of Ukraine on Chemical Safety and Chemical Product Management" (2022), the "State Building Norms of Ukraine on Protection against Noise and Vibration" (DBN V.1.2-10:2021), and the "State Sanitary Norms for Permissible Noise Levels in Residential and Public Buildings and on Residential Development Areas" (2019). This demonstrates that Ukraine's environmental legislation is multifaceted and requires coordination across different areas for effective implementation.

Unlike the Environmental Code of Sweden, the Environmental Code of France is structured according to the pandect system, as its provisions are grouped into General and Special Parts. The General Part includes provisions on the fundamental principles

underlying environmental legislation, the state authorities involved, and the objectives of the Environmental Code. The Special Part contains regulations related to the protection of water, forests, and air and governs activities related to waste management and hazardous substances. In addition, the Environmental Code of France contains provisions not typical of Western European countries' legal systems, such as the regulation of genetically modified organisms and environmental protection in Antarctica.

The Environmental Code of Italy regulates matters related to environmental impact assessment, integrated preventive pollution control, water and soil protection, air quality protection and emissions reduction, waste management, reclamation of contaminated areas, and claims for environmental damage.

Thus, the codified acts of France, Italy, and Sweden have similar content, including provisions regarding nature conservation, waste management, and penalties for legal violations. However, the most successful experience in this field still belongs to France, as its Code contains a greater number of significant norms and provisions that more effectively regulate the relevant legal relationships.

In the context of environmental governance, the public plays an integral role in France, Italy, and Sweden. The French Environmental Code requires public consultation for all industrial or urban development projects that could impact the environment and land. It also facilitates discourse on a broad spectrum of environmental issues. In Italy, environmental policy is predicated on principles such as sustainable development and prevention. The Italian legislation guarantees public access to environmental information, thereby promoting transparency. Sweden's Environmental Code, which is applicable to all activities that could potentially impact the environment, ensures public awareness through various databases and resources. This approach empowers citizens to express their views on environmental matters, thereby fostering a democratic society with an increased awareness of environmental issues.

Unlike EU countries, Ukraine does not have a single codified act that regulates environmental relationships within the country. However, the idea of creating a Ukrainian Environmental Code has been supported by many scientists, including Y. Shemshuchenko, G. Balyuk, S. Kuznetsova, O. Panchenko, and T. Proskura (Panchenko, 2017).

In Ukraine, active discussions are occurring regarding the content and structure of the codification act and the scope of codification. There are some theoretical developments and specific proposals for environmental code projects. One such project was introduced to the Verkhovna Rada as early as 2004, but it remained unexamined. The codification process is a complex and time-consuming endeavour that requires significant effort. It involves not only the creation of a new legislative act but also the review of existing laws, their analysis, and coordination among various government bodies.

The main drawback of Ukrainian legislation is the absence of legal consolidation of a systemic economic approach to environmental management. It should be noted that there are currently no effective economic incentives for the use of environmental business practices and environmentally responsible citizen behavior . Existing legal mechanisms are primarily fiscal and punitive and do not strike a balance between public and private interests. Meanwhile, a unified and balanced eco-economic mechanism for natural resource management that combines economic incentives, administrative promotion of positive environmental behavior, and comprehensive accountability for violations could create an effective system of interaction with the environment.

In general, the legislation of European countries is oriented towards promoting environmental safety. The preamble of the 6th Environmental Action Programme of the EU (2002) states that legislation is the cornerstone for addressing environmental issues, and the full and proper implementation of existing legislation is a priority.

Therefore, the creation of an Environmental Safety Code is evident since the current Law of Ukraine "On Environmental Protection" (1991) does not fulfil the role of a fundamental law in the field of environmental protection and ensuring environmental safety, under which natural resources and other specialised legislation should be developed. It is important to ensure that the new Code considers all the needs and interests of stakeholders and complies with international standards and norms. Therefore, this process should be transparent, inclusive, and collaborative, involving all interested parties, including government bodies, businesses, civil society, and scientists. Ultimately, its adoption will lead to the establishment of a more effective and integrated environmental legislation that can better protect the environment and promote sustainable development in Ukraine.

Administrative Tools for Managing Environmental Safety of Enterprises

The primary objective of administrative instruments within the mechanism of state eco-economic regulation is to involve natural resource users in the process of harmonizing relationships with the environment. The most important tools in this category include environmental standards and regulations, ecological limits, environmental monitoring, environmental auditing, environmental impact assessment, and strategic environmental assessment.

The need to implement environmental audits was recognised at the legislative level in Ukraine as early as the 1990s, particularly in the "Basic Directions of State Policy in the Sphere of Environmental Protection, Natural Resource Use, and Environmental

Safety," which were approved by the Verkhovna Rada of Ukraine on March 5, 1998, under Resolution No. 188/98-VR. The Law of Ukraine "On Environmental Audit" was adopted in 2004.

In Ukraine, an environmental audit is defined as a documented systematic independent process of assessing an environmental audit object. This process includes the collection and objective evaluation of evidence to establish compliance of identified types of activities, measures, conditions, environmental management systems, and related information with the requirements of Ukrainian legislation on environmental protection and other criteria of environmental audit.

In the European Union, environmental auditing is part of the EU Eco-Management and Audit Scheme (EMAS), which is a management tool developed by the European Commission for companies and other organisations to assess their activities, report on their environmental performance, and improve their environmental indicators. EMAS aims to create conditions for providing environmental information to the public. According to the official EMAS website data as of June 2023, there are 4,039 European organisations registered with a total of 12,847 sites.

Indeed, the primary difference lies in the fact that in Ukraine, environmental auditing was developed primarily for monitoring compliance with environmental legislation, whereas in the EU, it also aims to improve the environmental performance of businesses and organisations organizations.

The series of international standards for environmental management systems in businesses and organisations (ISO 14000) is one of the most recognised international instruments for environmental protection in Ukraine.

The State Standards of Ukraine (DSTU) ISO 14000:2015 have not gained widespread adoption in Ukraine. The main challenges of the limited implementation of ISO 14000 in Ukraine include the following:

- Economic instability in Ukraine.
- Contradictory and inadequate legislative, normative, and methodological framework.
- Insufficient resource allocation (financial, material, technical, human resources, etc.).
- Absence of state support for enterprises in environmental management system implementation.
- Insufficient levels of environmental awareness and knowledge among business owners and managers regarding the competitiveness of their products.
- Inconsistencies in terminology and definitions between the ISO system and Ukrainian legislation and within the DSTU ISO 14000 standards.

Thus, considering the EU's experience, Ukraine can expand its environmental audit system to include not only compliance with environmental legislation but also the improvement of companies' environmental performance. This can be achieved by implementing a national environmental management system similar to EMAS in the EU, which allows companies to assess, report on, and enhance their environmental indicators. For instance, the progressive environmental management system (PEMS)," which includes stages of assessment, planning, execution, monitoring, and improvement (integration with other management systems, use of digital technologies, and stakeholder engagement). Such an approach will not only promote legal compliance but also encourage companies to continuously improve their environmental practises.

Another important tool is environmental impact assessment (EIA). In the European Union, businesses provide relevant documentation to the competent authority before initiating any activity. Based on this documentation, the authority determines the need to conduct an EIA.

In Ukraine, unlike the European Union, an automatic screening model is implemented, where businesses independently determine whether they must conduct an EIA. This determination is based on Article 3 of the Law of Ukraine "On Environmental Impact Assessment".

Therefore, the main difference lies in who determines the need for conducting the EIA procedure: in the EU, it is done by the competent authority based on materials provided by the business entity, whereas in Ukraine, it is the business entity itself. This can be examined through the lens of the principle of separation of duties, which posits that no single entity should monopolise all aspects of a process. The compatibility of Ukraine's approach hinges on the presence of cheques and balances. In the absence of such mechanisms, the principle may not be fully actualised. Mechanisms such as independent audits or regulatory oversight are in place to ensure judicious decision-making by businesses, and the Ukrainian model could align with this principle. Therefore, the extent to which Ukraine's Environmental Impact Assessment (EIA) process aligns with the principle of separation of duties depends on the specific implementation of these cheques and balances.

Modernising the Environmental Impact Assessment (EIA) in Ukraine through the establishment of an independent EIA authority could lead to significant improvements in ensuring the environmental safety of enterprises. An independent EIA authority, free from political pressure or corporate interests, can objectively assess the potential impact of projects on the environment. This, in

turn, will strike a balance between economic development and environmental protection, promoting sustainable development and enhancing the transparency and openness of the EIA process, which will facilitate public oversight and citizen participation.

Strategic Environmental Assessment (SEA) in Ukraine and the European Union share similar objectives and principles. In both cases, SEA is a procedure for identifying, describing, and assessing the consequences of implementing documents of state planning for the environment, including for public health.

In Ukraine, the Strategic Environmental Assessment (SEA) is conducted in accordance with the Law of Ukraine "On Strategic Environmental Assessment" dated October 20, 2018. This law defines SEA as determining the scope of the strategic environmental assessment, preparing a report on the strategic environmental assessment, conducting public discussions and consultations (including transboundary consultations if necessary), considering the strategic environmental assessment report, the results of public discussions and consultations in the state planning document, and informing about the approval of the state planning document.

In the EU, strategic environmental assessment (SEA) is conducted in accordance with Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment. This directive defines SEA as a means of ensuring a high level of environmental protection and promoting the integration of environmental considerations into the preparation and adoption of plans and programmes to support sustainable development.

Thus, the difference between SEA in Ukraine and the EU lies in the specific legislative acts that regulate this process. However, both laws have a similar approach to SEA and emphasise the importance of integrating environmental considerations into the decision-making process.

To modernise the process of strategic environmental assessment (SEA), it is recommended to develop a digital platform. This platform provides interactive tools for simulating various long-term development scenarios and assessing their potential environmental impact. In addition, the platform can grant access to databases with the scientific and technical information necessary for conducting SEA.

As Ukraine already has the "EcoSystem" platform with an "e-SEA" section, for improvement and expansion of its functionality, it is advisable to add a module for the automated analysis and assessment of the potential environmental impact of various scenarios using artificial intelligence. Such an approach will streamline the SEA process and provide a more accurate and objective evaluation.

Environmental monitoring is an important tool for environmental protection and ecological safety. It allows for regular observations of the state of the natural environment and the level of pollution.

Ukraine operates a state environmental monitoring system that includes regulated periodic continuous, long-term observations, assessment, and forecasting of changes in the state of the natural environment. The main principles of the functioning of this system are a unified scientific-methodological framework for measuring parameters and determining indicators of the state of the environment, biota, and sources of anthropogenic impact on them.

However, environmental monitoring is not only a tool for control but also a vital means of planning and management. Monitoring results assist in the development of effective strategies and policies in the field of environmental protection.

However, Ukraine faces challenges with its environmental monitoring system, which does not fully meet its objectives and fails to meet modern requirements. In particular, there is insufficient effectiveness in the system concerning the interaction among environmental monitoring entities, their tasks, and the fundamental principles of the organisation. This also applies to the expansion of activities related to hydrocarbon extraction.

The European Union's environmental policy addresses the environmental needs of its member countries' populations, ensuring environmental safety, and promoting the sustainable use of natural resources. It also contributes to taking international measures to address regional or global environmental issues. In total, approximately 570 international standards in the field of environmental monitoring have been developed. The EU also collaborates with the governments of other countries to establish a methodological foundation for developing environmental regulations.

One of the innovative proposals for improving the environmental monitoring system in Ukraine could be the implementation of an intelligent environmental monitoring system (IEMS), developed on the basis of the experience of the European Union. The integration of Artificial Intelligence (AI) into environmental monitoring systems of the European Union has proven successful. The United Nations Environment Programme (UNEP) has emphasised the role of AI in addressing a spectrum of environmental challenges, from the creation of energy-efficient infrastructures to the surveillance of deforestation and the enhancement of renewable energy deployment. The World Environment Situation Room (WESR), a UNEP initiative, exemplifies the use of AI in the analysis of complex and diverse datasets. Moreover, the International Methane Emissions Observatory (IMEO) has adopted AI to innovate strategies for monitoring and mitigating methane emissions. The European Commission has also acknowledged the potential of AI in resolving several societal issues, including those related to the environment.

IEMS may include the following components:

- Data Integration: Automatic data collection from various sources such as satellites, air quality sensors, and monitoring stations. This allows for obtaining more accurate and up-to-date information about the state of the environment.
- Forecasting and Modelling: Using machine learning algorithms, IEMS can predict future trends and assess the impact of various factors on the environment. This helps in making timely decisions to prevent environmental issues.
- Interaction with the public: The IEMS will provide access to information about the state of the environment through a web portal or mobile application. This will increase awareness among citizens and their participation in environmental protection efforts.

Economic Tools for Managing Environmental Safety of Enterprises

The important place in the system of tools for state regulation of environmental aspects of entrepreneurial activity belongs to economic aspects. According to the Law of Ukraine "On Environmental Protection" (1991), the use of economic instruments is oriented towards the following:

- Establishing the correlation between enterprises' economic activities, rational use of natural resources, and effectiveness of environmental protection measures based on economic levers.
- Identifying sources of funding for environmental protection measures.
- Setting limits on the use of natural resources, emissions, discharges of pollutants into the environment, and waste disposal.
- Establish norms and rates of payment for the use of natural resources, emissions, pollution in the natural environment, and other harmful impacts.
- Providing economic entities with incentives to implement waste-reducing, energy-efficient technologies, and unconventional energy sources and to implement other effective measures for environmental protection.

Compensation for damages caused by violations of environmental protection legislation in accordance with established procedures.

The basic elements of the system of economic regulation of environmental activities of enterprises include fees/taxes for the special use of natural resources (mineral, water, land, forest, biological), fees for environmental pollution, and tax levers. On the one hand, they serve as incentives for environmentally friendly economic activities, while conversely, they serve as sources of environmental protection funds.

The main positive outcomes of the current economic mechanism for environmental regulation are, first, the establishment of the foundations of paid natural resource usage and, second, the inherent economic toolkit that serves as a means to ensure the availability of financial resources necessary for mitigating environmental pollution. However, certain subsystems and elements of this mechanism vary in terms of development and practical implementation.

The existing natural resource usage mechanism in Ukraine primarily relies on a set of regulators of environmental behaviour for manufacturers, compelling them to limit their environmentally harmful activities in accordance with regulatory acts, decrees, and laws. This mechanism does not incentivize them to adopt environmentally friendly business practises, constrains conservation efforts, and hampers the adoption of innovative environmentally oriented technologies, leading to the predictable deterioration of the environment.

When evaluating the effectiveness of the existing system of economic tools for natural resource usage based on ecological suitability and environmental quality improvement criteria, it is important to emphasise its ineffectiveness in addressing the preservation of the natural environment and its inability to ensure environmentally favourable conditions for economic activities. When assessing the effectiveness of the existing economic mechanism for natural resource usage based on the criterion of filling the state budget (profitability criterion), it is crucial to highlight its unquestionable effectiveness as an efficient means of meeting the significant national goal of satisfying the financial needs of the state.

Since 2000, Ukraine has been experiencing a stable trend of increasing budget revenues from fees/taxes for natural resource usage. The development of this trend primarily indicates the activation of the fiscal function of the current system of environmental taxation and the strengthening of its significance as a means of filling the state budget.

As of today, in Ukraine, according to the Budget Code, the environmental tax is distributed in a ratio of 45% to 55%, where 45% goes to the general fund of the State Budget (excluding the tax on carbon dioxide emissions and the tax on the formation and temporary storage of radioactive waste), and 55% of the environmental tax revenue belongs to the funds of local budgets (excluding the tax on carbon dioxide emissions and the tax on the formation and temporary storage of radioactive waste). Other taxes are paid and used based on the taxpayer's actual location.

In 2021, the Verkhovna Rada of Ukraine approved the draft law "On Amendments to the Tax Code of Ukraine and Certain Legislative Acts of Ukraine to Ensure Budget Revenue Balance No. 5600," under which the rates of the environmental tax for CO_2 emissions from stationary pollution sources were tripled, increasing from 10 UAH/t CO_2 to 30 UAH/t CO_2. However, even after this increase, the rate remains the lowest in Europe compared with other countries. According to the World Bank, "Carbon Pricing Dashboard", as of March 31, 2023, the highest rates are in Switzerland and Liechtenstein at \$130.81/t CO_2 and Sweden at \$125.56/t CO_2. The lowest rates are in Estonia at \$2.18/t CO_2 and in Ukraine at \$0.82/t CO_2 (see figure 1).

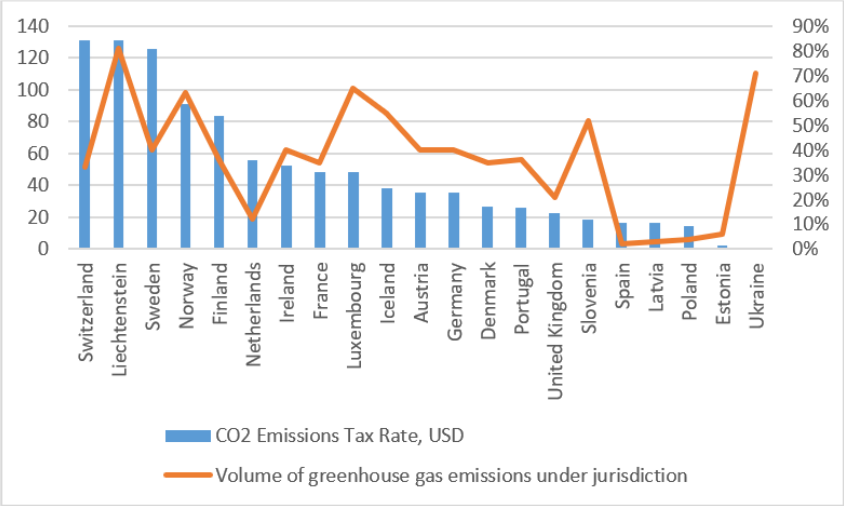

Figure 1. Emission Tax Rates

Carbon taxes can be established on various types of greenhouse gases, such as carbon dioxide, methane, nitrous oxide, and fluorinated gases. The magnitude of each country's carbon tax differs, leading to varying shares of greenhouse gas emissions covered by the tax.

Taxes should serve as a financial instrument that incentivizes businesses to modernise and implement environmental measures. However, in the legislation, the focus is once again on its fiscal function rather than its financial role, as is customary in European practise. Despite the provisions in draft law No. 5600 directing payments towards measures aimed at reducing CO_2 emissions in the manufacturing and electricity, gas, steam, and conditioned air supply sectors, to the extent of no less than 70% of the tax paid, the issue of how these funds will be used and which authority will oversee them remains unresolved.

Analysing European environmental taxation, it is worth noting that it is a complex system consisting of various types of tax payments, emissions trading mechanisms, and a variety of tax and non-tax incentives.

The Directorate-General for Taxation and Customs Union of the European Commission has allocated environmental taxes by usage area into seven main categories: energy taxes (on motor fuel, on energy products, on electricity); transport taxes (mileage taxes, excise duties on vehicle purchases, annual owner's tax); pollution charges (emissions of pollutants into the atmosphere and discharges into water bodies); waste disposal fees (fees for waste disposal in landfills, for their processing, and taxes on various specific products: packaging, batteries, tyres, oils, etc.); taxes on emissions of substances leading to global environmental changes (substances depleting the ozone layer and greenhouse gases); noise taxes; and charges for the use of natural resources.

According to their intended purpose, they are divided into three groups. The first group includes taxes with a fiscal function that increases revenues, directed not only towards covering the costs of environmental initiatives but also towards filling the budget. The second group consists of taxes aimed at cost recovery and directed towards environmental restoration (such as water abstraction fees, waste disposal charges, etc.). The third group encompasses incentive taxes designed to encourage environmentally responsible behaviour among economic entities (Shevchenko, 2014).

The EU is the first and only entity that obliges its member countries to pay energy taxes. Energy taxes constitute the largest share of environmental taxes in the EU. Transport taxes rank second, and pollution and resource taxes come third.

Considering the above distribution, it is necessary to analyse the environmental charges that operate within individual countries (see Table 2).

An analysis of existing taxes on a country-by-country basis has shown that Denmark, Sweden, and Ireland have the greatest diversity of environmental taxes. These countries appear to be leaders in the adoption of advanced technologies for environmental

Table 2. Types of environmental taxes in the EU

Tax	Country													
	UK	EST	SWE	FIN	DE	NL	DK	IE	CZ	PL	FR	LV	SI	UA
Energy Resource Tax		+	+	+	+	+	+	+						
Carbon Emission Tax				+			+	+			+		+	
Water Pollution Tax					+	+	+	+	+	+	+	+	+	+
Aviation Tax	+							+			+			
Air Pollution Tax								+	+	+	+			+
Vehicle emission tax			+		+			+						
Waste Tax	+		+	+	+	+		+		+	+			+
Packaging Tax			+		+						+			
Pesticides, Fertilisers, Chemicals Tax			+		+		+		+		+	+		
Environmental Protection Levy	+	+	+		+			+						

protection and have minimal anthropogenic impact on the environment. The leadership of these countries annually approves environmental development programmes and regularly reports to the public on completed and planned tasks.

As the issue of reducing pollution levels in the natural environment becomes increasingly important with each passing year, it is worth analysing the revenues accumulated by EU countries through environmental taxation.

According to Eurostat (see Figure 2) as of 2021, the total amount of environmental revenues amounted to 325.8 billion euros, whereas in 2000, the total amount of environmental payments was 123.8 billion euros less. It is worth noting that the largest share of EU environmental revenues comes from energy taxes, accounting for approximately 78.3% of the total as of 2021. In 2020, the share of such revenues was 77.4% although the value of the revenue from energy taxes decreased by 22.9 billion euros compared to 2021. This indicates an increase in the number of industrial enterprises and power plants in the EU.

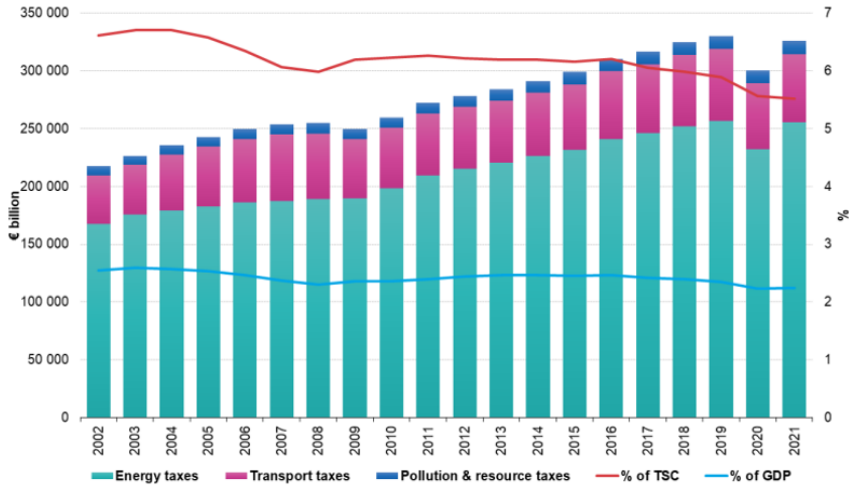

Figure 2. Receipts of Environmental Tax by Type and Total Environmental Taxes as a Percentage of GDP and GNI, EU-27, 2000–2021 (billion euros, %)

The average European factory pays most of its environmental taxes in the form of energy product prices and electricity used in its operations. Emissions are regulated through a quota trading system. In several cases, a factory may be eligible for tax incentives, typically linked to incentivize the adoption of "eco-friendly" technologies or processes. For example, in Italy, companies employing advanced technologies to reduce their negative environmental impact may qualify for what is known as "hyper-amortisation" of

these assets. In practise, a company can depreciate up to 270% of the asset's cost instead of 100%. In Belgium, the state can reimburse a significant portion of tax expenses (up to 80%) if the company participates in agreements to implement advanced energy-saving technologies (e.g., in accordance with ISO 50,001 standards).

A separate group of tax incentives can be highlighted, which are provided to taxpayers for their contribution to the development of new technologies, such as RD tax credits or patent boxes.

Because of this analysis, it can be concluded that the focus of European states is on taxing energy carriers. On the other hand, the legislative authority in Ukraine has been trying to control the level of environmental pollution for a long time, but this process is characterised by a certain degree of controversy. This leads to insufficient effectiveness in collecting environmental taxes.

In the context of exploring ways to improve the system of environmental taxation in Ukraine, considering the European experience, we propose considering the following directions:

- Energy taxation: introduction of taxes on energy products such as coal, oil gas, and electricity.
- Transport taxation: expanding transportation taxation, including the introduction of taxes on vehicle registration, road usage, congestion charges, and municipal fees.
- Pollution taxation: implementing taxes based on measured or estimated emissions into the atmosphere and discharges of pollutants into water bodies.
- Resource taxation: introducing taxes on the consumption of natural resources.

A critical component of the successful implementation of these proposals is a balanced increase in tax rates. This means that Ukraine should strive to strike a balance between effective environmental taxation and business stability.

The main expenditures for environmental protection are primarily funded through the State Budget of Ukraine. Additionally, the virtually sole source of financing for environmental measures carried out by local budgets is the respective funds for environmental conservation.

The domestic market for environmental services, including environmental insurance, has not achieved the necessary development that contributes to ensuring the "polluter pays" principle in the European Union. According to Directive 2004/35/EC on environmental liability, companies engaged in activities that could lead to environmental pollution must have environmental insurance.

In 2021, the government of Ukraine attempted to strengthen environmental regulation by considering the draft law "On Environmental Insurance and Guarantees of Compensation for Damage Caused by Activities that Pose Increased Environmental Risk," No. 6018-2 dated September 28, 2021. The main goal of this draft law was to establish new effective financial mechanisms for compensating damage caused to the environment, human life, health, and property, while also promoting the modernisation of polluting enterprises.

The Committee on European Integration of Ukraine states that this draft law does not contradict the goals of the Association Agreement with the EU. However, it raises concerns about the principle of legal certainty and therefore requires significant refinement.

To transition to a new level of development in the domestic economy, investments in natural resource management and resource conservation are essential. The quality of the environmental investment mechanism plays a crucial role in determining the country's socioeconomic development, the standard of living for the population, and the feasibility and completeness of implementing various modern environmental conservation measures, projects, and programmes.

The issue of funding environmental programmes and conservation measures is twofold. On the one hand, it presents itself as a problem related to the state and levels of funding for environmental protection, natural resource management, and ensuring environmental safety. On the other hand, it is a problem tied to the functioning of the financing mechanism for environmental conservation measures.

In shaping the "green" investment model in Ukraine, numerous obstacles are encountered:

- Significant macroeconomic imbalances and domestic economic disparities.
- Underestimation of the importance of technological progress leads to a technological lag.
- Ignoring the significance of innovation results in structural disparities in the economy.
- Low level of coordination among various government bodies in the field of state regulation.
- Substantial institutional weaknesses in the financial sector of the economy.
- Lack of a critical mass of investment projects for issuing green bonds and an underdeveloped capital market.
- Methodological issues in organising "green" investment related to the absence of a coordinated position among stakeholders.

In recent years, certain elements of the "green" investment mechanism have emerged and gained traction. Specifically, there have been positive developments in the use of green bonds as a financial instrument. In July 2021, the Law of Ukraine "On Capital Markets and Organised Commodity Markets" came into effect. This law introduced green bonds as a separate type of security and established rules for participants in the corresponding market.

The specificity of the functioning of the respective market remains diverse, even within Europe. For example, France issues sovereign green bonds to finance government-targeted projects, while Poland directs the proceeds from green sovereign bond issuance into the banking system to provide "green" loans. The United Kingdom stimulates the green bond market through a specially established Green Investment Bank, which assesses projects for compliance with green principles. In Germany, a state-backed bank that issues green bonds offers green loans at low interest rates.

Comparing the market for "green bonds" in Ukraine to European Union countries, it is worth noting that similar to France, "green bonds" in Ukraine can be used to finance government-targeted projects. However, unlike Poland and the United Kingdom, Ukraine currently lacks a mechanism to channel the proceeds from the issuance of "green bonds" into the banking system for providing green loans or stimulating the market through a specially established green investment bank.

Indeed, development and innovation in the Ukrainian green bond market could be a promising area for further growth. Implementing such a mechanism would contribute to increased investments in "green" energy and other environmentally friendly projects. This, in turn, would aid in achieving sustainable development goals and combating climate change.

According to the International Energy Agency, the energy sector will require $53 trillion in investments by 2035. Ransitioning to a decarbonised future will necessitate capital from both the public and private sectors because relying solely on government funds will not cover these expenses. Additionally, according to the International Finance Corporation (IFC), the potential of the Ukrainian energy efficiency and clean energy market is estimated at $73 billion by 2030. Half of this amount, $36 billion, can be raised through the issuance of "green bonds." This calls for the development of innovative financing mechanisms aimed at identifying potential investors who meet the green finance criteria and stimulating capital mobilisation to meet these goals. Some possible methods for attracting the necessary investments include using green equity funds, green securitisation and green leasing.

Taking into account the advanced experience of the European Union and the existing challenges in Ukraine, the modernisation of institutional and economic instruments should be developed and implemented with consideration for the principles of prevention and elimination of pollution sources, as well as the "polluter pays" principle, which forms the basis of EU environmental policy (see Table 3). Additionally, the goals of EU environmental policy, such as preserving, protecting, and improving environmental quality, safeguarding human health, rational use of natural resources, and promoting international actions to address regional or global environmental issues, should be considered.

Table 3. Modernisation of Institutional-Economic Management Tools for Environmental Safety in Enterprises

Regulatory Tools	Key Components	Purpose
Legal and Regulatory	Creation of the Environmental Safety Code	Regulation of environmental norms and standards
Administrative	Establishment of a Progressive Environmental Management System (PEMS)	Management of environmental processes and resources
	Establishment of an independent Environmental Impact Assessment Authority (EIAA)	Oversight of compliance with environmental norms
	Addition of a module for automated analysis and determination of the potential environmental impacts of different scenarios using artificial intelligence	Forecasting and analysis of environmental impacts
	Creation of an Intelligent Environmental Monitoring System (IEMS)	Monitoring the state of the environment
Fiscal	Implementation of energy taxation	Encouraging energy efficiency
	Implementation of transportation taxation	Reducing pollution from transportation
	Implementation of pollution taxation	Reducing polluting emissions
	Implementation of resource taxation	Encouraging rational resource use
Financial	Directing funds from emissions of "green" bonds to the banking system for the issuance of "green" loans	Financing "green" projects
	Government financing of conservation measures	Support for conservation initiatives
	Stimulating the market through the creation of a specialised Green Investment Bank	Attracting investments in "green" projects

Conclusion

The investigation, "Modernisation of Institutional and Economic Management Tools for Environmental Safety of Enterprises" accentuates the necessity of adjusting contemporary management mechanisms to assure environmental safety. This not only fortifies the resilience of enterprises to environmental challenges but also aids in the establishment of a more sustainable and eco-conscious business environment.

Despite numerous scholarly works spotlighting individual facets of enterprise environmental safety, a comprehensive approach to defining and implementing effective management mechanisms is lacking. Most researchers concentrate on examining individual issues. This investigation advocates a comprehensive strategy to modernise institutional and economic management mechanisms to augment the environmental safety of enterprises. This highlights the significance of a unified approach to environmental management and advocates for additional exploration in this domain.

Consequently, the modernisation of institutional and economic tools for managing environmental safety encompasses a series of pivotal innovations aimed at enhancing the efficiency of environmental safety management while maintaining equilibrium between economic productivity and environmental conservation. The suggestion for Ukraine to improve its institutional and economic tools for managing environmental safety involves legal, administrative, fiscal, and financial measures:

- the establishment of the Environmental Safety Code and the Progressive Environmental Management System (PEMS), as well as an independent Environmental Oversight Body (EOB), are important steps towards a more stable and effective environmental management system;
- the use of AI for automatic analysis and assessment of the potential impact of various scenarios on the environment, along with the creation of an intelligent environmental monitoring system (IEMS), represents promising directions for further development;
- the application of various forms of taxation, such as energy, transportation, pollution, and resource taxation, will contribute to reducing the negative impact of enterprises on the environment;
- directing the proceeds from the issuance of 'green bonds' into the banking system for providing green loans or stimulating the market through a specially established green investment bank will serve as an additional incentive for enterprises to adopt technologies.

The successful implementation of these regulatory tools could markedly enhance environmental management and sustainability not only in Ukraine also in other nations wrestling with similar environmental challenges. However, the effectiveness of these tools depends on the specific environmental context and the dedication of all stakeholders. Therefore, continuous monitoring, evaluation, and adjustment of these tools are essential to ensure their effectiveness and efficiency in achieving the desired environmental outcomes.

Peer Review: Externally peer-reviewed.
Conflict of Interest: The author has no conflict of interest to declare.
Grant Support: The author declared that this study has received no financial support.

ORCID:

Arthur Amber 0009-0001-3924-0875

REFERENCES

Allingham, M. G., & Sandmo, A. (1972). Income tax evasion: A theoretical analysis. Journal of Public Economics, 1, 323–338.

Bashir, M., MA, B., Bilal, et al. (2021). Analysis of environmental taxes publications: a bibliometric and systematic literature review. Environmental Science and Pollution Research, 28, 20700–20716. https://doi.org/10.1007/s11356-020-12123-x

Brunelli, S., Murzakhmetova, A., & Falivena, C. (2022). Environmental Auditing in Rural Areas: Current Patterns and Future Challenges in Central Asia. Sustainability, 14(22), 15163. https://doi.org/10.3390/su142215163

Budget Code of Ukraine. (2010). Bulletin of the Verkhovna Rada of Ukraine (BVR), 50-51, 572.

Draft Law of Ukraine on Environmental Insurance and Guarantees for Compensation of Damage Caused by Activities Constituting Increased Environmental Risk, Bill No. 6018-2 (2021) (Ukraine).

European Commission. (2004). Directive 2004/35/EC of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage. Official Journal of the European Union, L143, 56-75.

European Parliament and Council of the European Union. (2001). Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment. Official Journal L 197, 30 - 37.

Frey, M. (2016). Assessing the impact of a carbon tax in Ukraine. Climate Policy, 17, 1-19. https://doi.org/10.1080/14693062.2015.1096230.

Kölbel, J., Heeb, F., Paetzold, F., & Busch, T. (2019, July 20). Can Sustainable Investing Save the World? Reviewing the Mechanisms of Investor Impact. Organization & Environment. https://doi.org/10.1177/1086026620919202

Köppl, A., & Schratzenstaller, M. (2021). Effects of Environmental and Carbon Taxation: A Literature Review (WIFO Working Papers No. 619). WIFO.

Koziuk, V., Shymanska, O., & Voznyi, K. (2019). Trends in environmental taxation in Europe. Svit finansiv, 4, 8–22. Available at: http://sf.wunu.edu.ua/index.php/sf/article/view/1270.

Kumar, A., Kim, H., & Hancke, G. P. (2013). Environmental Monitoring Systems: A Review. IEEE Sensors Journal, 13(4), 1329-1339. doi: 10.1109/JSEN.2012.2233469.

Laha, S. R., Pattanayak, B. K., & Pattnaik, S. (2022). Advancement of Environmental Monitoring System Using IoT and Sensor: A Comprehensive Analysis. AIMS Environmental Science, 9(6), 771-800. doi: 10.3934/environsci.2022044

Marrone, M., Linnenluecke, M. K., Richardson, G., & Smith, T. (2020). Trends in environmental accounting research within and outside of the accounting discipline. Accounting, Auditing & Accountability Journal, 33(8), 2167-2193. https://doi.org/10.1108/AAAJ-03-2020-4457

Mok, L. W., Tripathy, A., & Lunven, G. (2020). A Multidisciplinary Literature Review of Academic Research on the Green Bond Market. Journal of Environmental Investing. Retrieved from https://ssrn.com/abstract=3691631

Muhammad, I., Mohd Hasnu, N. N., & Ekins, P. (2021). Empirical Research of Public Acceptance on Environmental Tax: A Systematic Literature Review. Environments, 8(10), 109. https://doi.org/10.3390/environments8100109

National Standard of Ukraine DSTU ISO 14001:2015. (ISO 14001:2015, IDT). Environmental Management Systems. Requirements and Guidelines Regarding Application. Official Edition. Kyiv: State Enterprise "UkrNDNC".

Panchenko, O.V., & Proskura, T.B. (2017). Codification of Environmental Legislation: Global Experience and Ukrainian Perspectives. Kyiv National Economic University named after Vadym Hetman.

Patel, S. K., & Jhalani, P. (2023). Formulation of variables of environmental taxation: A bibliometric analysis of Scopus database (2001–2022). Environmental Development and Sustainability. https://doi.org/10.1007/s10668-023-03027-0

Resolution of the Verkhovna Rada of Ukraine on the Main Directions of State Policy of Ukraine in the Field of Environmental Protection, Natural Resource Utilization, and Environmental Safety. Bulletin of the Verkhovna Rada of Ukraine (BVR), 38-39, 248.

Sandle, T. (2017). Environmental monitoring: A practical approach.

Scotford, E. (2021). Legislation and the Stress of Environmental Problems. Current Legal Problems, 74(1), 299–327. https://doi.org/10.1093/clp/cuab010

Shahzad, U. (2020). Environmental taxes, energy consumption, and environmental quality: Theoretical survey with policy implications. Environmental Science and Pollution Research, 27, 24848–24862. https://doi.org/10.1007/s11356-020-08349-4

Shevchenko, I.V. (2014). Environmental Taxation: Foreign Experience and Ukraine. Strategic Priorities, 2, 55-60.

Tchapchet-Tchouto, J.-E., Koné, N., & Njoya, L. (2022). Investigating the effects of environmental taxes on economic growth: evidence from empirical analysis in European countries. Environmental Economics, 13(1), 1–15. https://doi.org/10.21511/ee.13(1).2022.01.

The Law of Ukraine on Capital Markets and Organized Commodity Markets. (2006). Bulletin of the Verkhovna Rada of Ukraine (BVR), 31, 268.

The Law of Ukraine on Environmental Audit. (2004). Bulletin of the Verkhovna Rada of Ukraine (BVR), 45, 500.

The Law of Ukraine on Environmental Impact Assessment. (2017). Bulletin of the Verkhovna Rada of Ukraine (BVR), 29, 315.

The Law of Ukraine on Environmental Protection. (1991). Bulletin of the Verkhovna Rada of Ukraine (BVR), 41, 546.

The Law of Ukraine on Strategic Environmental Assessment. (2018). Bulletin of the Verkhovna Rada of Ukraine (BVR), 16, 138.

Tomlinson, P., & Atkinson, S.F. (1987). Environmental audits: A literature review. Environmental Monitoring and Assessment, 8, 239–261. https://doi.org/10.1007/BF00404267

White, E. R., & Bahlai, C. A. (2021). Experimenting with the past to improve environmental monitoring. Frontiers in Ecology and Evolution, 8. https://doi.org/10.3389/fevo.2020.572979

Zatti, A. (2020). Environmental taxes and subsidies: some insights from the Italian experience. Environmental Economics, 11(1), 39–53. https://doi.org/10.21511/ee.11(1).2020.04.

Zhang, Z., Liu, Y., Han, Z., & Liao, X. (2022). Green finance and carbon emission reduction: A bibliometric analysis and systematic review. Frontiers in Environmental Science, 10. https://doi.org/10.3389/fenvs.2022.929250

How to cite this article

Amber, A. (2024). Modernization of ınstitutional and economic management tools for environmental safety of enterprises. *Istanbul Management Journal*, 96, 17-31. http://doi.org/10.26650/imj.2024.1373175

Istanbul Management Journal
IMJ 96, 2024, 32–58
DOI: 10.26650/imj.2024.96.1372899

RESEARCH ARTICLE

Effects of 4Ps Marketing Mix Strategies on Profitability Enhancement of Petroleum Companies in Afghanistan – A Case Study

Mir Abdullatif Yahya[1]

[1]MSc, University of Europe for Applied Sciences, Business management, Hamburg, Germany

ABSTRACT
In the current era of intense rivalry, organizations must develop effective marketing strategies to differentiate themselves and raise awareness about their products or services. The effective execution of optimal marketing mix strategies possesses the capability to augment brand equity as well as establish a formidable competitive position. Unfortunately, the implications of 4Ps marketing mix strategies on the profitability of petroleum businesses (especially automotive fuels and autogas, or LPG) in Afghanistan have received little attention and have not been adequately investigated. The current study sought to determine the effectiveness of 4Ps marketing mix strategies and their relationship to increasing the petroleum company's profitability in Afghanistan. A case study approach was used to evaluate the marketing mix strategies applied by Zhakfar Petroleum, operated by the company Zhakfar Logistics and Services Ltd. Primary and secondary data was collected via personal interviews with the CEO, branch managers, finance managers, and the website of the company. Content analysis was used to evaluate the data obtained from both the survey and the sales data of the company. The research suggested that the company employed various marketing strategies related to "Product", "Price", "Place", and "Promotion", which demonstrated a significant growth rate of 34.51% during three months of marketing campaigns.

Keywords: Marketing mix strategies, fuel industry, competitive advantage, sales performance, Afghanistan
JEL Code: M1

Introduction

Attraction is one of the fundamental forces of human nature that exists as an inevitable and incomprehensible phenomenon depending on the intrinsic features and attributes that develop among objects, people, or ideas. Armstrong et al. (2014) define marketing as "the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large". Moreover, marketing is the art and talent of introducing, creating, and delivering value to specific potential market segments through a variety of activities that aim to build strong customer relationships that lead to boosting sales (Bennett, 1995; Cronje et al., 2007). Marketing starts with attraction, and the alignment of the intrinsic attributes of individuals or groups with the value of products or services will allow enterprises to compete with their competitors by having highly accurate consumer comprehension abilities.

In the business industry, in the contexts of marketing strategy and sales, alignment of the attraction phenomenon with accurate and reliable marketing strategies that address the consumer's intrinsic features and attributes could be a convenient approach to engage. The concept of "Marketing Mix" - first proposed by McCarthy (1964) and sometimes known as the "4Ps of Marketing" – is a method of putting marketing strategies into action (Borden, 1965). The marketing mix, commonly referred to as the 4 Ps, comprises four fundamental components, namely: "Product", "Price", "Place", and "Promotion". These elements have been widely acknowledged as pivotal factors in the formulation of an effective marketing plan (Parment et al. 2021). Furthermore, these factors pertain to the determinations made regarding the product or service being provided, its pricing structure, the channels through which it is distributed, and the promotional strategies employed.

As the marketing environment has undergone a continuous transformation, supplementary components have been recognized to augment the conventional 4Ps framework. In this sense, Booms and Bitner (1981) introduced the 7Ps of the marketing mix (Figure 1), which augments the original framework by integrating People, Process, and Physical Evidence.

Corresponding Author: Mir Abdullatif Yahya **E-mail:** latif.yahya1@gmail.com
Submitted: 12.10.2023 • **Revision Requested:** 08.11.2023 • **Last Revision Received:** 17.11.2023 • **Accepted:** 15.01.2024

In the context of "People", it is relevant to note that the significance of customer service and the contribution of employees in providing value to customers is a topic of great emphasis among individuals, as highlighted by Gronroos (1994).

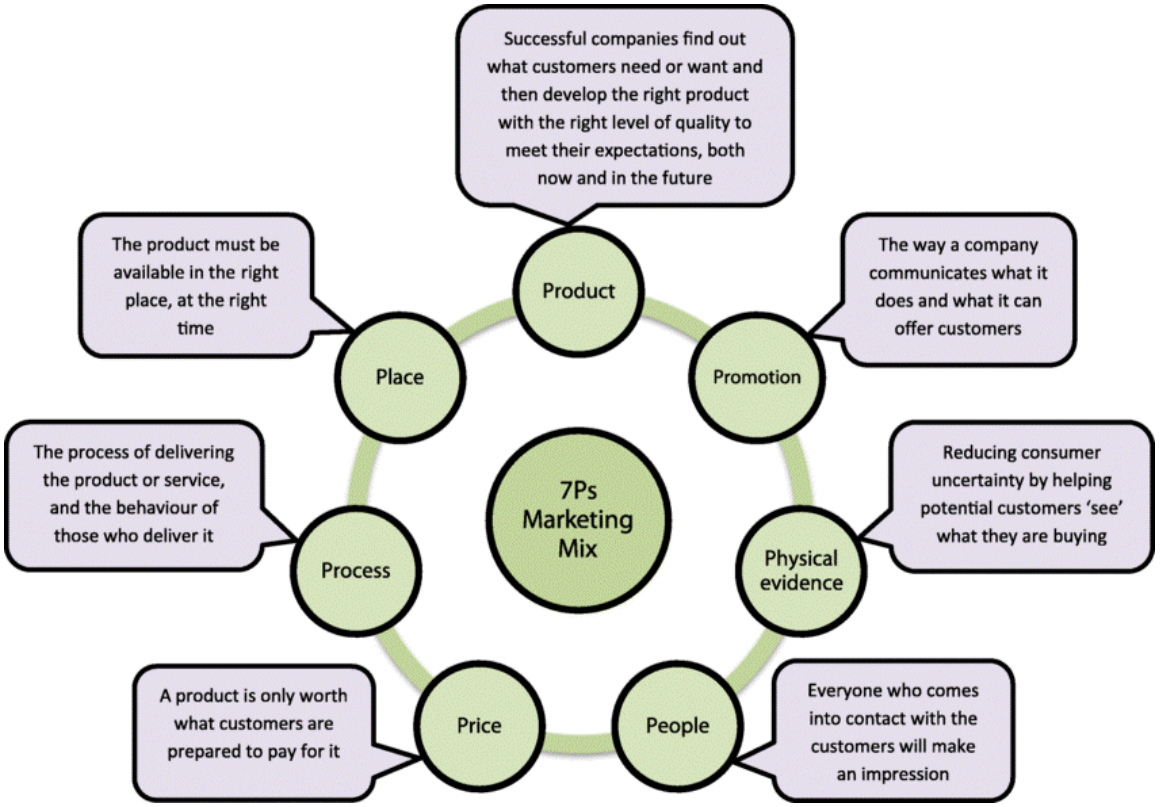

Figure 1. Booms and Bitner's 7Ps marketing mix (Hindi et al., 2019)

The term "Process" pertains to the established protocols and methodologies that regulate the delivery of goods or services, to achieve optimal efficiency and meet the expectations of customers (Zeithaml et al., 1985). According to Bitner (1992), "Physical Evidence" pertains to the concrete elements of the marketing proposition, including packaging, store ambiance, and website layout, that impact customer perceptions and encounters. The integration of supplementary components into the marketing mix enables businesses to embrace a more all-encompassing and consumer-focused strategy, recognizing the importance of individuals, procedures, and tangible evidence in fulfilling customer demands and cultivating enduring connections (Gronroos, 1994; Zeithaml et al., 1985). The marketing mix has had a significant impact on the evolution of both marketing theory and practice (Möller, 2006). Nevertheless, the marketing aspect of the mix's various elements has the potential to alter a company's competitive position (Gronroos, 1994) as well as increase customer satisfaction, and when designed accurately, it provides great sales, profits, and market share (Turner and Spencer, 1997).

The phenomenon of competition within industries is both ubiquitous and dynamic, necessitating companies to consistently pursue a competitive advantage. According to Kotler et al. (2003), a company's marketing mix integration of its "Product", "Price", "Place", and "Promotion" elements is a crucial factor in determining its competitive position. The component of the marketing mix known as "Product" pertains to the process of conceptualizing, creating, and distributing goods or services that align with the demands and inclinations of the target market. In this regard, the most effective approach to surpassing competitors is by providing exceptional products or services (Kotler et al., 2003). This is because by understanding the needs of their clientele and adjusting their merchandise accordingly, companies can establish a unique identity in the industry and attract customers.

The "Pricing" strategy, which is one of the essential components of the marketing mix, has a considerable impact on a firm's competitive position. Determining the appropriate price necessitates the contemplation of multiple factors, including expenses incurred during production, pricing strategies employed by competitors, and the subjective evaluation of the product's worth by the consumer. Therefore, a meticulously crafted pricing strategy can aid organizations in positioning themselves as providers of exceptional value or catering to distinct market segments. Porter (2011) highlights that the crux of strategy lies in the act of selecting what actions to avoid. In this sense, the determination of pricing becomes a crucial aspect in establishing a company's target market and differentiation strategy. On the other hand, the "Place" component of the marketing mix pertains to the strategic selection of suitable distribution channels and the assurance of product accessibility to the target market. To remain competitive in

the marketplace, companies must evaluate a range of factors, including geographic coverage, channel intermediaries, and customer convenience.

Eventually, the "Promotional" element of the marketing mix serves to enhance consumer awareness of the products, resulting in increased sales and fostering brand loyalty (Išoraitė, 2016). Organizations must devise efficacious promotional strategies to distinguish themselves and generate awareness regarding their offerings. The implementation of efficient promotional tactics and strategies has the potential to enhance brand equity and establish a robust competitive stance. Therefore, by correctly and accurately implementing the marketing mix strategies, firms will be able to execute their respective business goals in their intended core markets and so accomplish the goals of the organization. One of the best ways to ensure that the firm's existing resources are used effectively is to employ and consider the correct product at the correct place with the correct price and promotion.

Organizational Sales Performance

In literature, scholars have identified various levels of performance based on the research objective. These levels include operating performance, as demonstrated by Jaworski and Kohli (1993), and financial performance, as exemplified by Zahra and Covin (1995). The complexity of differentiating industries and profit models poses a challenge in establishing a universal metric for evaluating organizational performance. The assessment of performance ought to be predicated upon distinct objectives and employ diverse indicators of performance. In this regard, some scholars asserted that the evaluation of performance is contingent upon the contextual factors of the environment, strategies, and objectives. Nevertheless, the 4Ps of the marketing mix are integral components that contribute to the achievement of a company's goals and objectives. Numerous studies in literature and incredible sources offer perspectives on the characterization and evaluation of sales performance. According to Ingram et al. (2015), sales performance can be defined as the achievement of sales objectives and the fulfillment of quotas or targets set for a specific period. Organizational sales performance pertains to the assessment and quantification of the efficacy and productivity of sales operations within a given entity. The process entails evaluating the efficacy of sales teams or individual sales representatives in meeting the organization's sales objectives and benchmarks.

The trend of internal mobility strategies, which involve the transfer of personnel across various positions or departments within a company, has been demonstrated to yield notable outcomes in terms of organizational sales performance. Although there may be a limitation to studies that establish a direct correlation between internal mobility and sales performance, extensive research on talent management, employee development, and organizational performance can offer significant perspectives. In this regard, a study was conducted by Benson et al., (2020) to create and evaluate an empirical framework for analyzing the difference in performance levels between internally and externally hired employees evaluating the internal mobility strategy within firms. The framework utilized human capital theory, contextual learning theory, and theories of commitment to analyze employee productivity and retention. The human capital theory predicted that employees hired internally would immediately be more productive than those hired from the outside. Moreover, it was hypothesized through contextual learning that employees promoted from within the company will gradually become more productive over time. Finally, theories of commitment, which had not been researched in this field, suggested that internal advancement would boost retention among strong performers, leading to "positive retention." This area had not been extensively researched.

Benson et al. (2020) utilized a comprehensive empirical framework to investigate these mechanisms, and it concentrated on a shop that had 109,063 commissioned salespeople and 12,931 managers as its subjects. The research led to the conclusion that positive retention was the primary factor responsible for the performance disparity that was spotted in this environment. It is interesting to note that high-performing employees who were hired internally often left for reasons that had nothing to do with their jobs or possibilities for promotion. The significance of internal advancement as a strategy for maintaining outstanding achievers was illuminated by this study. It brought to light the fact that analyzing performance and retention separately may result in an underestimation of the significance of internal promotion in terms of retaining talented people. Organizations can establish methods to improve employee productivity, increase retention rates, and make the most of the benefits of internal advancement programs if they first understand the elements that contribute to positive retention and then make use of this knowledge.

Organizational performance can be evaluated based on the effectiveness of a company's utilization of marketing mix strategies, which enable businesses to increase profits and improve social benefits. In the current study, to measure organizational performance, the focal point of the conceptual framework is broken into three variables: the 4Ps of the marketing mix as independent variables; policies, rivalry, and financial resources as intervening variables; and sales performance as dependent variables (Gora et al., 2020) (Figure 2).

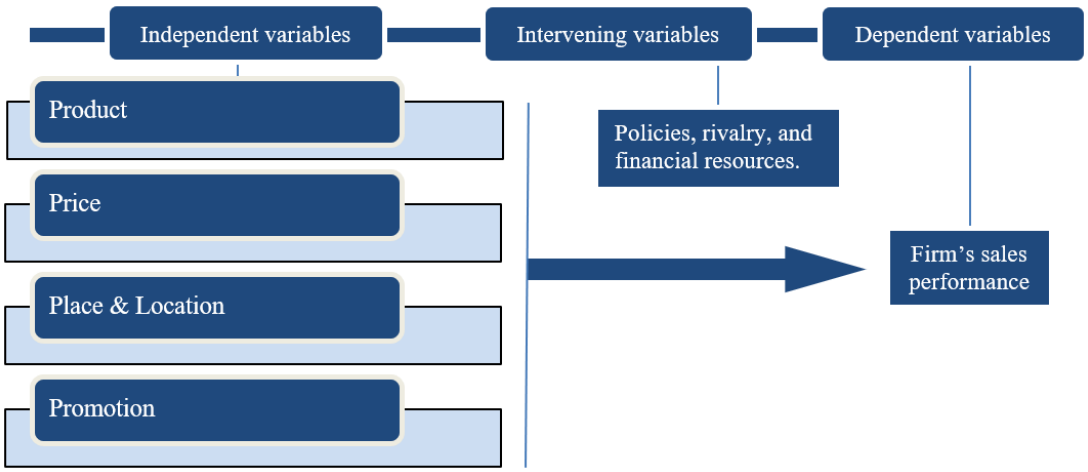

Figure 2. A conceptual framework of 4ps of marketing mix elements; having an impact on the sales performance of enterprises (Gora et al., 2020)

Afghan Petroleum Industry

In comparison to numerous other nations, Afghanistan's petroleum industry is inadequately developed. The nation possesses a certain amount of petroleum reserves (Ulmishek, 2004). However, the exploration and extraction of these resources face significant obstacles due to persistent conflicts and inadequate infrastructure. Nevertheless, the competitive landscape in Afghanistan's petroleum industry is crucial for its future advancement and financial expansion. At present, Afghanistan heavily relies on imported petroleum to meet its energy requirements. The nation procures processed petroleum commodities, including gasoline, diesel, and aviation fuel, with most of these imports coming from Central Asia in the northern region, Iran in the western region, and Pakistan in the southern and eastern regions (Rahmaty et al., 2020).

The focal point of competition in Afghanistan's petroleum industry is centered on the acquisition of exploration rights and investment prospects. According to a report by Pajhwok (2020), there has been a notable expression of interest from various multinational corporations in investing in Afghanistan's petroleum industry. The primary objective of these firms is to obtain exploration licenses and establish production facilities.

To stimulate investment and foster competition, it is important that enterprises accurately engage in marketing mix strategies. However, the implications of 4Ps marketing mix strategies on the profitability of petroleum businesses (especially automotive fuels and Autogas, or LPG) in Afghanistan have received little attention and have not been adequately investigated. Therefore, this research is motivated by this information gap. Moreover, the overarching goal of this study is to investigate how the 4Ps of marketing strategies might be engaged to boost the profitability of petroleum firms in Samangan province of Afghanistan, involving Zhakfar Petroleum Company Ltd. as a case study. Finally, the main contribution of this study is (i) to develop a theoretical framework on the subject to be used (ii) as a guide by the local industry, and (iii) as literature by other researchers on marketing mix strategies implementations in Afghanistan.

Resource-based and Competence-based Theories

This study is based on two theoretical frameworks, namely Resource-based Theory and Competence-based Theory. Resource-based Theory view posits the proficient and optimal utilization of a firm's resources which is considered crucial in establishing a durable competitive edge. Porter (2011) highlights the significance of a firm's resources as a determining factor in the competitive advantage of firms within the industry. The use of Resource-based Theory (RBT) in the field of marketing research has seen a significant increase of over 500% over the past decade, demonstrating its critical role as a conceptual framework for illuminating and predicting competitive advantages and performance outcomes (Kozlenkova et al., 2014). Besides this, over the past decades, scientists have made several changes to theory, using terminology such as resources, capabilities, assets, and "competencies" to describe the factors that affect a firm's competitiveness.

Competence-based Theory is a comprehensive strategy theory that encompasses economic, organizational, and behavioral considerations within a dynamic, systemic, cognitive, and holistic framework (Sanchez and Heene, 2004). According to this theoretical framework, a company's capacity is established on its core competencies, which are not attainable by its competitors. These competencies generate greater profits, thereby serving as the foundation for the firm's overall performance (Prescott et al., 2002). One of the fundamental distinctions between the resource-based view and the competence-based view pertains to the

causal relationship between the two. While the resource-based perspective posits that variances in performance among firms can be attributed to their possession of superior resources, the competence-based outlook favors a more nuanced rationale (Freiling, 2004). This theory plays a significant role in assessing a firm's competitiveness and sales, which align with customers' perceptions, enhancing their overall market performance (Lovelock and Yip, 1996). Therefore, this theory can be readily applied to a company's capacity to analyze the ever-changing business landscape and formulate tactics for its sustenance.

This research sought to determine the effectiveness of 4Ps marketing mix strategies and their relationship to increasing a company's profitability. Finally, the main contribution of this study is the development of a theoretical framework on the subject to be used (i) as a guide by the local industry, and (ii) as literature by other researchers in the area of marketing in Afghanistan.

Literature Review

Afghan Petroleum Industry

The import market for petroleum fuels is significant in all regions of Afghanistan, particularly in metropolitan regions. The country imports fuel through eight ports (Shir Khan, Heiratan, Akina, Turgundi, Islam Qala, Zaranj, Spenboldak, and Turkham) from Central Asia countries Iran and Pakistan. In comparison to other countries, Afghanistan has a low level of demand for petroleum fuels, however, demand has increased since 2002 (Paterson, 2005). The statistics show that Afghanistan imported 566,873 tonnes of petrol, 951,910 tonnes of diesel, and 623,257 tonnes of LPG from Central Asia and Iran in 2016 (Khalazaie 2019). Paterson, (2005) indicates that Afghanistan is particularly subjected to worldwide petrol price fluctuations due to long distances and transport challenges which contribute to the cost of imports. Therefore, it will not be lacking in importance to consider the function of the 4Ps marketing mix, which enables the companies to determine and perceive the nature, way, conditions, and interaction among the marketing mix elements with the environmental situations under different circumstances (Jain and Punj, 2002).

Main Concepts of Marketing Mix

Marketing mix strategies help customers grasp what the product or service has to offer and aid in the planning of a successful product offering, as well as the conception, development, and implementation of effective marketing strategies that enable organizations to capitalize on their strengths while avoiding unneeded expenditures. Therefore, the influence of marketing mix elements in various industries using different methodologies has been reported in the literature. For instance, Srisorn, et al. (2019) used survey research as well as Yamane's formula[1] method to investigate the effect of the marketing mix on purchasing behavior of customers. They have found that by evaluating each item of the marketing mix in the selected locations, the "Product" strategy scored the highest. In contrast, the promotional strategy was calculated at the lowest. The demographic characteristics revealed a statistically significant relationship with the buying behavior of consumers, and that the average monthly income has a link with the buying behavior in all dimensions.

In the study conducted by Rahman et al. (2019), convenience sampling was employed as a sampling technique. Convenience sampling involves selecting samples that are easily accessible or readily available within a specific geographic location or online platform (Edgar et al., 2017). In their research, Rahman et al. (2019) focused on exploring the relationship between the effect of service marketing mix elements and tourist satisfaction, using a national museum as a case study. They utilized a structured questionnaire to collect data from conveniently available participants, allowing them to gain insights into the specific context of the museum and its impact on tourist satisfaction. This approach facilitated the gathering of relevant information within the constraints of the study's scope and resources. Several statistical analysis approaches were used, including descriptive, correlation, regression, and ANOVA. Finally, the study discovered a positive linear link between all factors and tourist satisfaction, apart from promotional activities. They highlight a paper novelty that stands for the display of the outcomes of visitor contentment and discontent for the guidance of decision-makers and to keep the emphasis on promotional operations.

Rahman et al. (2019) investigated the correlation between the service marketing mix and the level of contentment experienced by tourists. Their respective outcomes indicate a positive linear correlation between tourist satisfaction and all variables, apart from promotional activities. The study made a novel contribution by showcasing the implications of tourist contentment and discontentment, thereby providing valuable insights for policymakers. Additionally, the research underscored the significance of prioritizing promotional endeavors to enhance overall results within the framework of tourist contentment.

The research presented by Niazi et al. (2021) endeavored to investigate the correlation between the elements of the marketing mix,

[1] Taro Yamane, a mathematical statistician, established a formula for predicting or calculating sample size in relation to the population under investigation, allowing survey findings and results to be applied to the entire population from which the sample was collected. The formula is n= N/ (1+N (e) 2); the variable "n" denotes the size of the sample. The variable "N" denotes the population being examined, while the variable "e" represents the margin of error.

namely "Product, "Price", "Place", and "Promotion" (commonly referred to as the 4Ps), and the construct of brand equity. Their study's conceptual framework is founded on prior research conducted by Yoo et al. (2000), which delved into the various aspects of brand equity in connection with the marketing mix. The researcher has identified that the correlation between brand equity and brand loyalty is the most robust, whereas the relationship between brand equity and perceived quality is comparatively weaker. Their study offers significant implications for brand and marketing managers, emphasizing the significance of comprehending the interrelationship between the various dimensions of brand equity and the four fundamental elements of the marketing mix, commonly known as the 4Ps. The results of their study provide valuable insights for managers to make informed strategic decisions, highlighting the importance of adopting a long-term perspective toward marketing initiatives to establish and enhance brand equity.

Numerous studies, both domestic and global in scope, have been conducted to investigate the correlation between marketing strategies and organizational performance. Khan et al. (2012) conducted research on the adaptation of the Marketing Mix Strategy by a retail organization in response to the global economic downturn. The research revealed that Woolworths modified its marketing mix strategy in reaction to the worldwide economic recession. The impact of marketing mix elements on organizational performance remains uncertain based on the results of the study. On the other hand, the study conducted by Yasanallah and Bidram (2012) examined the current state of the Marketing Mix (7Ps) within consumer cooperatives. The study's objective was to evaluate seven hypotheses using a one-sample t-test. They confirmed the hypotheses about price, location, promotion, product, operation management, and physical assets, which indicated a below-average status of these elements. The sole hypothesis that was deemed invalid pertained to the personnel component.

Terho et al. (2015) investigated the potential benefits and importance of sales strategy within the business-to-business marketing field and the dearth of research regarding its execution and influence on performance. This study employs a comprehensive sample size of 816 salespeople and directors from 30 sales organizations to investigate the correlation between sales strategy and selling performance. The study employs multilevel structural equation modeling to elucidate the causal pathway connecting sales strategy as an organizational construct to the performance of individual salespersons. The results of the study indicate that the sales strategy employed by a company has a significant impact on its market performance as well as having both direct and indirect effects on the performance of its salespeople. Furthermore, the research reveals that each aspect of sales strategy, namely segmentation, prioritization, and selling models, exerts a distinct influence on the performance of salespersons. The impact of segmentation on selling performance is direct, whereas the influence of prioritization and selling models is indirect, as they affect customer orientation and value-based selling. The findings presented in their study provide valuable insights that can be applied to enhance the implementation of sales strategies in business markets.

Sales teams in various industries have increasingly assumed a strategic role to gain a competitive edge. In contrast to marketing skills, sales capabilities have received comparatively less attention in terms of conceptual and empirical research. To address this gap, the paper by Guenzi et al. investigated the potential impact of the dual mechanisms of sales capabilities on organizational performance. Their respective study discussed the distinction between sales force management capabilities and personal selling capabilities, examined the interplay between these two factors, and assessed their collective impact on business performance. Based on their research findings, it has been determined that sales capabilities play a significant role in enhancing performance through two distinct mechanisms. Firstly, sales capabilities directly contribute to performance by enhancing the overall structure of the sales force. Secondly, sales capabilities indirectly impact performance by leveraging the proficiency of personal selling skills. They strongly emphasized that this can be achieved through the cultivation of sales talent and the effective targeting of clients. Nevertheless, this study contributes significant insights to the existing scholarly literature on sales and capabilities, as well as their association with business performance, through the experimental establishment, identification, and validation of sales force management and personal selling capability.

The study carried out by Le Meunier-FitzHugh et al., (2009) investigated the potential advantages that businesses may experience by enhancing collaboration between sales and marketing departments, with a particular focus on market orientation and firm performance. This research examines the influence of market intelligence systems and management attitudes toward coordination on the level of market orientation and collaboration between sales and marketing. Their research entails conducting a survey among senior executives employed by prominent business-to-business organizations in the United Kingdom, spanning diverse sectors. Their findings suggest a correlation between market intelligence systems, management's attitude towards coordination, and the level of collaboration between sales and marketing. Furthermore, the empirical evidence indicates that the synergy between sales and marketing departments exerts a positive and statistically significant impact on both market orientation and business performance.

Rouziès et al. (2014) apply social capital theory to explore the marketing and sales interface as a network of links between separate groups of people. The objective of their study was to investigate the role that cross-functional interactions play in fostering the development of social capital, which is an essential component in the production of value. The results of this research show that the social capital that is ingrained in the connections that are formed via marketing and sales can have varying effects on the success of a company, depending on the characteristics of the customers that the firm serves. According to their findings, it is

revealed that it is essential to successfully manage the interface between marketing and sales for a company to achieve satisfactory performance outcomes. This is especially true when the company is dealing with varying degrees of customer focus. This indicates that it is essential to have a solid understanding of and make effective use of the interactions that take place between the marketing and sales teams to improve performance results in a variety of client contexts. Nevertheless, their study endeavors to show that by recognizing the significance of social capital and adjusting their business strategies in response to this awareness, companies may improve their ability to produce value and achieve the levels of performance they have set for themselves.

According to Kanten et al., (2017), the marketing strategy has substantial positive effects on customer satisfaction but negligible negative effects on business performance. The primary objective of their study was to investigate the correlation between consumer behavior, marketing strategy, customer satisfaction, and business performance. The research employed a sample size of 171 participants who resided in Villa units and Hotels under the management of Alpha Hotel Management in Bali, Indonesia. The process of data collection encompassed the utilization of questionnaires, with a combination of purposive and accidental sampling techniques being implemented. Furthermore, a quantitative methodology was adopted utilizing Structural Equation Model (SEM) analysis conducted using AMOS software.

Kanten et al., (2017) indicate that consumer behavior exerts a favorable and substantial influence on both marketing strategy and customer satisfaction while demonstrating a lack of significance about business performance. Moreover, the study revealed that the marketing strategy had a statistically significant and positive effect on customer satisfaction, while its impact on business performance was statistically insignificant and negative. In contrast, it can be observed that customer satisfaction exerts a noteworthy and favorable impact on the overall performance of a business. Additionally, the research underscored the interplay between marketing strategy and customer satisfaction in bolstering the influence of consumer behavior on organizational outcomes. Kanten et al., (2017) concluded that to enhance business performance, marketers should consider a comprehensive range of variables, including consumer behavior, marketing strategy, and customer satisfaction, rather than exclusively concentrating on marketing strategy. They emphasize that the prioritization of customer satisfaction at the highest level is crucial to achieving optimal business performance. The authors further recommend that future research employ a comparable methodology but with a broader population and larger sample sizes. Additionally, it is advised to include supplementary variables and indicators to enhance the comprehensiveness of the study.

According to Banerjee et al. (2019), companies that participate in personal selling in both business-to-business and retail markets frequently dedicate substantial portions of their marketing budgets to generating leads through marketing agents and converting them into sales through sales representatives. Nevertheless, the arrangement of the marketing-sales interface is often considered inefficient as a result of the multi-channel attribution problem. To tackle this matter in their study, the utilization of analytical models is employed to ascertain the most advantageous designs for sales compensation, and to resolve the complexities presented by multi-channel attribution. Their research findings suggest that contracts that include revenue incentives, lead qualification, and sales automation have distinct trade-offs when it comes to optimizing profits. Moreover, they suggest that the presence of a disparity between the optimal profit and the realized profit can be attributed to a range of factors, including financial limitations, expenses related to lead qualification, and the sales team's restricted proficiency in marketing.

Banerjee et al. (2019) findings indicate that a higher level of aversion to risk tends to support the use of contracts that involve sales automation and lead qualification rather than revenue incentive contracts. Moreover, a greater degree of uncertainty in general tends to promote the adoption of lead qualification contracts. It is noteworthy that a specific form of remuneration system, namely a contest-based pay structure such as stack ranking, has been observed to attain the optimal profit outcome under conditions of moderate uncertainty. Their findings also provide valuable insights into the intricate dynamics of sales compensation design and offer guidance for organizations aiming to enhance their marketing and sales strategies amidst the challenges posed by multi-channel attribution.

The study by Thanabordeekij et al., (2020) tried to assess the relationship between marketing elements ("Product, "Price", "Place", and "Promotion"), brand image, customer satisfaction, and customer loyalty within the domestic Liquefied Petroleum Gas (LPG) market in Thailand. The primary area of interest for their inquiry was the Thai market. The study employed a quantitative research approach, and the results were validated by linear regression analysis. The survey encompassed the feedback provided by a collective of 400 individuals who possessed previous experience in the acquisition, transportation, and utilization of LPG cooking utensils. The study's findings indicate that the product dimension of the variables had a positive impact on customer loyalty. Additional factors that had a positive impact on customer loyalty included the perception of the brand and the level of customer satisfaction. The study's respected findings provide valuable insights for companies that are engaged in the LPG cooking gas industry in Thailand. Through the consideration of their findings, companies could be able to have the capability to develop effective marketing strategies that can enhance customer satisfaction and foster customer loyalty.

In contemporary society, characterized by its reliance on information and knowledge, it is commonplace for businesses to possess a human resources management system of some kind Mihalcea, A. D. (2015). In this regard the paper by Mihalcea, A. D.

(2015) endeavors that the employees' ability to adapt, effectively promote themselves, market ideas and initiatives, and generate sales are the key factors that differentiate the organization from its rivals. This study aimed to examine the relationship between marketing and human resources within the dynamic and complex oil and gas industry. This analysis delves into the significance and implications of the 4Ps framework ("Product, "Price", "Place", and "Promotion") and examines how employees can utilize these elements in their professional endeavors to establish a distinctive position for their organization within a society that values knowledge. This study specifically investigates the application of the 4Ps framework by employees in their respective work contexts. Organizations operating within the oil and gas industry can enhance their competitive advantage in a highly competitive environment by effectively leveraging the skills and capabilities of their workforce, through a comprehensive understanding of the interrelationship between marketing strategies and human resources policies.

The purpose of the study conducted by Sam (2017) was to investigate the impact that different marketing mix techniques have, both positively and negatively, on the profitability of businesses operating in the automotive industry in France. The purpose of this study is to uncover the determinants of effective marketing mix strategies and analyze the interaction among key factors. This will be accomplished by creating a link between the efforts that are put into implementing marketing mix strategies and the actual outcomes that they produce in this sector. These insights will help to gain a better knowledge of the automotive industry as a whole and indicate areas in which adjustments may be essential. The research makes use of secondary data gleaned from articles and studies that concentrate on the automotive sector on a worldwide scale as well as more particularly in France.

The product dimension is assessed by the number of models produced by each automaker that are included on the list of the top one hundred most desired automotives in a certain year. Estimating the price dimension requires using the median price of passenger automobiles broken down by manufacturer. The amount of money spent on advertisements may be used as a proxy for the promotion dimension, while the number of principal dealerships present in France can be used to approximate the location dimension. According to the data, product, pricing, and marketing are the most important aspects for automakers to think about, but the place element requires extensive examination before judgments can be made. This research offers helpful insights for businesses operating in the automotive industry, assisting such businesses in making educated decisions concerning the marketing mix tactics they employ to increase their profitability.

According to the study of Singh, (2012), to develop strategic decisions that might lead to a competitive advantage, it is necessary to take these aspects into consideration, namely the product, the price, the location, and the promotion. The purpose of this article is to highlight the significance of the link that exists between the various components of the marketing mix to achieve a competitive advantage in the market. Both the product marketing mix and the service marketing mix are included in what is referred to as the "marketing mix." Considerations including "Product," "Price", "Place", and "Promotion" are included in the "Product" marketing mix, which is most used for movable, material items. On the other side, the essential variables in the product marketing mix for services are the people, the processes, and the physical proof.

After Neil H. Borden released his essay on the topic in 1964, the notion that would later be known as the "marketing mix" became more well-known. The marketing mix consists of four distinct factors, each of which is of equal importance. The first thing that must be done is to create a product strategy that details the primary, secondary, and tertiary features of the product. Price-related choices, such as maintaining consistent pricing throughout all markets or differentiating prices for specific regions, also play an extremely important part. The third factor, "Place," refers to the decisions that are made regarding the locations at which the product will be marketed. Decisions on "promotion" center on tactics that may be used to boost sales. The marketing mix is comprised of judgments on the availability of products at a range of prices, with consideration given to the possibility of price differences across various markets. When developing a suitable marketing mix for a product, managers of marketing must take into account a variety of aspects that are grouped under the heading of the "4 Ps."

In the study of Habibi et al., (2023), validated methods were used to develop the possibility of marketing mix integration based on industrial customer behavior. This research was conducted to develop a model for an integrated marketing mix that could be adapted to the preferences of industrial customers in the market for oil products. The sample comprised fifteen professionals and managers working in the oil business, all of whom had been chosen using methodical procedures. To collect data for this study, semi-structured interviews were conducted, and that material was subsequently analyzed utilizing grounded theory using axial, selective, and open coding procedures. The model that was developed consequently serves as a model for an integrated marketing mix that is based on the behavior of industrial customers. The findings of their study underscore how important it is for industry managers to carefully analyze all the categories and subcategories that were identified in this study and to acquire sufficient knowledge about them to establish an efficient integrated marketing mix. In addition, the research highlights how important it is to concentrate on the development of an integrated marketing mix that is especially suited for the actions of industrial customers. These insights offer helpful direction for industry practitioners who are looking to optimize their marketing strategies and efficiently respond to the requirements of industrial clients in the market for oil products.

The field of global marketing presents challenges that stem from the distinct characteristics of various markets. The distin-

guishing features between developed and emerging countries are attributed to several factors like market heterogeneity, unbranded competition, resource infrastructure availability, and sociopolitical governance, respectively. In this regard, an investigation of the relationship between marketing mix and brand sales in global markets, with a focus on the contingent role of country-market characteristics was conducted by Bahadir et al. (2015). Their research endeavored to investigate the impact of country-market characteristics on the association between diverse constituents of the marketing mix and brand sales. The study employs a hierarchical linear model and panel data obtained from 14 markets, which collectively account for 62% of the global GDP. Their findings revealed that the interplay between country-market characteristics and the relationship under investigation is moderated, with asymmetrical effects. Pointing out that in developed countries, brand sales are more influenced by distribution and price, whereas in emerging markets, product innovation and advertising have a notably greater impact. The respected outcomes of their study emphasize the significance of implementing a contingency approach to marketing strategy within the worldwide market.

Damirchi et al. (2011) investigated the potential benefits of the Islamic marketing mix according to the notion of Islamic marketing and its relevance as an economic establishment. This study delves into the diverse array of instruments that have the potential to impact consumers and foster triumph in commercial enterprises. Furthermore, the research incorporates the marketing mix, encompassing the mix's Product element as Customer Value, considering "Price" as Cost, "Place" as Convenience, and "Promotion" as Communication, within the context of the Holy Quran and Islamic Laws. They point out that the utilization of the "4Cs" in lieu of the "4 Ps" is not a mere semantic exercise. However, the rationale for this practice is to prompt individuals to adopt a further understanding of customer-centric perspective and view things from the vantage side of their customers.

The objective of the study conducted by Keramati et al., (2012) was to examine the correlation between the marketing mix and sales performance within the specific context of privately-owned steel companies in Iran. Furthermore, the study aimed to ascertain the specific amalgamation of marketing mix elements that exerted the most significant influence on enhancing sales performance. A model was constructed and subsequently evaluated through the implementation of a survey methodology that relied on a validated questionnaire. Data was collected from a sample of senior executives and marketing professionals through the administration of a survey. The findings comprehensively analyzed and substantiated the presence of a correlation between the marketing mix and sales performance. Hence, it is imperative to consider the generalizability of these findings. This study conducted the initial empirical investigation into the relationship between marketing mix and sales performance within the Iranian steel market. Hence, the study presented in the paper focused on an unexplored empirical domain.

Palmatier et al., (2019) mentioned that the field of marketing has witnessed substantial expansion in terms of data, frameworks, and analyses that have empowered marketers to formulate and execute efficacious strategies. Nevertheless, the abundance and intricacy of these resources may present potential challenges in the process of strategy formulation. In this regard, their article presents a concise and efficient framework for making marketing strategy decisions and the corresponding tools. The framework was established upon four fundamental assumptions or first principles, which were deemed essential for the efficacy of marketing strategies. The aforementioned principles can be outlined as follows: (1) Variations are observed among customers, (2) customers experience changes over time, (3) competitors react to these changes, and (4) there are limitations on available resources. By conducting a comprehensive examination of prior marketing research about the four principles, the article effectively showcased the potential application of existing analyses and frameworks in facilitating strategic decision-making that aligns with each principle. The authors additionally offered theoretical perspectives on the interconnectedness of these four principles, outlining a logical progression that informs the formulation and execution of marketing strategies.

Arif, (2022) investigated the influence of marketing mix on online business through a case study. It is mentioned in the study that the rise in popularity of online business has been observed since the onset of the twenty-first century. Especially amidst the pandemic, online commerce emerged as a crucial means of sustenance for individuals. Despite the gradual adaptation of individuals to the pandemic, online business continued to play a crucial role in daily life. Therefore, the necessity of conducting academic research has become crucial to enhance the efficacy of online business for both sellers and buyers. The objective of their study was to investigate the influence of Marketing Mix components on the online business sector in Sylhet City. Data was collected by administering a mixed questionnaire to members of different online business groups. The survey was completed by a total of 256 participants. The results of the study revealed that the various components of the Marketing Mix exerted a noteworthy influence on the performance of online enterprises.

Londhe, (2014) investigated the potential role of marketing mix for the next generation. He mentioned that over the last few decades, there have been significant shifts in the components that comprise the marketing mix. Everyone who was a part of the marketing process initially made achieving "Value" their top priority when they set out on their quest for an objective. Customers took an active role in the marketing process by actively looking for enhanced value propositions that would maximize the return on their financial investments. This put a significant emphasis on the concept of "Value to the Customer." The "valued customer" is given the utmost importance by marketers, and they work hard to derive value from the companies they work for, which is commonly referred to as "Value to the Marketer." The consideration of "Value to Society" is a concept that is important to both customers and marketers, and both groups have the same overarching goal of putting the welfare of society first. Although it is

still in its conceptual stage, the novel marketing mix model provides answers to several unresolved questions that contemporary marketers face but that traditional marketing mix theories are unable to address.

Varadarajan and Yadav (2009) investigated the role of marketing mix from a digital perspective including the initial decade of the Journal of Innovative Management (JIM), followed by a prospective examination of the forthcoming ten years. This retrospective analysis was undertaken to examine the developments of the previous decade that prompted businesses to reassess and adopt substantial modifications in their marketing strategies. The advancements encompassed the expeditious expansion of the Internet, the conversion of information products into digital formats, and the conversion of the informational characteristics of non-information products into digital forms. The evaluation centered on the examination of prior research about marketing strategy within the context of an Internet-enabled environment. More specifically, the analysis focused on scrutinizing publications from previous editions of the Journal of Interactive Marketing (JIM). Furthermore, the authors provided conjectures regarding the prospective developments of interactive marketing about marketing practice, marketing research, and marketing education. The review provided evidence that the Internet has already resulted in significant changes in marketing strategy and operations. It has been projected that shortly, the integration and interdependence of marketing strategy and operations will intensify within the market environment facilitated by the Internet.

The study of Candemir et al., (2011) investigates the influence of Internet utilization on the global economy, with a specific focus on developing nations such as Turkey. Despite the prevalence of sophisticated online business transactions and models enabled by the Internet, there is a notable dearth of comprehensive analyses about the efficient utilization of websites for marketing mix strategies in Turkey. This underscores the necessity for additional research to guide companies and institutions in enhancing their marketing endeavors via this emerging platform, which has become an indispensable prerequisite for contemporary business models in the current era. This study aimed to examine the utilization of marketing mix tools on Turkish websites owned by the top 1000 companies, as reported in the survey conducted by the Istanbul Chamber of Industry (ICI) in 2010. The study's findings indicate that the incorporation of Internet resources in marketing mix strategies was insufficient, as certain companies did not fully capitalize on the available opportunities due to ineffective corporate websites.

Marketing Mix Strategies

In the scope of business and strategic management, Campbell et al. (2002) define strategies as the collection of theoretical constructs, conceptual frameworks, practical methodologies, and analytical instruments that aim to elucidate the determinants of organizational performance and aid executives in strategic cognition, planning, and implementation. In essence, it is a mechanism by which a business can evaluate historical outcomes and, crucially, establish forthcoming measures aimed at attaining and maintaining exceptional outcomes. Nagle & Holden (2012) posit that strategy constitutes a fundamental concept within the domain of strategic management. Nevertheless, the marketing mix refers to a set of controllable variables that a marketing manager can utilize to meet the needs and wants of a specific target market (McCarthy, J. 1964). Thus, marketing mix strategies and efforts have the potential to respond to the enterprise's influence and the necessities of their target markets, as well as enable firms to focus on understanding their consumers' wants and developing further strategies accordingly.

Product Strategy

A product can be defined as an object or item produced or manufactured by enterprises that fulfill a distinct function or meet a specific demand or desire of individuals or groups. It represents the outcome of the involvement of human ingenuity, originality, and labor with the specific objective of providing benefits to consumers. The attractiveness and observability of a product are contingent upon its possession of distinct attributes such as usefulness, visual appeal, value, intention & objective, and the possession of commutation potential. McGrath (2001), in his book "Product Strategy for High Technology Companies," endeavored to define product strategy as the desire to describe and identify the market segments to be targeted and the value proposition that the product or service offers. This underscores the significance of comprehending the market and customer requirements when formulating a distinctive value proposition. On the other hand, it is deemed imperative that the strategies for the product be in alignment with the overarching strategy and vision of the company (Christensen and Raynor, 2013). This highlights the importance of the process of aligning the product strategy with the company's long-term objectives as a crucial consideration for ensuring sustained success in business.

The strategy for a product encompasses various components, including packaging, branding, labeling, and product attributes. These attributes may include high quality, appealing style, desirable features, and attractive design. The presence of a robust brand preference is an additional attribute of the product. A product undergoes four distinct phases in its life cycle, namely market inoculation, growth, maturity, and decline (Theodore L., 1965) (Figure 3). Therefore, the development of novel product strategies like market segmentation strategy, differentiation strategy, product pricing strategy, and product development strategy would not

be lacking in benefit to result in a diverse array of offerings that have a significant impact on the business's ability to attract and retain a large customer base.

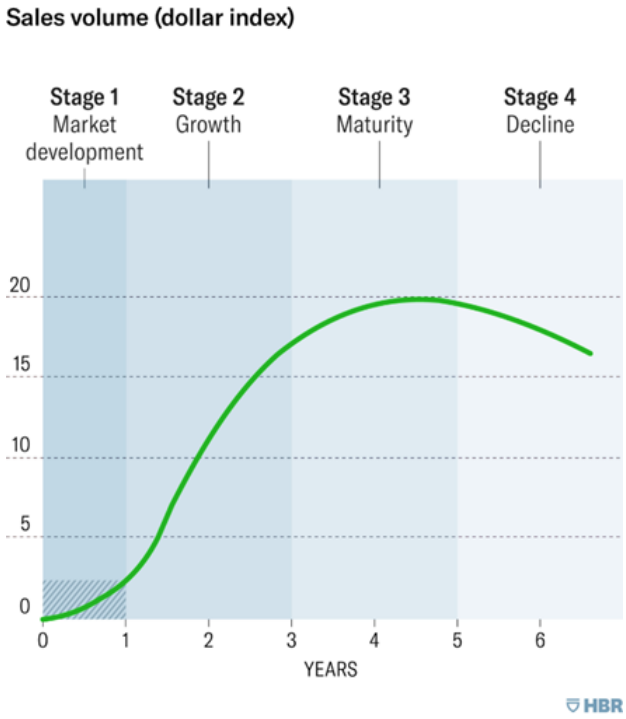

Figure 3. Product Life Cycle; Entire Industry (Theodore, 1965)

Place Strategy

The distribution strategy, also commonly known as the place strategy, is a pivotal component of marketing that centers on the methods by which products or services are rendered accessible to consumers. The process entails making choices about the identification of suitable channels of distribution and the effective management of inventory, transportation, and storage. According to Louis and Ansary (1998)'s book, a distribution channel is a group of autonomous entities that facilitate a product or service's use, or consumption, and its main goal is to provide enough of the right product or service at the right time and place. Distribution strategy differs from other marketing mix components because it relies on geographical positioning (Pitt et al., 1999).

Customers always express a high need for convenience in the product offering, particularly in terms of physical accessibility and delivery. Therefore, the significance of various place strategies like; intensive distribution, selective distribution, exclusive distribution, direct and indirect distribution strategies, as well as distribution channels, cannot be overstated in determining a firm's level of competitiveness. This is due to their impact on both the product's delivery time and its ultimate cost, which also play a considerable role in gaining a competitive advantage. Consequently, as Whetton (2011) mentioned, the distribution strategy of an organization facilitates an improved understanding of sales channels, including enhanced knowledge, better segmentation within sales channels, intermediary roles in the sales process, identification of centers of influence within the sales channel, and the positioning of the firm relative to the sales channels.

Price Strategy

The term "price" denotes the monetary value that a consumer must exchange for the acquisition of a particular product or service (Zimmerman and Blythe, 2017). The price of a product or service represents the aggregate of all the costs that consumers incur to obtain the associated benefits. The process of establishing the selling price may rely on cultural and ethical values, as well as the prevailing societal ideologies. It is noteworthy that business operations are not exclusively driven by profit motives, but rather encompass broader considerations (Sugianto, 2022). Therefore, pricing strategies such as customer value-based pricing, cost-based pricing, and competition-based pricing, play a crucial role in the sales performance of firms, as they are "considered highly adaptable within the marketing mix and are the sole components of the marketing mix that generate revenue, while all other elements represent costs" (Kotler and Armstong, 2020).

Promotion Strategy

Promotion refers to the synchronization of all seller-initiated endeavors aimed at establishing channels of information and persuasion for vending goods and services or propagating an idea (Lamb et al., 2021). Promotional activities like; personal selling, advertising, sales promotion, direct marketing, and publicity significantly have the potential to create a valuable relationship with the effective establishment of accurate channels of communication and persuasion for marketing efforts as well as products or services. Therefore, it is recommended that organizations adopt a standardized promotion strategy or sales promotion strategy to enhance their sales and profits (Aghara et al., 2018; Morimura and Sakagawa, 2018), subject to the condition that they efficiently administer the sales promotion program to attain the intended outcomes (Aghara et al., 2018).

The Efficacy Measurement of Marketing Mix.

The assessment of the effectiveness of the marketing mix involves the scrutiny of the influence of each element of the marketing mix ("Product," "Price", "Place", and "Promotion") on the comprehensive triumph of marketing strategies. Various methodologies are employed to evaluate the efficacy of the marketing mix components. The financial performance of a company can be evaluated through various methods, such as the shareholder-based approach, the balanced scorecard, and the triple bottom line (Schulz et al., 2016; Neri et al., 2021; Hourneaux et al., 2018). The concept of the triple bottom line encompasses the consideration of societal interests. The premise underlying this concept is that entities must assess their performance by considering the economic, environmental, or social value they generate. The practice is efficacious in terms of its capacity to raise awareness regarding a firm's performance among managers, while also contributing to the enhancement of accountability levels for said firms. Organizations should consider embracing the shared value framework as a means of incentivizing the generation of increased profits and enhanced social advantages.

The primary responsibility of managers is to provide the highest feasible return to shareholders. In this regard, the balanced scorecard can be a useful tool to assess the performance of organizations concerning financial metrics, customer satisfaction, employee motivation, and internal processes for learning and efficiency. The utilization of the balanced scorecard and triple bottom line is a comprehensive strategy for assessing organizational performance. This approach extends beyond financial metrics and incorporates other factors that contribute to a more robust and discerning evaluation of financial performance.

Research Methodology

Motivation and Value

Marketing mix elements are critical to boosting the sales performance of petroleum enterprises, specifically in Afghanistan. Unfortunately, the implications of 4Ps marketing mix strategies on the profitability of petroleum businesses (especially automotive fuels and autogas, or LPG) in Afghanistan have received little attention and have not been adequately investigated. This research is motivated by this information gap to investigate the effects of the 4Ps of marketing elements and how these strategies might be engaged to boost the profitability of petroleum firms in Afghanistan's circumstances, involving Samangan province as a case study.

This study's outcomes possess the potential to fill knowledge gaps in the existing pool in this field. Furthermore, the study will assist petroleum companies in comprehending how the 4Ps of marketing mix enhance profitability and consumer awareness; allowing them to have a clear and comprehensive understanding of marketing mix elements and their related effects on the sales performances of numerous services overall. Given how fiercely competitive the petroleum industry is, the return on investment (ROI) must be justifiable. Therefore, this study will further assist stakeholders, including current and upcoming investors and donors, in comprehending Afghanistan's petroleum marketing status, allowing them to make future business decisions based on sales performance through marketing strategies. Moreover, the study will be valuable to the petroleum companies in shaping their marketing decisions for profitability in Afghanistan, especially in the selected locations, and to oil marketers in discovering the optimal blend for controlling sales of automotive fuels to boost their profit margins as competition increases. This study will also help future researchers by disseminating the data across the country in different geographic locations to assess the sustainability of the findings.

Research Design

The study was structured employing case study and phenomenology methods. Phenomenology is a type of qualitative research that specifically examines an individual's own experiences in the world (Neubauer, B. E., et al., 2019). A case study is qualitative research as well as a comprehensive examination of a particular person, organization, or occurrence. Case studies prioritize a comprehensive analysis of a limited number of events or conditions, along with their interconnections within a given context

(Cooper et al., 2006). In the designing of a research project, case studies provide marketers with an additional instrument to investigate the complexities of business-to-business marketing, encompassing its processes and the multifaceted operational context in which it operates (Johnston et al., 2001) as well as the case study approach, delineates two distinct capabilities that (i) effectively amalgamate research and development with marketing, consequently (ii) generate supplementary value (Prašnikar et al., 2008). For instance, Bandinelli et al. (2011) conducted research employing a case study methodology, which revealed that the existing body of knowledge is supported by the findings. The study by conducting a case study approach found that the oil and gas industries typically lack a standardized methodology for the development of new Product-Service Systems (PSS) in Italy.

This comprehensive investigation, involving phenomenology and case study methods, becomes imperative in the process of decision-making processes, benchmarking a company, including its marketing strategies, and subsequently improving its sales performance (Ardley, B. 2005). Therefore, this research employed phenomenological design used primary as well as secondary data, and incorporated a combination of survey and literature review methodologies to gather insights and to obtain a comprehensive understanding of the subject matter. The research utilized the personal interview survey method to conduct the case study on the branch managers, marketing specialists, financial managers, and CEO of Zhakfar Logistics and Services Company Ltd, aiming to examine the impact of the 4ps marketing mix on the sales performance of petroleum enterprises in Afghanistan.

While certain qualitative research scholars refrain from discussing the precise number of interviews required, there is variation in the advised minimum. A vast quantity of articles, book chapters, and books advocate for direction and propose that anything between 5 and 50 participants is sufficient for conducting qualitative survey research (Dworkin, S. L. 2012). In this research, a qualitative personal interview survey with two branch managers, two financial managers, one marketing specialist, and the CEO of the company was conducted to get insights and obtain proper data for the research (Table 1).

Table 1. Research Participants' Profile

No.	Participant	Gender	Position	Years of Experience	Department	Interview Date	Interview Duration
1	Branch Manager 1	Male	Branch Manager	10	Operations	20.06.2023	40 min.
2	Branch Manager 2	Male	Branch Manager	9	Sales	22.06.2023	40 min.
3	Financial Manager 1	Male	Financial Manager	5	Finance	25.06.2023	40 min.
4	Financial Manager 2	Male	Financial Manager	6.5	Accounting	26.06.2023	40 min.
5	Marketing Manager	Female	Marketing Specialist	6	Marketing	27.06.2023	40 min.
6	CEO	Male	Chief Executive Officer	12	Executive Office	30.06.2023	30 min.

The interview was conducted online in a structured manner and was guided by a pre-established interview protocol that was customized to align with the research objectives. The research protocol encompassed inquiries that addressed various facets of the marketing mix, including product strategies, pricing determinations, distribution channels, and promotional undertakings in the petroleum industry of Afghanistan specifically in target locations.

According to Table 1, most participants were male, and the individuals selected for the interviews were those who hold significant decision-making roles and possess extensive knowledge regarding the organization's marketing practices. The utilization of online interviews facilitated expedient and convenient communication, surmounting geographical impediments. Throughout the interview, the respondents were queried regarding their viewpoints about the constituent components of the marketing mix and their perceived impact on their organization's efficacy within the petroleum industry of Afghanistan through obtaining Zhakfar Petroleum as a case study.

The participants were questioned regarding the challenges they encountered in executing successful marketing strategies and the measures they took to overcome them (Figures 5 and 6). The participants' responses were duly recorded and transcribed for subsequent analysis. A content analysis was performed to ascertain prevalent patterns, trends, and insights concerning the impact of the marketing mix on the profitability enhancement of petroleum companies in Afghanistan.

Research Protocol

The present study adopts a methodological approach (Figure 4) that centers on the examination of the 4Ps marketing strategies implemented by Zhakfar Petroleum during three months of marketing campaigns. In this context, data about sales during May, June, and July 2021, when marketing campaigns were executed, were gathered. Additionally, control data from August, September, and October 2021, when no marketing campaign was conducted, were also collected. Moreover, following the conclusion of the interview and the examination of literature reviews, all findings and data were subjected to analysis and cross-validation and subsequently used to conclude. The control data signifies a time interval during which no marketing campaigns were executed. Through a comparative analysis and evaluation of the results obtained from the implementation of 4Ps marketing mix strategies over three months, in conjunction with the control data, a comprehensive assessment of their efficacy will be attained.

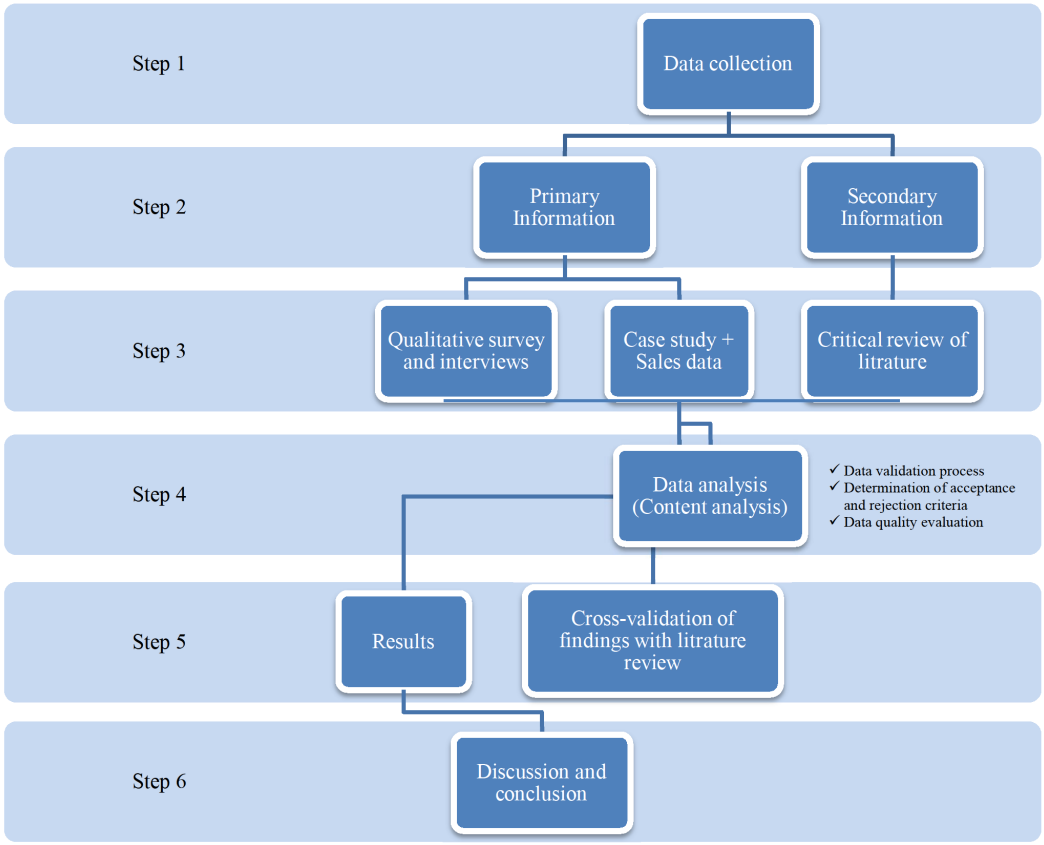

Figure 4. Methodological Process and Steps

Zhakfar Logistics and Services Company Ltd.

Zhakfar Logistics and Services Ltd. is an Afghanistan-based commercial enterprise engaged in various profit-oriented sectors, including petroleum, contracting, FX trading, and other related activities, since 2010. In the petroleum industry, the firm has its storage facilities for various fuel products in the country. Zhakfar Petroleum is operating within its specialized area, fostering business growth through the implementation of stringent cost-control measures, a structured regimen, and a steadfast commitment to pursuing actions that align with long-term objectives.

The organization also has significant expertise in managing projects for governmental and international entities, with a particular focus on logistics, supply chain management, procurement, and fixed-term & fixed-price turnkey projects. The petroleum industry has made noteworthy investments in the energy sector, which involve the establishment of fuel pump stations and the dissemination of petrol, diesel, and LPG gas via their two branches located in Samangan and Badakhshan provinces. The primary objective of the organization is to establish a robust brand image in this industry through the consistent delivery of superior-quality products and services to its clientele. Since 2010, facility management has emerged as a pioneering force in the provision of services to government service contracts and UN agencies across diverse military and civilian compounds in Afghanistan. The array of services provided in this regard by the organization includes general engineering as well as electrical and mechanical maintenance, waste management and disposal, and other crucial life support services.

Sales Data Before Implication of Marketing Strategies in Zhakfar Petroleum

Detailed information on this section has been censored for publication by the company. However, the result section presents an overall sales percentage as well as a summary of outcomes (Figure 4), which serves as an indicator of the effectiveness of the 4Ps marketing mix strategies following their implementation.

Data Analysis

Given the qualitative nature of the data, this research employed content analysis as a means of assessing the responses, making inferences, examining the literature review, as well as generating recommendations. Content analysis involves a thorough examination and review of interview responses to elicit and identify meanings and commonalities as well as distinctions, to establish themes and construct categories (Bengtsson M., 2016). The results obtained from the survey and sales data of the company were cross-validated with the knowledge acquired from the analysis of existing literature. Through a comparative analysis of survey findings and sales data as well as extant scientific works, a comprehensive comprehension of the relationship between 4Ps marketing mix elements and the profitability enhancement of petroleum companies in selected locations was made.

A meticulous examination of the collected data was undertaken to ascertain its precision, pertinence, and dependability. Ensuring the credibility and trustworthiness of the subsequent analysis and conclusions drawn from the data is contingent upon the completion of this critical step. The initial step in the data validation process involved evaluating the suitability of the data for addressing the research questions and objectives. The analysis exclusively included data that was directly relevant to the implementation of marketing strategies in the company and the evaluation of sales performance metrics. This encompassed various key indicators, such as revenue figures, customer acquisition costs, conversion rates, product type and quantity, sales date, sales price, and total sales amount. During this phase, any data that did not conform to the study's scope or appeared to be unrelated to the research focus was omitted.

The acceptance and rejection criteria were determined by pre-established guidelines and industry norms. Data points were deemed acceptable if they satisfied specific predetermined quality standards, including criteria related to completeness, consistency, and accuracy, e.g., data records that exhibited missing values or apparent errors were excluded from the analysis. In addition, data that was obtained from sources lacking reliability or proper validation procedures was excluded from the analysis.

A rating system was implemented to evaluate the quality of the data. A quality score was assigned to each data point, taking into consideration factors such as the credibility of the source, the method used for data collection, and the historical consistency. The data that exhibited high quality and originated from reputable sources, as well as the data collected through consistent procedures, received higher scores and attention. Conversely, data that displayed potential bias or uncertainty received lower scores and were subsequently excluded from the focal point.

To determine the growth rate, the formula [(New Value - Old Value) / Old Value] * 100 is employed. Here, "New Value" denotes the data about the current period, while "Old Value" refers to the data from the previous period. The formula facilitates the quantification of the percentage change observed between the two data points, thereby offering a distinct metric to evaluate the extent of growth or decline.

Results

The current study employed a comprehensive interview guide to gather primary data from senior management personnel across key divisions, as well as select middle-level managers who possess direct involvement in marketing. The process of devising and executing a plan of action is commonly referred to as strategy formulation and implementation. The study utilized secondary data obtained from the official website of Zhakfar Logistics and Services Ltd., which included the organization's present strategic plan. After data collection, a content analysis approach was employed to examine the data by the study's objectives. The results were subsequently organized and presented by distinct themes, evaluating the socioeconomic background of respondents to the survey, the 4Ps marketing mix strategies adopted by the company, as well as the efficacy of each mix's elements on the firm's sales performance, and finally making comparative observations and discussions on pre and post-three-month sales data, as outlined below:

The Socioeconomic Background of Respondents

The research findings indicate that the individuals who took part in the study possess either a bachelor's or a master's degree as well as years of experience in marketing and management. The participant's advanced level of education enabled them to comprehend and provide accurate responses throughout the interview. The duration of employment within a specific or similar

organization fosters a perception of stability and imbues the interviewer with a heightened level of assurance regarding the anticipated result. Nevertheless, during an interview with the Chief Executive Officer (CEO) of the company, it was disclosed that the company's organizational culture mandates managers to participate in the process of hiring well-specialized and experienced staff. The study found that the respondents had accumulated a decade of work experience for the company, indicating a significant level of acquaintance with the organization's culture and marketing strategies amidst environmental challenges. This is attributed to the company's frequent use of the "internal mobility or transfer" strategy. Zhakfar Logistics and Services Ltd. frequently employs the "internal mobility" strategy to cultivate the positive retention and competencies of their personnel, furnish them with a range of experiences, and adapt to the evolving demands of the enterprise.

The findings of the research underscore the notable consequences of the company's adoption of the internal mobility strategy. The implementation of this strategy has facilitated the acquisition of varied experiences and expertise by employees, resulting in a heightened level of familiarity and awareness of the organization's culture and marketing strategies. The employees' familiarity with the company landscape proved advantageous in addressing environmental challenges, as they possess the necessary skills to navigate the challenges that arise. The adoption of internal mobility has demonstrated its efficacy in facilitating the growth of employees' competencies, promoting their flexibility, and nurturing their comprehensive understanding of the organization's culture, thereby augmenting the company's ability to effectively tackle geographical challenges.

Marketing Mix Strategies in Zhakfar Petroleum

The responses provided by the participants exhibited a diverse array of viewpoints and personal encounters, thereby illuminating the intricate and multifaceted characteristics inherent in Zhakfar Petroleum's 4Ps marketing mix strategies. Several participants indicated a significant inclination towards the company's focus on environmental sustainability, highlighting its positive impact on their purchasing choices and their perception of the brand. They emphasized the importance of Zhakfar Petroleum's endeavors to advance renewable energy sources and mitigate carbon emissions through their promotional initiatives. Moreover, the participants offered valuable perspectives on the efficacy of individual components within the marketing mix. The impact of Zhakfar Petroleum's digital marketing initiatives, such as engaging social media campaigns and targeted online advertisements, has been emphasized by some, as they have effectively captured the attention of consumers and cultivated brand loyalty. Alternative viewpoints were presented by some individuals who indicated a predilection for conventional marketing channels, including television commercials and print advertisements. These individuals underscored the importance of employing a varied marketing mix to effectively target distinct customer segments. Additionally, the data collected from the participants' responses indicated a significant impact of Zhakfar Petroleum's marketing strategies on their perception of the company's overall reputation. The participants also observed that the marketing campaigns conducted by the company had a significant impact on influencing their perception of Zhakfar Petroleum as an organization that embraces innovation and forward-thinking strategies. The company's branding was linked to attributes such as dependability, technological progress, and a dedication to environmental sustainability. Nevertheless, the study participants' varied responses contribute to a comprehensive comprehension of the efficacy, merits, and areas requiring enhancement in the firm's marketing mix strategies. These insights provide valuable contributions toward improving future marketing initiatives and customizing strategies to align more effectively with the expectations and preferences of the target demographic.

Analyzing the Effectiveness of Product Strategies Adopted by Zhakfar Petroleum

The findings of the study were supposed to shed light on the product strategies pursued by the company. The study uncovered the following product strategies that were put into action in May, June, and July of 2021 (Table 2):

Table 2. Product Strategy Trends Adopted by Zhakfar Petroleum

Month/Year	Product strategies
May 2021	1. Diverse product portfolio 2. Providing premium products
June 2021	3. Customizing the product portfolio 4. Transparent pricing and visible labeling
July 2021	5. Monitoring and controlling product distribution. 6. Data-driven product decisions

Initially, the participants were requested to specify the range of petroleum products offered by the company, its competitive edge, the procedure for making decisions regarding the introduction or discontinuation of certain products (such as Diesel, Petrol, and LPG), and to provide some real-life examples of how they have personalized their product portfolio to meet the requirements of particular customer segments. They indicated that they sell a range of petroleum products, including petrol, diesel, and LPG gas, based on customer demand, and that these products are prominently displayed at their petrol station with clear price labels on the tanks. They strive to differentiate the firm through several key factors. Firstly, the company takes pride in offering high-quality petrol with a rating of 92, superior diesel labeled as 02, and premium LPG gas, delivering exceptional quality, and providing free gas transfer services to specific customer ranges using mobile tankers, offering convenience and flexibility. Customers have expressed satisfaction with the usability of these products, leading to their continued availability. They also mentioned that another aspect that sets Zhakfar Petroleum apart from its competitors in the region is its commitment to providing Only High-Quality products. They do not compromise on quality, which has attracted customers away from competitors who offer lower-grade options, and in terms of product sales, they have observed that their fuel sales exceed those of other gas stations as they closely monitor and control the distribution of their products by tracking their country of import, such as Iran, Russia, and Turkmenistan, as the quality of the fuel directly impacts its sales performance.

The study also reported that the company's decision-making process for products is influenced by a careful examination of daily sales records, which enables them to recognize demand trends and consumer preferences. The company gains important insights into the popularity of its products and pinpoint areas for development by regularly monitoring sales performance and actively growing its customer base.

Analyzing the Effectiveness of Place (Distribution) Strategies Adopted by Zhakfar Petroleum

The research aimed to ascertain from the respondents the place strategies implemented by the company and found the following place strategies that had been implemented during May, June, and July of 2021 (Table 3):

Table 3. Place Strategy Trends Adopted by Zhakfar Petroleum

Month/Year	Place (distribution) strategies
May 2021	1. Convenient and accessible locations 2. Clean and attractive surroundings
June 2021	3. Catering to diverse customer needs 4. Special services for targeted categories
July 2021	5. Multiple distribution methods 6. Targeted distribution agreements

The interviewees indicated that, firstly, the positive code of conduct demonstrated by Zhakfar Petroleum's staff contributed to enhancing customer satisfaction as it created a welcoming and helpful atmosphere. Moreover, they demonstrate a keen understanding of the diverse needs of their customer segments. For instance, by providing free parking lots for trucks as well as specific requirements for truck drivers, ensuring a convenient and easily accessible refueling solution. This tailored approach not only contributed to enhanced customer satisfaction but also fostered customer loyalty within the targeted segments. Moreover, the strategic positioning of the firm's station (adjacent to the highway) coupled with its pristine surroundings and dining establishment, serves as an added incentive for the customers. People visit petrol stations not solely to refuel their vehicles, but also for leisure, relaxation, prayer, and enjoying their time, thereby enhancing the competitive standing of the company.

The corporation utilizes a varied array of distribution channels to optimize the expeditious conveyance of its petroleum commodities to its customers. Mobile tanks are employed for gas transportation, with consideration given to branding aspects to maintain consistency and reinforce brand recognition throughout the distribution process. To maximize efficiency and punctuality, Zhakfar Petroleum implements contractual agreements between its station and clientele, which incorporate a commitment to deliver fuel within a specified timeframe. This dedication guarantees the timely delivery of products to customers. In addition, the organization has successfully executed efficient distribution strategies, including targeted distribution to various retail establishments, hotels, and corporate settings. The aforementioned strategies function within the context of formal agreements, augmenting ease of access and simplifying the process of dissemination. Consequently, the proficient implementation of these distribution strategies led to an enhancement in sales performance.

Analyzing the Effectiveness of Price Strategies Adopted by Zhakfar Petroleum

In this section, the company's pricing strategies were the topic of discussion for the respondents. It is revealed that this was mainly attributed to the adoption of a systematic daily report system as well as, competitive pricing, cost-based pricing, market-based pricing, volume-based discounts, customized discounts, loyalty discounts, and promotional pricing strategies to drive the firm's overall pricing strategy during May, June, and July of 2021 (Table 4).

Table 4. Price Strategy Trends Adopted by Zhakfar Petroleum

Month/Year	Price strategies
May, June, and July. 2021	1. Competitive Pricing 2. Cost-Based Pricing 3. Market-Based Pricing 4. Volume-Based Discounts 5. Customized Discounts 6. Loyalty Discounts 7. Promotional Pricing Strategies

Through a comprehensive analysis of market trends, costs, and other pertinent factors, they determined competitive prices for their products. To ensure ongoing competitiveness, the company diligently collected and examined daily weekly, monthly, quarterly, and yearly statistics. This data-driven approach allowed them to evaluate their market position and make well-informed decisions regarding pricing adjustments. They have successfully implemented a pricing strategy that involves procuring cost-effective petroleum products and anticipating future price increases. By offering these products at lower prices compared to their competitors' fuel stations, they effectively capture the interest of new customers, stimulate sales, and enhance overall customer satisfaction.

Consequently, this strategy yielded numerous benefits, including increased sales volume of petroleum products and elevated levels of customer satisfaction. On the other hand, the company considers several factors regarding pricing strategies. Initially, the pricing rate is determined based on global rating volatility as well as the prices at Aqinah and Hairatan ports.

Additionally, they factor in the rate of the US Dollar, the purchase rate, and payroll expenses. They also include a tax of 2 Afghanis per letter. To ensure competitive pricing in the market, the Provincial Office of Petrol and Gas Distribution grants the company the flexibility to compete on price; previously, the company had control over setting the prices, but as of now it falls under the authority of the city Provincial Office, which determines and implements the prices across the area. For instance, the provincial Directorate of Petroleum and Liquid Gas Materials provides a reference rate, such as 65 Afghani for Diesel, and gives the option to sell at a lower price if desired. The company performs calculations considering factors such as price fluctuations at Aqinah and Hairatan ports, staffing costs, and the US Dollar Rate. If they find themselves in a profitable position, they lower the price, enabling them to offer a more attractive price in the market.

To cater to distinct customer segments, the company provides customized discounts and benefits. Valued and loyal customers who are daily drivers and reside in the Hazrat Sultan area of Samangan province can receive exclusive discounts on their fuel purchases. Zhakfar Petroleum also offers a discount of approximately 1 Afghani per liter to customers who purchase more than 200 liters of diesel for their truck vehicles. This discount is implemented through adjustments made to the company's profit systems. These promotions assist in preserving differentiated customer segments and promoting sustained customer loyalty. The respondents indicated the positive impact of the implementation of pricing strategies on Zhakfar Petroleum's sales performance. One such strategy involved setting a rate of 66 Afghani for new customers in the first fuel dispenser, while long-time customers or those purchasing more than 30 liters of fuel were given a discounted rate of 65 Afghani in the second fuel dispenser. This approach proved effective in driving up sales, particularly as new customers were attracted by the opportunity to avail themselves of the long-time customer discount benefit.

Analyzing the Effectiveness of Promotion Strategies Adopted by Zhakfar Petroleum

The study aimed to ascertain the existence of promotional strategies implemented by Zhakfar Petroleum. The research findings indicate that the following promotional strategies were adopted by the company during May, June, and July 2021 (Table 5):

Table 5. Promotion Strategy Trends Adopted by Zhakfar Petroleum

Month/Year	Price strategies
May, June, and July. 2021	1. Social Media Marketing 2. Local WhatsApp Groups 3. Group SMS 4. Roadside Banners 5. Promotional Merchandise

With regards to promotion, the company employed a range of promotional strategies to raise awareness and effectively market their products. As a key approach, they consider harnessing the power of social media platforms and local WhatsApp groups. They were able to reach a wider audience, build brand recognition, and spark interest in their products by utilizing these digital channels. The business effectively connects with potential clients through social media and conveys the benefits of its petroleum products. Their marketing initiatives are aimed at raising awareness, providing useful information, and encouraging interaction with their target market. These endeavors aim to stimulate interest and drive sales for their petroleum products.

The company employs several channels to make sure that customers receive their petroleum products. Initially, they used digital marketing platforms as well as Facebook and other media channels for marketing efforts, but they soon realized that their target demographic, especially drivers, was not actively using these platforms. Consequently, they shifted their focus slightly away from social media marketing. The company also uses group messaging (SMS) on mobile devices and through WhatsApp, which has been successful in drawing customers' attention. Another strategy used by the company to advertise its products is the placement of advertising banners on public roads and highways. Lastly, the company has incorporated a branding strategy by free distribution of travel safety handbooks and prayer hooks to drivers that can be hung on the rear-view mirrors of vehicles. This approach has proven to be an effective marketing strategy that has resulted in a notable increase in sales attributed to heightened brand recognition. The use of these diverse channels and promotional activities proved to have a positive effect on addressing customers' specific preferences and needs.

Based on the sales data provided by the company and a thorough examination of the 4Ps marketing mix strategies employed by Zhakfar Petroleum throughout May, June, and July 2021, in contrast to the control data from August, September, and October 2021, there is a clear and significant correlation between the 4Ps marketing mix and the notable surge in sales. The results indicate a significant increase in sales of 34.51% during the period in which targeted marketing initiatives were actively implemented. The analysis of the sales data collected over the three-month marketing campaign period, in comparison to the control data, provided additional evidence supporting the direct influence of the 4Ps marketing mix on the observed increase in sales. The lack of marketing campaigns during the designated control period spanning from August to October 2021 brought to light a discernible disparity in sales performance, thereby highlighting the efficacy of the 4Ps marketing mix strategies employed by Zhakfar Petroleum. The results of this study highly underscore the significant impact of the 4Ps marketing mix on the enhancement of sales growth. Through the strategic alignment of product, price, promotion, and place, Zhakfar Petroleum successfully leveraged market opportunities, effectively attracting customers, and significantly boosting sales. These insights offer valuable guidance for the company's future marketing endeavors, allowing them to enhance and optimize their marketing strategies to sustain growth and uphold a competitive advantage in the market.

Sales Data After Implication of Marketing Strategies in Zhakfar Petroleum

Sales data from May, June, and July 2021, during which marketing campaigns were implemented, compared to the control data from August, September, and October 2021, during which no marketing campaign was conducted, revealed a statistically significant growth of 34.51%. Detailed information in this regard has been censored for publication by the company due to the presence of sensitive data. Table 6 denotes a summary of the outcomes from seven major aspects.

Table 6. Outcome Summary

No.	Major Aspects	Result
1	Socioeconomic Background of Respondents	Interview participants had strong academic background degrees as well as several years of specialized and experienced marketing and management experiences. The interviewee's advanced education helped them understand and respond accurately. The interviewer feels more confident about the outcome if the candidate has worked for a specific or similar company for a long time.
2	HR-Internal Mobility Strategy at Zhakfar Logistics and Services Ltd.	This research underscores the notable impacts of the company's internal mobility strategy on the performance of human resources. This strategy has helped employees gain diverse experiences and expertise, increasing their knowledge of the company's culture and marketing strategies. The company's familiarity with environmental issues gave employees the skills to overcome challenges. Internal mobility improved the company's ability to overcome geographical challenges by helping employees develop their skills, flexibility, and cultural understanding.
3	Marketing Mix Strategies in Zhakfar Petroleum	The digital marketing initiatives undertaken by Zhakfar Petroleum, including interactive social media campaigns and focused online advertisements, have successfully attracted customer interest and fostered brand loyalty. There exists a segment of individuals who exhibit a preference for conventional marketing channels such as TV and print ads.
		The marketing campaigns implemented by the company had a notable influence on shaping the perception of Zhakfar Petroleum as an entity that embraces innovative and forward-thinking strategies.
		The findings of this study highly underscore the significant impact of the 4Ps marketing mix on the enhancement of sales growth.
		By implementing these 4Ps marketing mix strategies in Afghanistan, particularly in Samangan province, over a three-month period, petroleum companies' sales performance be able to increase significantly, as in this study it was evidenced a 34.51% growth rate.
4	**"Product"** Strategy Efficacy at Zhakfar Petroleum	The continuous provision of fuel products of superior quality has been found to result in customer satisfaction, thereby ensuring the sustained availability and loyalty of customers.
		The quality of fuel products directly impacts sales performance. Therefore, it has been found that closely monitoring and controlling distributions by tracking the country of import has a paramount and inevitable connection with sales performance.
		It has been found that daily sales records as well as data-driven products influence the company's decision-making process by revealing demand trends and consumer preferences. Monitoring sales success and aggressively developing the customer base gives valuable data into product popularity and development opportunities.
5	**"Place"** (Distribution) Strategy Efficacy at Zhakfar Petroleum	The implemented "Place" strategies, e.g., providing convenient and accessible locations, catering to diverse customer needs, special services for targeted categories (mobile tanks), targeted distribution agreements, as well as other multiple distribution methods, crafted a positive code of conduct toward individual customers and corporations, which consequently led to WOM (word of mouth) marketing.
6	**"Price"** Strategy Efficacy at Zhakfar Petroleum	A timely data-driven approach proved to be a prevalent technique to evaluating the market position and making updated and well-informed decisions regarding pricing adjustments.
		Through cost-effective procurement, it was possible to successfully implement pricing strategies to anticipate future price volatility.
		Customized Discounts and Benefits for Loyal Customers proved an effective price strategy in driving up sales, particularly as new customers were attracted by the opportunity to avail themselves of the long-time customer discount benefit.
7	**"Promotion"** Strategy Efficacy at Zhakfar Petroleum	Social media platforms - at a low rate - and local WhatsApp groups - at a high rate – as well as direct messaging (SMS) on mobile devices have been demonstrated as effective digital channels for expanding outreach, establishing brand visibility, and generating interest among petroleum consumers in Afghanistan.
		The branding strategy of Free Distribution of Travel Safety Handbooks under the brand name of the company and the distribution of Prayer Hooks to drivers - that can be hung on the rear-view mirrors of vehicles - played a pivotal role in heightened brand recognition.

Discussion of Outcomes

Zhakfar Petroleum has experienced an increase of 34.51% in sales within a three-month timeframe, which can be attributed to the successful execution of the company's 4Ps marketing mix strategies. This section discusses the various strategies implemented by

the company and their impact on the enhanced sales performance of the business - addressing the research question and objectives of the study.

The company's strategy of supplying a wide-ranging array of products has contributed to the company's success in producing greater revenue, which in turn has contributed significantly to the company's overall performance. By carrying such a wide variety of petroleum products, Zhakfar Petroleum can cater to its customer's varied wants and satisfy their specific tastes. This strategy approach helps the business broaden its position in the market by targeting a variety of consumer subgroups, which results in improved sales performance as a direct consequence. It has been demonstrated that emphasizing the delivery of high-quality items may be a successful strategy for increasing sales. Zhakfar Petroleum has established itself as a respected brand in the business by delivering petroleum products of excellent quality that not only meet but significantly exceed industry benchmarks. This has allowed the company to position itself as a leader in the market. Consumers who are willing to pay a higher price have been tempted by the appeal of greater quality and perceived value that are attached to high-end items. These consumers have made a substantial contribution to the overall rise in sales because of their willingness to pay a higher price.

In terms of sales performance, Zhakfar Petroleum has seen positive results thanks to the deployment of a product portfolio customization approach. The company tailors its products and services to meet the specific demands of its many diverse types of customers by having an in-depth grasp of those customers' individual needs and preferences.

It is guaranteed that consumers will be able to find items that are suitable for their requirements and preferences when customization techniques are put into effect. Consequently, customer satisfaction levels will increase, and there will be a greater possibility that customers will make additional purchases.

A significant contributor to the rise in revenue generated by Zhakfar Petroleum is the company's unwavering commitment to maintaining open and understandable pricing and labeling practices. Customers are given a sense of trust and confidence in the company thanks to its offering price structures that are open, simple, and easy to understand, as well as exhaustive information on its products. Customers are given the ability to make well-informed judgments regarding their purchases because of the openness that is offered, which leads to a noticeable rise in sales. The success of Zhakfar Petroleum's sales efforts may be directly attributed to the company's decision to install an all-encompassing monitoring and control system for product distribution. The firm can efficiently maximize its market penetration and boost its accessibility thanks to its rigorous control of distribution routes and strategic positioning of products. This strategic approach ensures that the firm's products will be more easily accessible to clients, which will subsequently lead to an increase in sales.

At Zhakfar Petroleum, the adoption of decision-making processes that are driven by data has been crucial to the company's success in increasing revenue from product sales. The company makes well-informed judgments on its product offerings since it conducts thorough research on market trends, client preferences, and sales statistics. The adoption of a data-driven methodology assists in lessening the possible risks and challenges that are inherent in the process of product creation while simultaneously enabling Zhakfar Petroleum's capacity to match its product offerings with the demand that is currently being seen in the market. Zhakfar Petroleum places its gas stations in areas that have elevated levels of traffic, are not far from residential areas, and are next to key transit routes and highways. This ensures that its products can be easily accessed by the company's consumer base conveniently. The availability of this convenience element makes a substantial contribution to the overall pleasure of clients and acts as a catalyst for the development of repeat business, which leads to a noticeable increase in sales. The formation of a welcoming atmosphere that is meticulously cared for is beneficial to the development of a favorable brand image and assists in enhancing the experience that a company provides for all its customers. This specific strategy plays a significant role in improving customer satisfaction and encouraging customer loyalty, both of which contribute to brand image and consequently to an increase in total sales.

Zhakfar Petroleum provides individualized services that are tailored to meet the demands of certain client groups. These specialized services include fleet oil change services, priority fueling, and dedicated support. The application of these strategies has the effect of increasing the level of customer satisfaction and cultivating relationships that are maintained over time, which in turn propels the increase in sales in these specific areas. The utilization of internal staff mobility within Zhakfar Logistics and Service Ltd. has demonstrated significant efficacy in the development of managerial competencies through training and skill enhancement. The company has established a comprehensive development program that strengthens the skills and expertise of employees and managers by offering them opportunities to transition between various roles and departments. This approach not only facilitates managers in obtaining a comprehensive comprehension of the organization's operations but also empowers them to develop cross-functional competencies and more profound insight into the company's culture and values, as well as having a positive impact on employee engagement and retention rates.

In conclusion, the implementation of the 4Ps marketing mix greatly enhanced the sales performance of Zhakfar Petroleum in Samangan province. Upon analyzing three months of sales data in comparison to the control set, it was found that there was a

significant 34.51% rise in the growth rate. This confirms that the "Product," "Price," "Place," and "Promotion" components have a beneficial impact on overall profitability.

Research Limitations

- This study employed a case study methodology, thus confining the research scope to a particular organization.
- To enlighten the discussion, it is crucial to acknowledge that the understanding of the effects of 4Ps marketing mix strategies on profitability improvement primarily stems from the specific context of Zhakfar Petroleum. Hence, these findings may not reflect enough to be universally applicable to other industries within Afghanistan.
- The utilization of a personal interview for data collection posed challenges in scheduling interview appointments, primarily due to the limited availability of stable internet connections among the targeted senior management individuals. Consequently, the duration of the data collection process exceeded the initially anticipated timeframe.
- The study centered on conducting interviews with the executive team members who were occupied with numerous responsibilities, thereby presenting challenges and limitations in coordinating suitable interview schedules. Nevertheless, the research succeeded in acquiring data from the primary stakeholders within the company.

Research Suggestion for Further Investigations

- Given the current study's focus solely on Zhakfar Petroleum company's 4Ps marketing mix strategies, it is imperative to conduct additional research to ascertain the remaining components of the mix's strategies (7Ps) that have the potential to enhance the sales performance of petroleum companies.
- Research can be conducted in various industries apart from the petroleum industry.
- The research employed a personal interview methodology, resulting in findings that were reliant on the subjective viewpoints of individual respondents. For future investigations, it is recommended to incorporate alternative data collection instruments and data analysis techniques.
- This study focused exclusively on the marketing mix strategies implemented by ZHAKFAR Petroleum. Hence, other organizations within the Afghan industry can potentially replicate this research.

Peer Review: Externally peer-reviewed.
Conflict of Interest: The author has no conflict of interest to declare.
Grant Support: The author declared that this study has received no financial support.

ORCID:

Mir Abdullatif Yahya 0000-0002-3699-2983

REFERENCES

Aghara, V. N., Nwaizugbo, I. C., Oparah, P. C., & Ifeanyichukwu, C. D. (2018). Sales promotion as a leverage strategy for improving sales and profitability in alcohol beverage industry. International research journal of management, IT and social sciences, 5(4), 18-25.

Ardley, B. (2005). Marketing managers and their life world: explorations in strategic planning using the phenomenological interview. The Marketing Review, 5, 111-127. https://doi.org/10.1362/1469347054426195.

Arif, A. A. (2022). The Impact of the Marketing Mix on Online Business: A Study in Sylhet City. South Asian Res J Bus Manag, 4(6), 220-225.

Armstrong, G., Adam, S., Denize, S., & Kotler, P. (2014). Principles of marketing. Pearson Australia.

Bahadir, S. C., Bharadwaj, S. G., & Srivastava, R. K. (2015). Marketing mix and brand sales in global markets: Examining the contingent role of country-market characteristics. Journal of International Business Studies, 46, 596-619.

Bandinelli, R., & Gamberi, V. (2011). Servitization in oil and gas sector: outcomes of a case study research. Journal of Manufacturing Technology Management, 23(1), 87-102.

Banerjee, S., & Bhardwaj, P. (2019). Aligning marketing and sales in multi-channel marketing: Compensation design for online lead generation and offline sales conversion. Journal of Business Research, 105, 293-305.

Bengtsson, M. (2016). How to plan and perform a qualitative study using content analysis. NursingPlus open, 2, 8-14.

Bennett, P.D. 1995. Dictionary of marketing terms. 2nd edition. Chicago: American Marketing Association, p. 115.

Benson, A., & Rissing, B. A. (2020). Strength from within: Internal mobility and the retention of high performers. Organization Science, 31(6), 1475-1496.

Bitner, M. J. (1992). Servicescapes: The impact of physical surroundings on customers and employees. Journal of marketing, 56(2), 57-71.

Booms and Bitner (1981). Marketing strategies and organizational structures for service firms. Marketing of services, Marketing of Services 1981, American Marketing Association.

Borden, N. H. (1965). The concept of the marketing mix. In Schwartz, G. (Ed), Science in marketing. New York: John Wiley & Sons, 386-397.

Campbell, D., Stonehouse, G., & Houston, B. (2002). Business strategy: an introduction. Routledge.

Candemir, A., Ventura, K., & Kazançoğlu, İ. (2011). Content Analysis Of Top 1000 Turkish Company Web Sites: Marketing Mix Practices. International Journal of Business and Management Studies, 3(2), 55-68.

Central Intelligence Agency. (2021). The World Factbook: Afghanistan. Access time: 17 May 2023, Retrieved from https://www.cia.gov/the-world-factbook/countries/afghanistan/

Check, J., & Schutt, R. K. (2011). Research methods in education. Sage Publications.

Christensen, C., & Raynor, M. (2013). The innovator's solution: Creating and sustaining successful growth. Harvard Business Review Press.

Cooper, D. R., Schindler, P. S., Cooper, D. R., & Schindler, P. S. (2006). Marketing research. New York: McGraw-Hill/Irwin.

Cronje, GJ, Du Toit GS, Motlatla, & MDC, Marais, A de K. 2007. Introduction to Buiness Management. 6th edition.Cape Town: Oxford University Press, p. 283.

Culliton, J.W. (1948). The Management of Marketing Costs. Division of Research, Graduate, School of Business Administration, Boston, MA: Harvard University.

Damirchi, G. V., & Shafai, J. (2011). A guideline to Islamic marketing mix. Interdisciplinary Journal of Contemporary Research in Business, 3(3), 1339-1347.

Dworkin, S. L. (2012). Sample size policy for qualitative studies using in-depth interviews. Archives of sexual behavior, 41, 1319-1320.

Edgar, T. W., & Manz, D. O. (2017). Convenience sampling. Research Methods for Cyber Security.

Freiling, J. (2004). A Competence-based Theory of the Firm. management revue, 27-52.

Gora, Rahila Chirai & Mohammed, Zakari & Habibu, Mohammed & Aliyu, Murtala. (2020). Influence of Marketing Strategies on Sale Of Periodical Publications By The Periodical Street Vendors In Zaria Metropolis, Kaduna State, Nigeria.

Gronroos, C. (1994). From marketing mix to relationship marketing: towards a paradigm shift in marketing. Asia-Australia Marketing Journal, 2(1), 9-29.

Guenzi, P., Sajtos, L., & Troilo, G. (2016). The dual mechanism of sales capabilities in influencing organizational performance. Journal of Business Research, 69(9), 3707-3713.

Habibi, M., Kheiri, B., & Aligholi, M. (2023). Developing an Integrated Marketing Mix Based on the Behavior of Industrial Customer: The Case of Behran Oil Company. Iranian Journal of Management Studies, 16(2), 465-479.

Hanaysha, J. R., Al Shaikh, M. E., & Alzoubi, H. M. (2021). Importance of marketing mix elements in determining consumer purchase decision in the retail market. International Journal of Service Science, Management, Engineering, and Technology (IJSSMET), 12(6), 56-72.

Hindi, A. M., Schafheutle, E. I., & Jacobs, S. (2019). Community pharmacy integration within the primary care pathway for people with long-term conditions: a focus group study of patients', pharmacists' and GPs' experiences and expectations. BMC family practice, 20(1), 1-15.

Hourneaux Jr, F., Gabriel, M. L. D. S., & Gallardo-Vázquez, D. A. (2018). Triple bottom line and sustainable performance measurement in industrial companies. Revista de Gestão, 25(4), 413-429.

Ingram, T. N., LaForge, R. W., Avila, R. A., Schwepker Jr, C. H., & Williams, M. R. (2015). Sales management: Analysis and decision making. Routledge.

Išoraitė, M. (2016). Marketing mix theoretical aspects. International Journal of Research-Granthaalayah, 4(6), 25-37.

Jain, S. C., & Punj, G. (2002). Developing marketing Practices: A framework Approach. Marketing Intelligence and Planning, 7(3), 34-42.

Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: antecedents and consequences. Journal of marketing, 57(3), 53-70.

Johnston, W. J., Leach, M. P., & Liu, A. H. (2001). Using case studies for theory testing in business-to-business research: the development of a more rigorous case study methodology. In Getting better at sensemaking (pp. 215-241). Emerald Group Publishing Limited.

Kanten, I. K., & Darma, G. S. (2017). Consumer behaviour, marketing strategy, customer satisfaction, and business performance. Jurnal Manajemen Bisnis, 14(2), 143-165.

Keramati, A., Ardalan, A., & Ashtiani, P. G. (2012). Relationship between marketing mix and sales performance In the context of the Iranian Steel private firms. International Journal of Arts and Commerce, 1(6), 195-199.

Khalazaie M (2019) "Developments in the oil and gas sector of Afghanistan" Kakar Advocates Law Firm LLC (https://kakaradvocates.com) Accessed: 25 May 2023.

Khan, S., Steenkamp, P., & Haydam, N. (2012). Marketing mix strategy adaptation: a retail organization's response to the global economic downturn. Journal of Applied Research in Business and Economics.

Kotler, P., & Armstrong, G. M. (2010). Principles of marketing. Pearson Education India.

Kotler, P., & Keller, K. (2003). Marketing management, (international version).

Kozlenkova, I. V., Samaha, S. A., & Palmatier, R. W. (2014). Resource-based theory in marketing. Journal of the academy of marketing science, 42, 1-21.

Lamb, C. W., Hair, J. F., & McDaniel, C. (2011). Essentials of marketing. Cengage Learning.

Le Meunier-FitzHugh, K., & Lane, N. (2009). Collaboration between sales and marketing, market orientation and business performance in business-to-business organisations. Journal of Strategic Marketing, 17(3-4), 291-306.

Londhe, B. R. (2014). Marketing mix for next generation marketing. Procedia Economics and Finance, 11, 335-340.

Louis W. Stern and Adel I. EI-Ansary, Marketing Channels, 3rd ed. (Englewood Cliffs, NJ: Prentice-Hall, 1988).

Lovelock, C. H., & Yip, G. S. (1996). Developing global strategies for service businesses. California management review, 38(2), 64-86.

McCarthy, J. (1964). The concept of the marketing mix. Journal of Advertising Research, June, 2-7.

McGrath, M. (2000). Product strategy for high technology companies. McGraw Hill Professional.

Mihalcea, A. D. (2015). HUMAN RESOURCES AND MARKETING MIX IN OIL & GAS INDUSTRY. Annales Universitatis Apulensis-Series Oeconomica, 17(1).

Möller, K. (2006). The marketing mix revisited: Towards the 21st century marketing by E. Constantinides.

Morimura, F., & Sakagawa, Y. (2018). Information technology use in retail chains: Impact on the standardisation of pricing and promotion strategies and performance. Journal of Retailing and Consumer Services, 45, 81-91.

Nagle, T. T., & Holden, R. K. (1995). The strategy and tactics of pricing Englewood Cliffs. NJ: Prentice Hall. Naman, JL and DP Slevin (1993)," Entrepreneurship and the Concept of Fit: A Model and Empirical Tests," Strategic Management Journal, 14, 137-54.

Neri, A., Cagno, E., Lepri, M., & Trianni, A. (2021). A triple bottom line balanced set of key performance indicators to measure the sustainability performance of industrial supply chains. Sustainable Production and Consumption, 26, 648-691.

Neubauer, B. E., Witkop, C. T., & Varpio, L. (2019). How phenomenology can help us learn from the experiences of others. Perspectives on medical education, 8, 90-97.

Niazi, N., Rashid, M., & Shamugia, Z. (2021). Role of Marketing Mix (4Ps) in Building Brand Equity: Case Study of Shell Petrol, UK. International Journal of Applied Business and Management Studies, 6(1), 2021.

Pajhwok Afghan News. (2020, October 26). Afghanistan's Petroleum Potential and Investment Opportunities. Access time: 17 May 2023, Retrieved from https://www.pajhwok.com/en/2020/10/26/afghanistan%E2%80%99s-petroleum-potential-and-investment-opportunities

Palmatier, R. W., & Crecelius, A. T. (2019). The "first principles" of marketing strategy. Ams Review, 9, 5-26.

Parment, A., Kotler, P., & Armstrong, G. (2021). Principles of Marketing: Scandinavian Edition. Pearson Higher Ed.

Paterson, A. (2005). Understanding Markets in Afghanistan: A Study of the Market for Petroleum Fuels (No. 298-2016-4739).

Pitt, L., Berthon, P., & Berthon, J. P. (1999). Changing channels: the impact of the Internet on distribution strategy. Business Horizons, 42(2), 19-28.

Porter, M. E. (2011). Competitive advantage of nations: creating and sustaining superior performance. simon and schuster.

Prašnikar, J., Lisjak, M., Buhovac, A. R., & Štembergar, M. (2008). Identifying and exploiting the inter relationships between technological and marketing capabilities. Long Range Planning, 41(5), 530-554.

Prescott, J. F., & Miller, S. H. (Eds.). (2002). Proven strategies in competitive intelligence: lessons from the trenches. John Wiley & Sons.

Rahman, M., Islam, M., Al Amin, M., Sultana, R., & Talukder, M. (2019). Effective factors of service marketing mix on tourist satisfaction: A case study. Asian Social Science, 15(7).

Rahmaty, H., Ershad, A. M., & Sabory, N. R. (2020). Afghanistan fuel market prediction. Repa Proceeding Series, 1-12.

Rouziès, D., & Hulland, J. (2014). Does marketing and sales integration always pay off? Evidence from a social capital perspective. Journal of the Academy of Marketing Science, 42, 511-527.

SAM, A. F. (2017). The Effects of Marketing Mix (4P) on Companies' Profitability: A Case Study of Automotive Industry in France. Journal of Research in Marketing (ISSN: 2292-9355), 8(1), 636-640.

Sanchez, R., & Heene, A. (2004). The new strategic management: Organization, competition and competence. Wiley.

Schulz, S. A., & Flanigan, R. L. (2016). Developing competitive advantage using the triple bottom line: A conceptual framework. Journal of Business & Industrial Marketing.

Singh, M. (2012). Marketing mix of 4P's for competitive advantage. IOSR Journal of Business and Management, 3(6), 40-45.

Srisorn, W., Chayanon, S., & Punluekdej, T. (2019). Marketing Mix Affecting Buying Behavior of Riceberry of the Consumers in Yasothon Province. BESM-30, 14.

Sugianto, S. (2022). Behind the Selling Price Determination in Commercial Photography Service Practice. Indonesian Interdisciplinary Journal of Sharia Economics (IIJSE), 5(1), 331-341.

Terho, H., Eggert, A., Haas, A., & Ulaga, W. (2015). How sales strategy translates into performance: The role of salesperson customer orientation and value-based selling. Industrial marketing management, 45, 12-21.

Thanabordeekij, P., & Syers, K. (2020). The effect of marketing mix factors and brand image toward customer satisfaction and customer loyalty of liquefied petroleum gas for household use in Thailand. Journal of ASEAN PLUS Studies, 1(1), 35-43.

Theodore Levitt (1965), Exploit the Product Life Cycle; to convert a tantalizing concept into a managerial instrument of competitive power, Product Management, Harvard Business Review. Access time: 23 May 2023, 11:01 AM, Retrieved from: https://hbr.org/1965/11/exploit-the-product-life-cycle.

Turner, G. B., & Spencer, B. (1997). Understanding the marketing concept as organizational culture. European Journal of marketing.

Ulmishek, G. F. (2004). Petroleum geology and resources of the Amu-Darya basin, Turkmenistan, Uzbekistan, Afghanistan, and Iran (Vol. 2201). Iran: US Department of the Interior, US Geological Survey.

Varadarajan, R., & Yadav, M. S. (2009). Marketing strategy in an internet-enabled environment: a retrospective on the first ten years of JIM and a prospective on the next ten years. Journal of interactive marketing, 23(1), 11-22.

Whetton, D. (2011). Organizational Effectiveness: A Comparison of Multiple Models (pp. 261–77). New York, NY: Academic Press.

Yasanallah, P., & Bidram, V. (2012). Studying the status of marketing mix (7Ps) in consumer cooperatives at Ilam province from members' perspectives. American Journal of Industrial and Business Management, 2(04), 194.

Yoo, B., Donthu, N., & Lee, S. (2000). An examination of selected marketing mix elements and brand equity. Journal of the academy of marketing science, 28(2), 195-211.

Zahra, S. A., & Covin, J. G. (1995). Contextual influences on the corporate entrepreneurship-performance relationship: A longitudinal analysis. Journal of business venturing, 10(1), 43-58.

Zeithaml, V. A., Parasuraman, A., & Berry, L. L. (1985). Problems and strategies in services marketing. Journal of marketing, 49(2), 33-46.

Zimmerman, A., & Blythe, J. (2017). Business to business marketing management: A global perspective. Routledge.

How to cite this article

Yahya, M.A. (2024). Effects of 4Ps marketing mix strategies on profitability enhancement of petroleum companies in Afghanistan – A case study. *Istanbul Management Journal*, 96, 32-58. http://doi.org/10.26650/imj.2024.96.1372899

Appendixes

SECTION 1: Background data of interviewee

1. Name of department.
2. What is your status in the organization?
3. What is your educational attainment?
4. For how long you have worked in the organization?
5. What is your strategy on development policy?

SECTION 2: Marketing strategies in the ZHAKFAR Petroleum

Product:

6. How would you describe the range of petroleum products offered by your company?
7. What differentiates your products from those of your competitors? *(Competitive advantage)*
8. How do you determine which products (Deiseal, Petrol, LPG gas) to introduce or phase out?
9. Can you provide examples of how you have tailored your product offerings to specific customer segments?

Price:

10. How do you determine the pricing strategy for your petroleum products?
11. What factors do you consider when setting the price for different products?
12. How do you ensure that your pricing remains competitive in the market?
13. Have you implemented any pricing strategies that have positively impacted sales performance? Can you provide examples?

Place (Distribution):

14. Can you describe the channels through which your petroleum products reach the customers?
15. How do you determine the optimal distribution channels for your products?
16. How do you ensure efficient and timely delivery of your products to customers?
17. Have you implemented any distribution strategies that have improved sales performance? Can you provide examples?

Promotion:

18. How do you create awareness and promote your petroleum products?
19. What marketing channels and tools do you utilize to reach your target audience?
20. Have you implemented a successful marketing campaign? If yes what was?
21. Do you measure the effectiveness of your promotional activities? If yes, how?

Addition questions (if time remained):

22. How do the different elements of the marketing mix work together to achieve your sales objectives?
23. Can you provide an example of how changes in one element of the marketing mix affected the performance of the other elements?
24. How do you assess the overall impact of the marketing mix on sales performance?

Page 1 of 2

Figure 5. Interview questionnaire form; Sections 1 and 2

SECTION 3: Marketing strategies and sales performance

25. How do you consider the effectiveness of the marketing mix strategies adopted by ZHAKFAR Petroleum on sales performance? It would be great if you could provide some statistics and percentages based on sales data.

- *Effectiveness of product strategies*
- *Effectiveness of place (distribution) strategies*
- *Effectiveness of price strategies*
- *Effectiveness of promotion strategies*

Page **2** of **2**

Figure 6. Interview questionnaire form; Section 3

İSTANBUL UNIVERSITY PRESS

Istanbul Management Journal
IMJ 96, 2024, 59–73
DOI: 10.26650/imj.2024.96.1403313

RESEARCH ARTICLE

Review of the Environmental Performance Index (EPI): Methods, Constraints and Recommendations

Uğur Arcagök[1]

[1]Assist. Prof., Muş Alparslan University, Faculty of Economics and Administrative Sciences, Department of Business Administration, Muş, Türkiye

ABSTRACT

During the formation of composite index constructs, some constraints are encountered with respect to considerations such as the availability or accessibility of indicators, weights of such indicators, sub-indicators or variables to be used for reaching the indicators, data pertaining to such variables, and the determination of the most convenient method to be used for arranging the data set. In addition, it is required for the methods to be used to comply with the aim of the index to be formed. Researchers who want to develop a composite environmental index are required to consider all these considerations. This study aims to indicate and discuss the composite environmental index formation process through the examination of the EPI, which is a global composite index. One might argue that it contributes to the explanation of the composite index construction process, which has been examined, albeit limitedly, in the literature. Eventually, the methods that may be used in the index formation process by the researchers who want to form a composite index were discussed, and suggestions that may improve the methodological strength of the indices to be developed by them were presented. Our findings indicate the absence of an established theoretical methodology for composite sustainability indices. The creation of these indices has depended entirely on the expertise of the involved researchers.

Keywords: Composite Index, Weighting Methods, Indicators, Sustainability, Environmental Performance Index
JEL Code: C30, C38, C82

1. Introduction

We have entered a new era in recent years in terms of data-driven approaches concerning environmental sustainability. The sustainable development goals were determined, especially in the Millennium Development Goals declared by the United Nations in 2000 and at the Paris Conference organized in 2015, and the states were asked to explain their attainability of such goals using quantitative criteria. Thus, it has been ensured that the states adopt a more data-driven and empirical approach to the determined goals. In the global sense, governments have come together to determine the problems, monitor the tendencies, and measure the success or failure of the determined policies. In addition, the way has been paved for the development of composite indices that would ensure the measurement of states' performances on economic, social, or environmental issues. This process has pioneered the emergence of numerous indices such as the Human Development Index, Sustainable Development Goals Index, Global Green Economy Index, Ocean Health, European Innovation Scoreboard, Social Progress Index, and Environmental Quality Index, as well as the Environmental Performance Index (EPI).

The Environmental Performance Index (EPI), which is the first among these indices and which was published with the name Environmental Sustainability Index (ESI) before 2006, is published biennially and updated by Yale University and Columbia University in cooperation with the World Economic Forum and the EU's Joint Research Centre. The EPI presents a strong policy instrument supporting the efforts to attain the UN's Sustainable Development Goals and carry society to a sustainable future (Wolf et al., 2022). The EPI was published under the name Environmental Sustainability Index (ESI) before the 2006 ESI was aimed at decision-makers, the public, and analysts wishing to compare the nations' long-term environmental orbits. ESI tried to determine the nations' performances in terms of environmental sustainability. However, in 2006, the ESI underwent extensive modifications and began to be published under the name EPI. The EPI intends to measure sustainability at the global level, determine the problems, define the goals, follow up on the trends, understand the consequences, and determine effective policy methods (WEF, 2002). In other words, the EPI addresses the environmental dimension of sustainable development more extensively.

The goals and political categories of EPI have been determined to adhere to international policy agreements (Srebotnjak, 2007).

Corresponding Author: Uğur Arcagök **E-mail:** u.arcagok@alparslan.edu.tr
Submitted: 11.12.2023 • **Revision Requested:** 07.02.2024 • **Last Revision Received:** 08.02.2024 • **Accepted:** 28.02.2024

It can be specified that enabling environmental sustainability (MDG7), among the Millennium Development Goals (MDGs), caused the formation of EPI. Hence, in the EPI report of 2012, it was specified that EPI was the complementary factor of the Millennium Development Goals (J.W. Emerson et al., 2012). EPI had two main goals until the year 2020: goals of environmental health and ecosystem vitality, which covered the political categories concerning long-term public health. In the report published in 2022, the number of main goals was increased to three, with the addition of the climate change goal. During the formation of the index, performance goals were determined for each indicator based on international agreements, scientific literature, and expert consultancy.

This study aims to indicate and discuss the composite environmental index structure process through the examination of the EPI, which is a global composite index. The reason for the preference of the EPI as the index is that it is the first study providing a measure at an international scale regarding how close the states are to the determined goals and political categories (Hsu et al., 2013). The present study, it was based on EPI reports, which were published from 2006 to 2022, and the JRC Technical Reports, published by the Joint Research Centre (JRC) affiliated with the European Commission. The statistical methods that may be used in the global composite index formation process were defined by the methods used in the EPI. Moreover, it referred to the strengths and weaknesses of the methods used and the global indices in which such methods were used. Ultimately, recommendations were made concerning the methods that researchers who want to form a composite index may resort to. The present study may be a load-star for researchers who form a new composite index or who perform studies concerning these indices. When the literature on the indices is examined, there are limited sources in which the methodological development of a global index has been indicated. The present study will also contribute to the literature in this sense.

2. Literature Review

A composite index is a mathematical composition consisting of numerous indicators and representing more than one dimension of a concept (Saisana and Tarantola, 2002). In another definition, a composite index has been defined as the synthetic index of numerous independent indicators (Freudenberg, 2003). Today, the indices are used more extensively to facilitate communication among policy-makers, the public, and scientists (Reisi et al., 2014). Under composite indices, tendencies regarding themes such as poverty, food safety, humanitarian development, and biological diversity are followed. In other words, composite indices enable us to observe the multi-dimensional and complex constructs around us.

Environmental indices inform policy-makers and the public regarding the development process of environmental themes (Dobbie and Dail, 2001). Thus, they encourage the accountability of the states both to each other and to the public regarding the determined goals. In addition, such indices contribute to the formation of political and media awareness regarding environmental themes (Fischer et al., 2022). However when such indices are formed insufficiently or poorly, they may hinder the environmental efforts of policy-makers and the public, and may direct policy messages and decisions incorrectly (Alberti and Parker, 1991).

When the composite environmental performance indices are examined, some categories and sub-groups enable the identification of the indices (Mendola and Volo, 2017). For instance, the EPI consists of three goals: environmental health, ecosystem vitality, and climate change. The referred goals consist of eleven sub-groups (air quality, biodiversity and habitat, alleviation of climate change etc.). The ocean health index (OHI) consists of two goals: current status and possible future status. The referred goals consist of four dimensions: status, trend, pressures, and resilience. Such dimensions consist of 10 sub-groups within themselves (Halpern et al., 2012). These sub-groups formed in composite environmental indices try to establish a clear relationship between the measured structure and the structure of the index. Thus, it becomes easier for the users of the index to understand the index.

In general, three institutions lead the formation of environmental indices with their reports that they have shared with the public for many years. Since 1990, the OECD has followed more than 50 indicators from 30 member and 17 non-member states (Lankoski and Lankoski, 2023). The referred indicators addressed by the OECD have focused on individual aspects of environmental performance instead of a general evaluation of environmental sustainability. The World Bank, which is another institution that has shared reports with the public for many years, annually publishes its report, which examines the quality of life in 127 world economies under seven themes. Under the seven themes referred to in the report, data is shared regarding 18 dimensions reflecting how the use of natural resources and activities interfere with nature and environmental growth (García-Sánchez et al., 2015). The Joint Research Centre (JRC), affiliated with the European Commission, which is another institution, shares the data regarding EPI in cooperation with Yale University and Columbia University biennially. The primary characteristic of this index is that it is an integrated model considering the economic, social, demographic, and environmental dimensions. Moreover, another significant characteristic of this index is that it is also being used by the United Nations. Member states of the UN regularly inform the data of EPI to the UN Sustainable Development Commission (García-Sánchez et al., 2015).

Another significant characteristic of the EPI is that it is an index that is both use-based and scientific-based. Eyles and Furgal (2002) divide the index criteria into two groups: scientific-based and use-based. Scientific criteria cover scientific quality themes such as data usability and compatibility, indicator validity, indicator representation, reliability, and decomposition ability. These

criteria are accepted in many studies (Edwards et al., 1999; Eylenbosch and Noah, 1988; Eyles et al., 1996; Von Schirnding Y.E.R., 1997). Considering the use-based criteria, they depend on the goals of the indicators. These goals are applicability, manageability, balanceability, manipulability, and the ability to serve as a catalyst. When the literature is examined, different variations of these criteria are found. For instance, such as indicator sensitivity, understandability by policy-makers, cost-effectiveness, minimum environmental effect to be gained, audience interpretability, and applicability to the population (Barber, 1994; Cairns and Mc-Cormick, P. V. Niederlehner, 1993; Edwards et al., 1999). When the EPI reports are examined, it is observed that they meet both the use-based and scientific-based criteria. In this sense, it can be said that the EPI has the quality of being for scientists, policy-makers, and the public.

3. Method

3.1. Research Design

In this section, the methods that may be used during the formation of the composite index were defined. The first step is the determination of the goal. These goals are divided in two: use-based and scientific-based (Eyles and Furgal, 2002). Then, concrete variables regarding the policies for realizing the determined goals are determined. Afterwards, forming and arranging the data set for such variables to be used in statistical analyses is needed. This stage consists of the steps of missing value imputation to variables containing missing values and normalization of the data set. Then, the type of correlation to be used for observing the strength and direction of the relationship among the variables is decided. Afterwards, the type of mean to be used in the index is determined. The most extensively used mean types are arithmetic mean and geometric mean. Finally, the weights of variables for the calculation of the index score is decided.

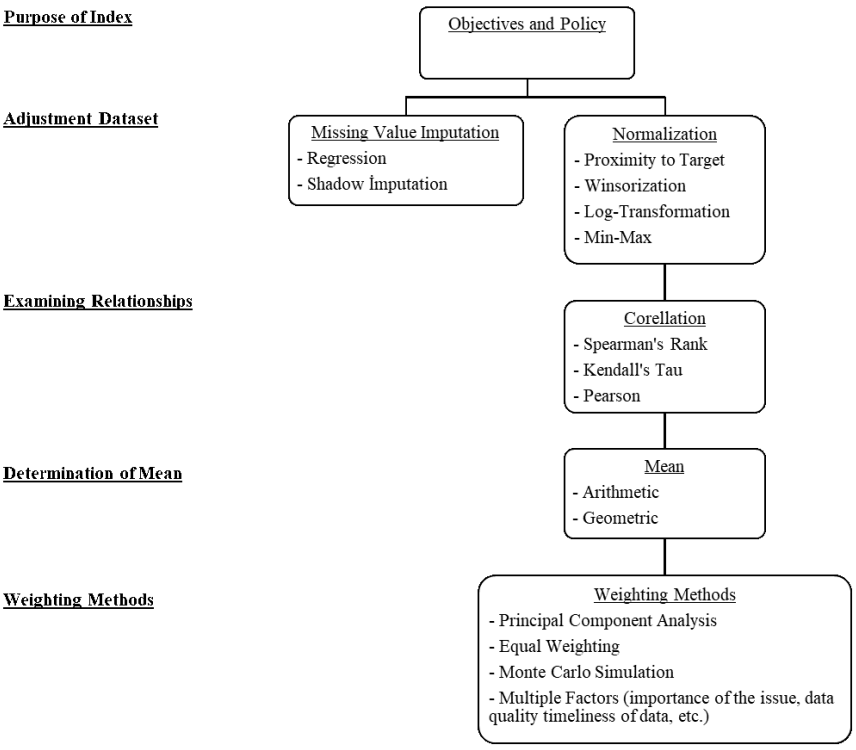

Figure 1. Research Design

3.2. Goals and Political Categories

The number and categories of EPI's indicators differ in each publication period. These indicators are selected through policy agreements and expert appraisal emerging from the Millennium Development Goals determined by the UN. The first index published in 2006 consisted of two goals (environmental health and ecosystem vitality), six political categories, and sixteen indicators. In the report published in 2022, there were three goals (environmental health, ecosystem vitality, and climate change), eleven political categories, and forty indicators (all the variables are shown in detail in Appendix Table 1).

In the first EPI report, while the goal of environmental health measured the protection of human health from environmental damages, the goal of ecosystem vitality measured the protection of ecosystems and resource management. The six political categories under these goals covered sixteen indicators in total, with at least two and at most five. In the index published in 2008, the number of indicators under six political categories for the same two goals was increased to 25 from 16 (Esty et al., 2008). However, the policy category of "sustainable energy" included in 2006 was replaced with the category of "climate change" in 2008. In 2010, the number of indicators in the index remained the same as in the previous index, but the number of political indicators had changed. The political indicator of "productive natural resources" under the goal of ecosystem vitality was redefined as three separate policies: "forestry", "fisheries", and "agriculture" (J. Emerson et al., 2010). In 2012, the political indicator of "environmental burden of disease" was replaced with the political indicator of "environmental health". Moreover, two indicators were removed from both of the political indicators of "air pollution" and "water", one indicator was removed from "agriculture", and one indicator was added to both of the political indicators of "forestry" and "climate change" (J.W. Emerson et al., 2012). In 2014, even if the number of indicators was specified as twenty, the index was calculated at nineteen indicators as the states' electricity score couldn't be calculated. The political indicator of "water", included under the goals of environmental health and ecosystem vitality, was removed from both goal and instead, it was represented in the goal of environmental health with the name of "water and sanitation". The change was made in three political goals and included under the goal of environmental health. Instead, the political indicators of "health impacts", "water and sanitation", and "air quality" were added. The number of indicators included under the goal of ecosystem vitality decreased to 14 from 17 (Hsu et al., 2014).

"Climate change", which was initially included in 2008 as a political indicator under the goal of ecosystem vitality, was named "climate change and energy" in the following years, and in 2022, "climate change" was determined as a main goal. Thus, the number of goals in the EPI was increased to three for the first time since 2006 (Wolf et al., 2022). Another first in 2022 was the use of this many indicators (40) in the calculation of the EPI score.

3.3. Adjustment of the Data Set

During the adjustment of the data set, the raw data were standardized to make the data comparable (as per population, acreage, gross domestic product, or other measures) among the states (Hsu, A., and L.A. Johnson, 2013). Additionally, the distance-to-target method was used. In the EPI, the distance-to-target technique was normalized using all the time series containing data and the states (Papadimitriou et al., 2020). This method is also used as a weighing method to evaluate the distance from the current status to the desired status (target) (Castellani et al., 2016). In 2012, the scores of proximities to the annual target were used in a simple linear regression model to determine the rate of increase or decrease for each indicator. In addition, the time series analysis was used for a few indicators in 2010. However, in 2012, the availability of time series data for nearly all the indicators enabled an increase in data quality by allowing the evaluation of trends and disparities. Moreover, for the 2012 EPI and Pilot Trend EPI, all the time series data was used to determine both the low and high-performance criteria.

Even if the distance-to-target method was used to normalize the data set in EPI, this method is a weighing method extensively used in the measurement of environmental policies (Bjørn and Hauschild, 2015; Frischknecht and Büsser Knöpfel, 2014; Lin et al., 2005; Wang et al., 2011). The distance-to-target is measured as the ratio of the current environmental load to the future environmental target value (Li et al., 2015). his method focuses on to what extent a society or a state is unsuccessful in attaining environmental standards. This approach has strengths as well as weaknesses. The progress of states towards predetermined targets, the states' exhibition of their strengths and weaknesses, the performance of standardization using a common scale, and guidance constitute the strengths. In case the determined targets and policies are subjective, however, the possibility of the calculation of distance-to-target causes biases or uncertainties, and in case the data obtained from the states are limited or inconsistent, the possibility of the data affecting the accuracy of measurement may be indicated as the weaknesses of this method (Valipour et al., 2015). Moreover, as is known, environmental systems and policies are complex and include dependency. In such cases, measuring environmental systems by reducing them to a single measure may be deceptive.

In the second step of the adjustment of the data set in the EPI, the skewness of distributions was corrected using a logarithmic transformation for the raw data of each indicator. As the transformed data was generally substantially skewed, a logarithmic transformation is required in specific data sets (namely, data sets with left or right skewness). This method has two benefits. The first is that if there are a large number of states that are very close to the target in an indicator, a logarithmic scale makes a clearer distinction among the ones exhibiting the best environmental performance. The second is that a logarithmic transformation facilitates the interpretation of differences among the sub-nation units at the opposite ends of the scale. While the log scale more accurately reflects the nature of differences in all the performance ranges, it doesn't exhibit the differences among the states in the best and worst statuses in a sufficiently distinct manner.

The use of logarithmic transformations can be beneficial in statistical modelling or regression analysis. In cases of a change in the data's variance along with the level of the independent variable, the data may exhibit heteroscedasticity. The application of a logarithmic transformation can make the variable more constant at different levels by fixing the variance (J.H. Curtiss, 1943).

Moreover, logarithmic transformation is also able to assist in the normalization of skew data distributions (Feng et al., 2014). This method may reduce the effect of extreme values and converge the data distribution to a normal distribution. Moreover, it may also be beneficial while applying the statistical techniques assuming normality or while comparing the variables with different scales.

In the third step, during the adjustment of the data set, the Winsorization method was used to prevent the states with extreme values from forming skewness. Outlier observations were adjusted as per the percentiles of 5%, 95%, and 97%. This method was used until 2018. In the 2020 and 2022 reports, the regression method was used to prevent and determine the outlier observations. While the Winsorization method provides advantages such as the providing resilience against outliers, preserving the original order and sequencing of data, and being a simple method (Jennifer Anne Haley, 2001). Disadvantages include the possibility of the results being affected due to the subjectivity of changes in extreme values, changes in the distribution and form of data, and the determination of a threshold (Barnett and Lewis, 1994).

In the report published in 2022, numerous changes were made. One of these is the adjustment of the data set. During the adjustment of the data set, the data set was normalized using the min.-max. approach as the first step (Smallenbroek et al., 2023). The purpose here is to ensure the contribution of all the indicators at equal rates. In other words, it was ensured that all the indicators would contribute to the total score between 0 and 100. The use of the min.-max. approach, among the normalization methods, ensured the data was both cleared from their units and drawn to a specific range. In other words, it facilitates the interpretation of results as well as the ease of measurement.

According to the method to be used in the index, it is required to normalize the data set because the variables forming the data set generally constitute different units. Normalization is applied to draw these variables to a common scale. The most extensively used normalization methods are standardization, min.-max., categorical scaling, and reference distance (Ruiz et al., 2020). Standardization is used to transform the data set into a scale with a mean of 0 and a standard deviation of 1. The min.-max. method is used for the data set to be in a specific range. On the categorical scale, value imputation is performed. The reference distance method is used to normalize a specific indicator as per its relative position to a reference level.

To overcome the problem of missing values, the regression method and the shadow imputation method were used. The shadow imputation method was not included in the previous reports. In the preferred method, imputation is made to the point of the missing value by ignoring the missing value and averaging out the rows or columns. This method was used for some variables. For instance, it was used in environmental variables that are valid for states that don't have access to large water bodies. Missing value imputation was generally performed by estimating with the regression method. Moreover, in the 2020 report, the median value was used for missing value imputation. In 2022, a penalty was also applied while performing missing value estimation for states with missing values. In the report, the missing value, the final step of the data set adjustment, was also referred to. When the variables had an absolute skewness higher than 2.0 and an absolute kurtosis higher than 3.5 at the same time, they were assessed as outlier observations (Groeneveld and Meeden, 1984).

Hair (2009) classified the data sets containing missing values into three groups. He specified that modelling is not required for the ones in which the ratio of missing values to the data set is below 10%, or that value imputation may be performed with the mean. If the data set contains missing values between 10% and 20%, then the hot deck imputation method should be applied for MCAR values, and the model-based missing value process should be applied for MAR cases. If the data set contains a missing value above 20% and if imputation is desired, then regression should be applied for MCAR cases and model-based imputation methods should be applied for MAR cases (Hair, 2009).

When the EPI reports are examined, the meticulous performance of the process of preparation of the data set for the analyses draws attention. Relying on these many changes in the methods used emphasizes the fact that the method to be used in research is required to comply with the data set and the purpose of the index. However, the lack transparency regarding the cause of changes made in the methods used in the reports compared to the previous period indicates the imperfection of the reports.

3.4. Correlation

In the first index published in 2006, the relationship among the variables and the relationship between the variables and the EPI were not considered. In the interpretation part of the results, the relationship between the GDP and EPI scores of the states was considered by Pearson's correlation coefficient. The reports after 2008 examined the relationships among the EPI score, goals, and political categories. In 2008, the strength of the relationship among the EPI score, two goals, and six political categories was examined by Spearman's rank correlation coefficient. In 2010, the relationship among the EPI score, two goals, and ten political categories was examined by Kendall's Tau correlation coefficient. In the reports published between 2012 and 2018, the relationship among the EPI score, goals, and political categories was examined by Pearson's correlation. In the reports published in 2020 and 2022, Spearman's rank correlation was used.

In the EPI, the results of the correlation analysis were considered at many points. If a variable contains missing values and

if it has a high correlation with the other variables, then missing value imputation was performed for that variable. Otherwise, the value zero, or no data, was entered. A correlation analysis was performed to examine the relationship between the EPI score and the indicator scores, policy scores, and finally, goal scores. As each of the political categories represents different aspects of environmental performance, it was observed that they had a high correlation with the EPI while they had a low correlation among themselves. A low correlation among political categories is a status desired in the development of an index. Moreover, to determine whether environmental success is sacrificed for economic competitiveness or not, the relationship between the EPI scores and GDP, the human development index, the global competitiveness index, the voice and accountability index, and the government effectiveness index was examined by way of correlation.

In different periods of the EPI reports, three different correlation coefficients, namely Pearson's, Spearman's, and Kendall's Tau correlation coefficients were used. As is known, correlation defines the strength and direction of the relationship among the variables in the widest sense. Pearson's correlation coefficient is used to measure the strength and direction of the relationship for variables having a linear relationship, having a normal distribution, and being in the interval and ratio scale. Spearman's rank correlation coefficient and Kendall's Tau correlation coefficient are used to measure the strength and direction of the relationship for the variables without a linear relationship, without a normal distribution, ranked, and in the interval and ratio scale (Schober et al., 2018). While Spearman's rank correlation coefficient is based on ranking differences, Kendall's Tau correlation coefficient is based on the number of compatible and incompatible pairs (Kowalski and Tu, 2008). It is important to decide the type of correlation to be used as per the type of relationship (linear or non-linear), the type of scale (categorical, ordinal, interval, and ratio), and the type of distribution (normal or non-normal). Moreover, Spearman's rank correlation considers the strength of the monotonous (increase or decrease at the same time) relationship among the variables. In the EPI, as the relationship among ranks (Spearman's) is more significant than the relationship among variables (Pearson's), the use of Spearman's rank correlation in the recent two index reports (2020 and 2022) was the right decision.

3.5. Mean

The decision regarding the use of the arithmetic mean or geometric mean is made as per the distribution of the data. For instance, if the data set exhibits a normal distribution and does not contain outlier observations, and if it is a data set with an interval or ratio scale, then an arithmetic mean is suggested (Gaddis and Gaddis, 1990). If the data set exhibits a log-normal distribution and contains multiplicative relationships or outlier observations, then a geometric mean is suggested (Olsen et al., 2003). When the EPI reports were examined, it was determined that the index had been formed using the arithmetic mean method. During the adjustment of the data set, missing value imputation was performed, the problem of outlier observations was solved, showing that the use of the arithmetic mean after observation of the normal distribution of the data set was the right decision.

3.6. Weighting

In the three EPI reports published prior to 2012, two goals were equally weighted (50% - 50%). In 2012, the use of this weighting method was discontinued. In 2012, it was observed that the EPI score was affected to a high degree by the goal of environmental health in cases of equal weighting. It was determined that the referred inequality was arising from the variance differences in the scores of the environmental health and ecosystem vitality goals. The equal weighting caused the formation of a much higher correlation between the scores of the general EPI and environmental health compared to the score of ecosystem vitality. In other words, the states exhibiting high performance in the environmental health goal would generally exhibit better performance in the EPI, independent of the score of the ecosystem vitality goal. To eliminate this statistical imbalance, the environmental health goal was weighted at 30 percent and the ecosystem vitality goal at 70 percent during the 2012 determination of the total EPI score. This weighting implies the prioritization of the indicators of ecosystem vitality compared to environmental health. The purpose is to ensure a balance among the contributions of these policy goals to the general EPI. In the EPI published in 2014, equal weights were assigned to the goals. In the political categories, if any indicator under a political category is less reliable or less related compared to other indicators under the same category, then it is weighted with a lower score. In 2016, the goals were again subjected to equal weighting. In addition, the political categories forming these goals were also subjected to equal weighting. In 2018, this equilibrium was disrupted again, and during the determination of the total EPI score, the goal of environmental health was weighted at 40 percent and the goal of ecosystem vitality at 60 percent, and the statistical strength of these weights was tested by way of Monte Carlo simulation (Wendling et al., 2018). However, the weights of the political categories were not as equal as in the previous year. The same weighting method was also used in 2020 (Wendling, Z.A. et al., 2020). In 2022, the weights of the political goals were amended again. The weights of political goals were determined using statistical analyses for balancing the significance of the theme, quality of data, relevance of data, and distribution of scores. Accordingly, ecosystem vitality was determined at 42%, climate change at 38%, and environmental health at 20%.

In the EPI, the states' scores were scaled in a manner that gave them a value between 0 and 100. A composite index was formed with a three-step cumulative model. To combine the indicators into a single composite performance score, the scores of individual

components were combined into a general score after the assignment of numerical weights. This combination was performed with a linear combination (combination of weighted normalized indicator scores). When the weights are equal, it is similar to calculating the simple arithmetic mean. Uncertainty and sensitivity analyses were performed to ensure the validity of the results of policies obtained from EPI and measure the sensitivity of the index to alternative methodological assumptions. In other words, the results were examined under different scenarios to determine how the ranks and scores changed when the weights of the index were differentiated. Moreover, in the reports published in some of the years, clustering analysis was used in the interpretation of the states' EPI scores, and interpretations were made on a regional basis.

It can be specified that the weighting process is both a political and a scientific process. To form the EPI score, weights were assigned to indicators, policy categories, and goals forming the EPI. The EPI was formed considering the experts' recommendations on weights, perceived data quality, the significance of indicators and categories in terms of policy-making, and the indicators' degree of enabling the direct measurement of environmental performance, etc. Moreover, another significant issue considered while determining the weights is the basic distribution of the indicator's policy category and purpose scores, or the number of variations in the data. Principal component analysis (PCA) was used for the determination of the loads of these political categories forming the goals, the formation of suitable groupings, and the determination of their weights. As a result of PCA, PCA factor loads were used as weights for these indicators. The indicators without clear references in the PCA results were grouped as per the literature review and the experts' opinions.

As the determination of weights has an effect on the results during the formation of the composite index, it is a subject that must be considered. In many composite indices, equal weights are assigned to all the variables. In cases where equal weights are not assigned, the methods of PCA, conjoint analysis, and data envelopment analysis are generally used for the determination of weights (Ruiz et al., 2020). Moreover, the analytic hierarchy process (Saaty, 1977, 1988) or MACBETH (Benito and Romera, 2011) techniques, among multiple-criteria decision-making techniques, are also used. All these methods can affect the strengths and weaknesses depending on the purposes and goals of the index desired to be formed.

4. Discussion

4.1. Goals and Political Categories

The goals of an effective environmental index should be based on both scientific and practical criteria. The indices should be quantitative, sensitive to change, sensitive to analyses, and traceable in terms of the determined policies. When the example of the EPI is examined, it can be said that the goals and policies were formed as per scientific criteria. The EPI consists of three inclusive environmental goals and a political category for attaining such goals. These goals cover the policies prioritized by the global environment authorities, the environmental dimension of the Millennium Development Goals, and the net zero greenhouse gas emission goals of the Glasgow Climate Pack. These goals are based as much as possible on international agreements and contracts (Moldan et al., 2012). The goals not included in this category were formulated assertively by the ones forming the index, and they were formed in a manner that will allow improvement for all the states.

4.2. Adjustment of the Data Set

During the formation of the composite index, steps such as identification of the indicators, evaluation of the missing data, normalization, mean, weighting, summation, uncertainty, and sensitivity analysis should be performed carefully. An examination of the literature on sustainability reveals a discussion on the normalization method to be used and whether its use is required or not (Diaz-Balteiro et al., 2018). It is not required to perform normalization before some analysis methods (DEA or multiple benefit theory) used during the formation of the composite index, because these methods contain normalization. The normalization technique to be used can uncover different results (Pollesch and Dale, 2016). Which technique would be optimal should depend on the characteristics of the specific problem analyzed. While the rate of not using normalization in the sustainability indices was determined to be 70% (Ibáñez-Forés et al., 2014) by the study performed in 2014, it was determined that the relevant rate decreased to 30% in the study performed in 2017 (Diaz-Balteiro et al., 2017). Moreover, in the context of sustainability, if it is required for the final solutions to reflect the analyzed truth with the minimum error, it is required for the variables used to be normalized.

The missing value imputation is another significant issue that must be considered. An examination of the literature shows that the most extensively used missing value imputations have been case deletion, single imputation, or multiple imputations. In single imputation, mean, median, mode, hot deck and cold deck imputation, unconditional mean imputation, regression imputation, and expectation-maximization imputation are used. In multiple imputations, the Monte Carlo algorithm is used (Kondyli, 2010). The benefit of this imputation is its assistance in estimating the missing values in the present data. When the EPI example is examined, it is not clearly specified how the problem of missing values was solved, in other words, which method was used in the reports before 2020. The lack of discussion on missing value imputation indicates the deficiency of the reports published until 2020. In

2020, the referred deficiency was filled, and the median method, among the single imputation methods, was used in missing value imputation. In 2022, linear regression was used to perform missing value imputation on the data set.

4.3. Mean

Deciding on the type of mean to be used while forming the composite index is a significant step. In general, there are two mean types in composite indices: arithmetic mean and geometric mean. Which one of these would be used should be determined as per the distribution of data. For instance, if the data set exhibits a normal distribution and does not contain outliers, and if it is a data set with an interval or ratio scale, then an arithmetic mean is suggested (Gaddis and Gaddis, 1990). If the data set exhibits a log-normal distribution and contains multiplicative relationships or outliers, then a geometric mean is suggested (Olsen et al., 2003). Hence, the question of whether the geometric mean or the arithmetic mean should be used in the calculation of EPI was discussed in the reports. The mean to be used was determined based on to what extent it would change the states' EPI scores. It was observed that the geometric mean had a moderate level of effect on the EPI ranking. In other words, when the geometric mean was used instead of the arithmetic mean at the level of policy, a remarkable skewness arose in the ranking of states. The use of a geometric mean caused skewness in the median in the ranking of one-tenth of the states. Consequently, the general environmental performance index was calculated based on the arithmetic mean of the target scores. Moreover, the arithmetic mean was also used in the missing value imputation in 2010.

To indicate the states' performance in the EPI, three policy goals were combined under a single score using a weighted arithmetic mean. The use of an arithmetic mean instead of a geometric mean to compare the two summing approaches and emphasize the states with varying profiles was a correct decision, because as is known, the geometric mean tends to penalize the presence of a very low value in the data set. Easy interpretability of the arithmetic mean can ensure a balance (a high score in one goal may completely balance the low scores in another goal) among the policy goals in the EPI.

4.4. Determination of Weights

During the formation of the composite index, the correct weighting of the goals and policies is as important as the meticulous determination of such goals and policies by the relevant experts. The weighting methods that may be used by the researchers are shown in Figure 2. When the globally used composite indices are examined, the most extensively used weighting methods are equal weighting (Human Development Index, Sustainable Development Goals Index, Global Green Economy Index, Ocean Health Index, European Innovation Scoreboard) and principal component analysis (Social Progress Index, Environment Quality Index). The greatest advantage of the equal weighting method is its simplicity. However, this method has disadvantages such as the consideration of the significance levels of the indicators as equal, double weighting, and the inability to recommend concrete policies for policy-makers (Hermans et al., 2008). In weighting with PCA, there is the advantage of making individual interpretations for each factor as the indicators are grouped. However, in the preferred method, there is the risk of having the weights differing in truth as they are based on correlation. An examination of the EPI reports shows that the most extensively used weighting methods are those with equal weighting at the level of policies, equal weighting at the level of indicators, and weightings derived from factor analysis and principal component analysis. These methods were also discussed in different scenarios.

4.5. Uncertainty and Sensitivity

During the formation of the EPI, it is important to have uncertainty and sensitivity analyses performed because uncertainty and sensitivity analyses increase transparency and determine the strength of the index (Munda and Saisana, 2011; Quadus and Siddique, 2001; Saisana et al., 2005). Sensitivity analysis is used to calculate the share of uncertainty that the indicators cause in the composite index (Freudenberg, 2003). In the composite index, it is important to determine the propagation of uncertainty to input values. The formation of a composite index is performed by including or not including the uncertainty indicators and using alternative normalization, weighting, and addition schemes (Kwatra et al., 2020). Uncertainty and sensitivity analyses are very important for checking the strength of global composite indices such as the EPI, by which states' sustainability is measured and their performances can be compared.

5. Conclusion

In the present study, the EPI reports published from its initial year of publication in 2006 to its last year of publication in 2022 were methodologically examined. Before moving on to methodological discussion, the change in years of goals and political categories forming the index was also shown in detail (Table 1). The purpose here was to show that the discussed index's goal or policy level can easily adapt to changing conditions. For a composite index to be formed at the global level and gain recognition, it is required to be able to adapt to changes.

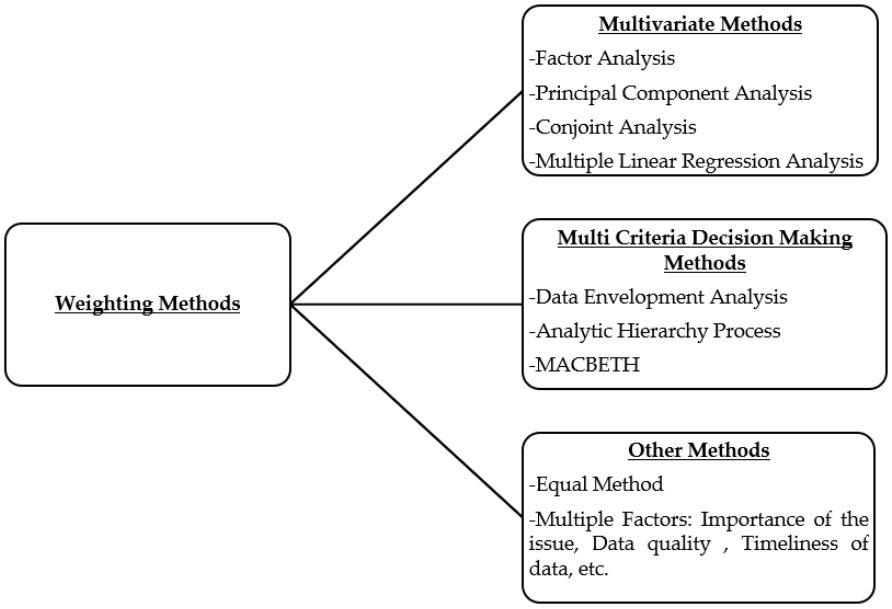

Figure 2. Weighting Methods

The composite indices have a complex construct. Therefore, it is important to consider that the statistical methods to be used do not play a dominant role in the index: in other words, they do not directly affect the scores or rankings that will be formed as a result of the index. For that reason, in the present study, it is very important to decide the methods, correlation types, mean types, and weighting methods that may be used in the adjustment of the data set. In the present study, the strengths and weaknesses of the methods and the circumstances in which they have to be used were identified. However, the causes of differentiation as per the years of the statistical methods used in the EPI reports or the justifications of preference for the methods used were not reported. This circumstance reveals the weakness of EPI reports. Resorting to these many changes in the statistical sense in the calculation of EPI may eliminate the ability to compare the index with the score of the previous index. In other words, it may cause the index to be inconsistent. The composite indices should be consistent and comparable within themselves. However, the differentiation of the determined goals or political indicators may be explained by the periodicity of such goals and policies. For instance, while climate change is a political indicator, it has become one of the main goals in 2022. Likewise, the effect of periodicity is observed in the determination of the goals' weights.

The composite index may give inconsistent messages in the case of its incorrect construction or interpretation or in the case of ignoring the significant dimensions (Singh et al., 2009). To avoid this circumstance or to strengthen the index, it is required to test the results with uncertainty analysis and sensitivity analysis. Moreover, deciding only by considering the index's score may cause information loss. In other words, the decision-making of the decision-makers only by considering the index's score may mislead them. During the formation of the index, the determined goals and the policies formed for attaining such goals or the performances in sub-indicators should also be considered. Only in this manner can the decision-makers develop the correct policies for their strengths and weaknesses.

Global composite indices, which will enable the measurement of countries' performances, are expected to increase gradually over the years. The creation and availability of consistent and comparable indicators regarding countries' structures and performances are important for the analysis of various environmental, economic, and social policy areas. Researchers who will construct a composite index need to extend the scope of indicators to broader and more flexibly defined conceptual areas. Otherwise, the failure to calculate the relative contributions of indicators could lead to the formation of misleading index scores. In other words, if the composite index created is theoretically weak, the index may rely on spurious quantitative degrees, thereby resulting in erroneous comparisons."

In conclusion, the composite indices formed for measuring sustainability generally enable the decision-makers to assess the decisions they will make in the future or allow them to raise the awareness of society. As these indices contain quantitative and temporal goals, they ensure the measurement of the states' results. Thus, this enables the ranking and comparison of the states. In addition, it may ensure transparency and accountability and facilitate decision-making on complex issues. However, such indices do not indicate the sustainable status of a state or a state's position on a sustainable route. In the sense of attaining the determined common goals, they give an idea regarding the states' or regions' degree of performance. Under the composite index, the general direction of progress towards the determined goals is determined.

Peer Review: Externally peer-reviewed.
Conflict of Interest: Author declared no conflict of interest.
Financial Disclosure: Author declared no financial support.

ORCID:

Uğur Arcagök 0000-0002-4469-9525

REFERENCES

Alberti, M., & Parker, J. D. (1991). Indices of environmental quality. Environmental Impact Assessment Review, 11(2), 95–101. https://doi.org/10.1016/0195-9255(91)90026-G

Barber, M. C. (1994). Environmental Monitoring and Assessment Program: Indicator development strategy. In US Environmental Protection Agency (Issue January 2014).

Barnett, V., & Lewıs, T. (1994). Outliers in statistical data (Vol. 3, No). Wiley.

Benito, M., & Romera, R. (2011). Improving quality assessment of composite indicators in university rankings: a case study of French and German universities of excellence. Scientometrics, 89(1), 153–176. https://doi.org/10.1007/s11192-011-0419-5

Bjørn, A., & Hauschild, M. Z. (2015). Introducing carrying capacity-based normalisation in LCA: framework and development of references at midpoint level. The International Journal of Life Cycle Assessment, 20(7), 1005–1018. https://doi.org/10.1007/s11367-015-0899-2

Cairns, J., & McCormick, P. V. Niederlehner, B. R. (1993). A proposed framework for developing indicators of ecosystem health. Hydrobiologia, 263, 1–44.

Castellani, V., Benini, L., Sala, S., & Pant, R. (2016). A distance-to-target weighting method for Europe 2020. International Journal of Life Cycle Assessment, 21(8), 1159–1169. https://doi.org/10.1007/s11367-016-1079-8

Diaz-Balteiro, L., Belavenutti, P., Ezquerro, M., González-Pachón, J., Ribeiro Nobre, S., & Romero, C. (2018). Measuring the sustainability of a natural system by using multi-criteria distance function methods: Some critical issues. Journal of Environmental Management, 214, 197–203. https://doi.org/10.1016/j.jenvman.2018.03.005

Diaz-Balteiro, L., González-Pachón, J., & Romero, C. (2017). Measuring systems sustainability with multi-criteria methods: A critical review. European Journal of Operational Research, 258(2), 607–616. https://doi.org/10.1016/j.ejor.2016.08.075

Dobbie, M. J., & Dail, D. (2001). Encyclopedia of Environmetrics. In A. H. El-Shaarawi & W. W. Piegorsch (Eds.), Encyclopedia of Environmetrics. Wiley. https://doi.org/10.1002/9780470057339

Edwards, R., Hancock, T., & Labonte, R. (1999). Indicators that count! Measuring population health at the community level. Canadian Journal of Public Health, 90(1), 22–26.

Emerson, J., Esty, D. C., Levy, M. A., Kim, C. H., de Sherbinin, A., Srebotnjak, T., Mara, V., & Jaiteh, M. (2010). 2010 Environmental Performance Index. 87.

Emerson, J. W., Hsu, A., Levy, M. A., Sherbinin, A. de, V. Mara, D. C. E., & Jaiteh., M. (2012). 2012 Environmental Performance Index and Pilot Trend Environmental Performance Index. 99.

Esty, D. C., Kim, C., Srebotnjak, T., Levy, M. A., Sherbinin, A. de, & Mara, V. (2008). Environmental performance. 2008 Environmental Performance Index, 82–89. https://doi.org/10.1787/862890ed-en

Eylenbosch, W., & Noah, N. (1988). Surveillance in Health and Disease. Oxford University Press.

Eyles, J., Cole, D., & Gibson, B. (1996). Human Health in Ecosystem Health: Issues of Meaning and Measurement. International Joint Commission (IJC) Digital Archive, 1–62. http://scholar.uwindsor.ca/ijcarchive%0Ahttp://scholar.uwindsor.ca/ijcarchive

Eyles, J., & Furgal, C. (2002). Indicators in environmental health: Identifying and selecting common sets. Canadian Journal of Public Health, 93(SUPPL. 1). https://doi.org/10.1007/bf03405121

Feng, C., Wang, H., Lu, N., Chen, T., He, H., Lu, Y., & Tu, X. M. (2014). Log-transformation and its implications for data analysis. Shanghai Archives of Psychiatry, 26(2), 105–109. https://doi.org/10.3969/j.issn.1002-0829.2014.02

Fischer, S. M., Joy, M. K., Abrahamse, W., Milfont, T. L., & Petherick, L. M. (2022). The Use and Misuse of Composite Environmental Indices. BioRxiv, 2022.03.15.484501. https://doi.org/10.1101/2022.03.15.484501

Freudenberg, M. (2003). Composite indicators of country performance: a critical assessment. OECD Science, Technology and Industry Working Papers, 16(September), 35. https://doi.org/10.1787/405566708255

Frischknecht, R., & Büsser Knöpfel, S. (2014). Ecological scarcity 2013—new features and its application in industry and administration—54th LCA forum, Ittigen/Berne, Switzerland, December 5, 2013. The International Journal of Life Cycle Assessment, 19(6), 1361–1366. https://doi.org/10.1007/s11367-014-0744-z

Gaddis, M. L., & Gaddis, G. M. (1990). Introduction to biostatistics: Part 1, basic concepts. Annals of Emergency Medicine, 19(1), 86–89. https://doi.org/10.1016/S0196-0644(05)82149-3

García-Sánchez, I.-M., Almeida, T. A. D. N., & Camara, R. P. D. B. (2015). A proposal for a Composite Index of Environmental Performance (CIEP) for countries. Ecological Indicators, 48, 171–188. https://doi.org/10.1016/j.ecolind.2014.08.004

Groeneveld, R. A., & Meeden, G. (1984). Measuring Skewness and Kurtosis. The Statistician, 33(4), 391. https://doi.org/10.2307/2987742

Hair, J. (2009). Multivariate data analysis. Pearson.

Halpern, B. S., Longo, C., Hardy, D., McLeod, K. L., Samhouri, J. F., Katona, S. K., Kleisner, K., Lester, S. E., O'Leary, J., Ranelletti, M., Rosenberg, A. A., Scarborough, C., Selig, E. R., Best, B. D., Brumbaugh, D. R., Chapin, F. S., Crowder, L. B., Daly, K. L., Doney, S. C., . . . Zeller, D. (2012). An index to assess the health and benefits of the global ocean. Nature, 488(7413), 615–620. https://doi.org/10.1038/nature11397

Hermans, E., Van den Bossche, F., & Wets, G. (2008). Combining road safety information in a performance index. Accident Analysis & Prevention, 40(4), 1337–1344. https://doi.org/10.1016/j.aap.2008.02.004

Hsu, A., L.A. Johnson, and A. L. (2013). Measuring Progress: A Practical Guide From the Developers of the Environmental Performance Index (EPI). 80. http://epi.yale.edu/content/measuring-progress-practical-guide-developers-environmental-performance-index-epi

Hsu, A., Emerson, J., Levy, M., Sherbinin, A. de, Johnson, L., Malik, O., Schwartz, J., & Jaiteh., M. (2014). 2014 Environmental Performance Index. Wiley StatsRef: Statistics Reference Online. https://doi.org/10.1002/9781118445112.stat03789

Hsu, A., Lloyd, A., & Emerson, J. W. (2013). What progress have we made since Rio? Results from the 2012 Environmental Performance Index (EPI) and Pilot Trend EPI. Environmental Science and Policy, 33, 171–185. https://doi.org/10.1016/j.envsci.2013.05.011

Ibáñez-Forés, V., Bovea, M. D., & Pérez-Belis, V. (2014). A holistic review of applied methodologies for assessing and selecting the optimal technological alternative from a sustainability perspective. Journal of Cleaner Production, 70, 259–281. https://doi.org/10.1016/j.jclepro.2014.01.082

J. H. Curtiss. (1943). On Transformations Used in the Analysis of Variance. 14(2), 107–122. https://www.jstor.org/stable/2235813

Jennifer Anne Haley. (2001). Information To Users. Dissertation, 274.

Kondyli, J. (2010). Measurement and evaluation of sustainable development. Environmental Impact Assessment Review, 30(6), 347–356. https://doi.org/10.1016/j.eiar.2009.08.006

Kowalski, J., & Tu, X. M. (2008). Modern applied U-statistics. John Wiley & Sons.

Kwatra, S., Kumar, A., & Sharma, P. (2020). A critical review of studies related to construction and computation of Sustainable Development Indices. Ecological Indicators, 112(January), 106061. https://doi.org/10.1016/j.ecolind.2019.106061

Lankoski, J., & Lankoski, L. (2023). Environmental sustainability in agriculture: Identification of bottlenecks. Ecological Economics, 204(PA), 107656. https://doi.org/10.1016/j.ecolecon.2022.107656

Li, X., Su, S., Shi, J., & Zhang, Z. (2015). An environmental impact assessment framework and index system for the pre-use phase of buildings based on distance-to-target approach. Building and Environment, 85, 173–181. https://doi.org/10.1016/j.buildenv.2014.11.035

Lin, M., Zhang, S., & Chen, Y. (2005). Distance-to-Target Weighting in Life Cycle Impact Assessment Based on Chinese Environmental Policy for the Period 1995-2005 (6 pp). The International Journal of Life Cycle Assessment, 10(6), 393–398. https://doi.org/10.1065/lca2004.10.185

Mendola, D., & Volo, S. (2017). Building composite indicators in tourism studies: Measurements and applications in tourism destination competitiveness. Tourism Management, 59, 541–553. https://doi.org/10.1016/j.tourman.2016.08.011

Moldan, B., Janoušková, S., & Hák, T. (2012). How to understand and measure environmental sustainability: Indicators and targets. Ecological Indicators, 17, 4–13. https://doi.org/10.1016/j.ecolind.2011.04.033

Munda, G., & Saisana, M. (2011). Methodological Considerations on Regional Sustainability Assessment Based on Multicriteria and Sensitivity Analysis. Regional Studies, 45(2), 261–276. https://doi.org/10.1080/00343401003713316

Olsen, G. W., Church, T. R., Miller, J. P., Burris, J. M., Hansen, K. J., Lundberg, J. K., Armitage, J. B., Herron, R. M., Medhdizadehkashi, Z., Nobiletti, J. B., O'Neil, E. M., Mandel, J. H., & Zobel, L. R. (2003). Perfluorooctanesulfonate and other fluorochemicals in the serum of American Red Cross adult blood donors. Environmental Health Perspectives, 111(16), 1892–1901. https://doi.org/10.1289/ehp.6316

Papadimitriou, E., Neves, A. R., & Saisana, M. (2020). JRC statistical audit of the 2020 environmental performance index. https://doi.org/10.2760/849820

Pollesch, N. L., & Dale, V. H. (2016). Normalization in sustainability assessment: Methods and implications. Ecological Economics, 130, 195–208. https://doi.org/10.1016/j.ecolecon.2016.06.018

Quaddus, M. A., & Siddique, M. A. B. (2001). Modelling sustainable development planning: A multicriteria decision conferencing approach. Environment International, 27(2–3), 89–95. https://doi.org/10.1016/S0160-4120(01)00066-6

Reisi, M., Aye, L., Rajabifard, A., & Ngo, T. (2014). Transport sustainability index: Melbourne case study. Ecological Indicators, 43, 288–296. https://doi.org/10.1016/j.ecolind.2014.03.004

Ruiz, F., El Gibari, S., Cabello, J. M., & Gómez, T. (2020). MRP-WSCI: Multiple reference point based weak and strong composite indicators. Omega (United Kingdom), 95. https://doi.org/10.1016/j.omega.2019.04.003

Saaty, T. L. (1977). A scaling method for priorities in hierarchical structures. Journal of Mathematical Psychology, 15(3), 234–281. https://doi.org/10.1016/0022-2496(77)90033-5

Saaty, T. L. (1988). What is the Analytic Hierarchy Process? In Mathematical Models for Decision Support (pp. 109–121). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-83555-1_5

Saisana, M., Saltelli, A., & Tarantola, S. (2005). Uncertainty and Sensitivity Analysis Techniques as Tools for the Quality Assessment of Composite Indicators. Journal of the Royal Statistical Society Series A: Statistics in Society, 168(2), 307–323. https://doi.org/10.1111/j.1467-985X.2005.00350.x

Saisana, M., & Tarantola, S. (2002). State-of-the-art report on current methodologies and practices for composite indicator development Institute for the Protection and Security of the Citizen State-of-the-art Report on Current Methodologies and Practices for Composite Indicator Development. Eu, July, 1–72. https://doi.org/10.13140/RG.2.1.1505.1762

Schober, P., Schwarte, L. A., & Boer, C. (2018). Correlation coefficients: Appropriate use and interpretation. Anesthesia and Analgesia, 126(5), 1763–1768. https://doi.org/10.1213/ANE.0000000000002864

Singh, R. K., Murty, H. R., Gupta, S. K., & Dikshit, A. K. (2009). An overview of sustainability assessment methodologies. Ecological Indicators, 9(2), 189–212. https://doi.org/10.1016/j.ecolind.2008.05.011

Smallenbroek, O., Caperna, O., & Papadimitriou, G. (2023). JRC audit of the Environmental Performance Index 2022. https://doi.org/10.2760/381247

Srebotnjak, T. (2007). The role of environmental statisticians in environmental policy: the case of performance measurement. Environmental Science and Policy, 10(5), 405–418. https://doi.org/10.1016/j.envsci.2007.02.002

Valipour, M., Ziatabar Ahmadi, M., Raeini-Sarjaz, M., Gholami Sefidkouhi, M. A., Shahnazari, A., Fazlola, R., & Darzi-Naftchali, A. (2015). Agricultural water management in the world during past half century. Archives of Agronomy and Soil Science, 61(5), 657–678. https://doi.org/10.1080/03650340.2014.944903

Von Schirnding Y.E.R. (1997). Indicators for Policy and Decision-making in Environmental Health. Draft report prepared for the Office of Global and Integrated Environmental Health. World Health Organization.

Wang, H., Hou, P., Zhang, H., & Weng, D. (2011). Towards Life Cycle Sustainability Management. In M. Finkbeiner (Ed.), Towards Life Cycle Sustainability Management (Issue July 2011). Springer Netherlands. https://doi.org/10.1007/978-94-007-1899-9

WEF. (2002). Pilot Environment Performance Index. World Economic Forum: Annual Meeting, An Initiative of the Global Leaders of Tomorrow Environment Task Force.

Wendling, Z. A., Emerson, J. W., de Sherbinin, A., & Esty, D. C. (2020). Environmental Performance Index 2020: Country Profile Egypt. 2–4.

Wendling, Z. A., Emerson, J. W., Esty, D. C., Levy, M. A., & de Sherbinin, A. (2018). 2018 Environmental Performance Index.

Wolf, M. J., Emerson, J. W., Esty, D. C., Sherbinin, A., & Wendling, Z. A. (2022). Environmental Performance Index 2022: Ranking country performance on sustainability issues Summary for Policymakers. In Report: Summary for Policymakers. epi.yale.edu

How to cite this article

Arcagök, U. (2024). Review of the Environmental Performance Index (EPI): methods, constraints and recommendations. *Istanbul Management Journal*, 96, 59-73. http://doi.org/10.26650/imj.2024.96.1403313

6. Appendix

Table 1. Methodological change of EPI as per years

Year	Objectives and Policy Categories	Indicators	Method	Difference from the Previous Index
2006	Environmental Health (4) Ecosystem Vitality (12): Air Quality (2), Water Resources (1), Biodiversity and Habitat (3), Productive Natural Resources (3), Sustainable Energy (3)	16	Proximity to Target Winsorization PCA Sensitivity Analyses Pearson's Correlation Coefficient (GDP with EPI)	-
2008	Environmental Health (6): Environmental Burden of Disease (1) Water (2), Air Pollution (3), Ecosystem Vitality (19): Air Pollution (2), Water (2), Biodiversity and Habitat (4), Productive Natural Resources (8), Climate Change (3)	25	Proximity to Target Winsorization Pearson's Correlation Coefficient PCA K-Means Method Sensitivity Analyses	The number of variables was increased to 25 from 16. Environmental health was divided into three political categories and covered six indicators in total. The category of sustainable energy was removed. The category of climate change was added.
2010	Environmental Health (5): Environmental Burden of Disease (1) Water (2), Air Pollution (2) Ecosystem Vitality (20): Air Pollution (4), Water (3), Biodiversity and Habitat (3), Forestry (2), Fisheries (2), Agriculture (3), Climate Change (3)	25	Proximity to Target Winsorization PCA Time Series Kendall's Tau Correlation Coefficient Logarithmic Transformation	The number of variables remained the same, but the political categories and the number of variables under such categories had changed. A variable (local ozone) under the political category of "air pollution", included under the environmental health goal, was removed. When ecosystem vitality was examined, two variables (nitrogen oxide emission and volatile organic compound emission) were added under the political category of air quality. A variable (the water shortage index) was added under the political category of water. Two variables (protection risk index and effective protection) were removed and one variable (protection of living beings) was added to the political category of biodiversity and habitat. The political category of productive natural resources was removed, and instead, the sub-indicators forming the referred political category became political categories. The number of variables in forestry was increased by one (growing stock), and fisheries remained the same. In agriculture, only the variable of agricultural support remained among the variables of the previous year, and all the other variables were removed. Two variables

Table 1. Continued

				(agricultural pesticide adjustment and agricultural water density) were added instead of them. No change had occurred in the political category of climate change.
2012	Environmental Health (5): Environmental Health (1) Water (2), Air (2), Ecosystem Vitality (17): Air (2), Water (1), Biodiversity and Habitat (3), Forestry (3), Fisheries (2), Agriculture (2), Climate Change & Energy (4)	22	Proximity to Target Winsorization Logarithmic Transformation Pearson's Correlation Coefficient Linear Regression Sensitivity Analyses	The political indicator of environmental disease burden was removed, and the political indicator of environmental health was added. Two indicators were removed from both of the political indicators of air pollution and water, and one indicator was removed from agriculture. One indicator was added to both of the political indicators of forestry and climate change.
2014	Environmental Health (6): Health Impacts (1) Water ve Sanitation (2), Air Quality (3) Ecosystem Vitality (14): Water Resources (1), Biodiversity and Habitat (4), Forestry (1), Fisheries (2), Agriculture (2), Climate Change & Energy (4)	20	Proximity to Target Winsorization Logarithmic Transformation Pearson's Correlation Coefficient Linear Regression Sensitivity Analyses	Even if the number of indicators was specified as 20, the index was calculated with 19 indicators. The states' electricity score couldn't be calculated. The political indicator of water, including the goals of environmental health and ecosystem vitality, was removed from both of these goals and instead, the political indicator of water quality was added under the goal of environmental health. A change was made in the three political goals included under the goal of environmental health, and instead, the political indicators of health impacts, water quality, and air quality were added. The number of indicators included in the goal of ecosystem vitality decreased to 14 from 17.
2016	Environmental Health (7): Health Impacts (1) Water and Sanitation (2), Air Quality (4) Ecosystem Vitality (14): Water Resources (1), Biodiversity and Habitat (5), Forestry (1), Fisheries (1), Agriculture (2), Climate Change & Energy (2)	20	Proximity to Target Winsorization Logarithmic Transformation Pearson's Correlation Coefficient Linear Regression	Even if the number of indicators was specified as 20 in the year 2014, the index was calculated with 19 indicators. The states' electricity score couldn't be calculated. The number of indicators under the political category of air quality, included under the goal of environmental health, was increased by 1. While there was no change in the total number of indicators under the political categories included under the goal of ecosystem vitality, the political category of water quality was replaced with the political category of water resources.

Table 1. Continued

2018	Environmental Health (6): Heavy Metals (1) Water and Sanitation (2), Air Quality (3) Ecosystem Vitality (18): Air Pollution (2), Water Resources (1), Biodiversity and Habitat (6), Forestry (1), Fisheries (2), Agriculture (1), Climate Change & Energy (5)	24	Proximity to Target Winsorization Logarithmic Transformation Pearson's Correlation Coefficient Linear Regression	The political category of health effects, included under the goal of environmental health, was removed, and instead, the political category of heavy metals was added. The number of political categories under the goal of ecosystem vitality was increased by one. The political category of air pollution was added.
2020	Environmental Health (7): Heavy Metals (1) Sanitation & Drinking Water (2), Air Quality (3), Waste Management (1) Ecosystem Vitality (25): Pollution Emissions (2), Water Resources (1), Biodiversity and Habitat (7), Fisheries (3), Agriculture (1), Climate Change (8), Ecosystem Services (3)	32	Proximity to Target Logarithmic Transformation Spearman's Correlation Coefficient Linear Regression	The political indicator of waste management was added under the goal of environmental health. The name of the political indicator of air pollution, included under the goal of ecosystem vitality, was amended to pollution emission. The name of the political indicator of forestry was amended, and it was named ecosystem services. Moreover, the name of the political indicator of climate change and energy was amended to climate change.
2022	Environmental Health (13): Heavy Metals (1) Sanitation & Drinking Water (2), Air Quality (7), Waste Management (3) Ecosystem Vitality (18): Biodiversity and Habitat (7), Ecosystem Services (3), Fisheries (3), Acid Rain (2), Agriculture (2), Water Resources (1) Climate Change (9): Climate Change Mitigation (9)	40	Proximity to Target Logarithmic Transformation Spearman's Correlation Coefficient Linear Regression	The political indicator of climate change, included in the index in previous years under the goal of ecosystem vitality, had become a goal. The number of goals was increased to three for the first time, and the EPI was formed with these many indicators for the first time.

Istanbul Management Journal
IMJ 96, 2024, 74–87
DOI: 10.26650/imj.2024.96.1441303

RESEARCH ARTICLE

*The Relationship Between Servant Leadership and Social Sustainability: A Case of a Health-Dedicated University

Zeynep Görmezoğlu[1]

[1]Dr., Bezmialem Vakif University, General Secretariat, Istanbul, Türkiye

*** This article was produced from the author's doctoral thesis.**

ABSTRACT
Social sustainability is one of the least researched and applied topics in the field of sustainability, and identifying the leadership approach associated with social sustainability is equally critical for organisations. The main purpose of this study is to examine the impact of servant leadership on social sustainability. The scope of this research is the Bezmialem Foundation University, which is a health–dedicated and nonprofit university, in Istanbul. The survey method was chosen as the data collection method, and a questionnaire was completed by 730 people working in the academic and administrative units of Bezmialem Foundation University. In accordance with the findings, positive and significant relationships were found between servant leadership and social sustainability. The originality of this study is derived from the fact that the relationship between servant leadership and social sustainability was examined. This research fills an important theoretical gap in the relevant field. Thus, it is likely that it would be beneficial for organisations that want to enhance their social sustainability practises to highlight the servant leadership approach as a leadership style. It is expected that the results of this research will be used by social sustainability practitioners and researchers within the framework of leadership approaches.

Keywords: Servant Leadership, Social Sustainability, Health Sector.
JEL Code: M19, S01, P46

Introduction

The importance of the sustainability approach has also increased in the modern society of the new age to such an extent that all over the world, issues such as the rapid increase in population, the development of technology, the change of relations between economies, population, poverty, health, conservation of oil and ecosystems, food, water, climate change, etc. are dealt with (Bormane et.al., 2017). Sustainability issues such as growing inequality and the degradation of livelihoods from natural resources transition to a more sustainable economic system gradually necessary (Geissdoerfer et al., 2018). Various challenges such as globalization, climate change, resource depletion, and ageing population show that the development of societies can no longer be achieved with quantitative economic growth, and qualitative changes are a necessity (Staniškienė & Stankevičiūtė, 2018). In addition, many organisations have constantly faced environmental changes in recent years and have been forced to adapt to sustainability resulting from the laws implemented by the government and pressure from society (Cella–de–Oliveira, 2013). A successful realization of sustainability is only possible if economic, environmental, and social objectives are fulfilled together (Afshari et al., 2022). In this respect, while the concept of sustainable development generally refers to creating a balance between the environmental, economic, and social bases of sustainability, the meaning of the social basis and its related purposes remain uncertain (Murphy, 2012). Within this framework, social sustainability performance has been relatively neglected and developed far less than the statement that emphasizes its economic and environmental aspects (Kamali et al., 2018).

While social sustainability involves 'respecting human rights and equal opportunities for everyone in society', it also includes 'giving great importance to local communities, maintaining and strengthening their life support systems, recognizing and respecting different cultures, avoiding all forms of exploitation' (Mejia et al., 2022). As social sustainability focuses on individual assets such as education, skills, experience, consumption, income, and job/employment, it also includes each citizen's active physical, legal, educational, and participatory access to society's resources and services (Omann & Spangenberg)., 2002). The complex and multifaceted nature of sustainability demands/needs exceptional leadership skills, such as servant leadership, which plays a

Corresponding Author: Zeynep Görmezoğlu **E-mail:** zgormezoglu@bezmialem.edu.tr
Submitted: 22.02.2024 • **Revision Requested:** 13.03.2024 • **Last Revision Received:** 25.03.2024 • **Accepted:** 21.05.2024

crucial role in ensuring the sustainability and economic growth of both the organization and its employees and in establishing the mission and vision of the organization . (Batool, et. al., 2022). In this context, servant leadership surpasses many leadership theories because of its unique structure, such as philanthropy and multidimensional leadership characteristics. It primarily focuses on serving its followers, aims to achieve an extraordinary vision that will create value for society, and encompasses the situational, transformational, and personal characteristics of leadership. In addition, servant leadership offers a multidimensional theory of leadership that incorporates all aspects of leadership, including ethical, relational, and outcome–based dimensions. It is similar to existing leadership theories, but it also differs from them in that it proposes a meaningful leadership path for individuals, organisations , and societies to achieve sustainable results. (Coetzer et. al., 2017). Batool et al. (2022) emphasise that servant leadership is a vital resource that prioritises and empowers employees and contributes to their sustainability in the workplace by focusing on making them more resilient and creative in the workplace. Servant leadership is a timeless phenomenon that has existed in many cultures, civilisations, and religions for thousands of years. From ancient Greek philosophers to military commanders and religious leaders, there are examples of servant leaders in different civilisations (Sendjaya & Sarros, 2002). The concept of 'servant leadership' first appeared in the literature on leadership in Robert K. Greenleaf's article (1970) titled 'The Servant as Leader'. Since the beginning of the 1990s, with Graham (1991), Spears (1995), Buchen (1998), Farming, and their colleagues' studies (1999), it has become widespread in the academic field as a new leadership style. Especially in the 2000s, incidents such as the 2001 Enron and 2015 Volkswagen scandals, which occurred due to ethical violations in the world's leading businesses, revealed the necessity of switching to the virtuous leadership model, which gives importance to human and ethical values, instead of the rational economic model (Markham, 2015). In this context, servant leadership takes its place in the literature as a leadership approach that focuses primarily on serving its followers, people, and society, while giving importance to ethical and moral values.

Servant leadership emphasizes the personal development of followers and adds a social responsibility component to transformational leadership. Employee well-being is highly important for servant leaders. Servant leadership emphasizes sustainability and corporate social responsibility by focusing on creating a pleasant work environment in which employees can work, rather than obtaining high returns on investments. This type of leadership best fits the theory of corporate social responsibility among the new leadership types (Broch et al., 2020). Corporate social responsibility theory defines a business's responsibility for its environment, its social and societal needs, and the quality of management of its operations. Businesses with a corporate social responsibility understanding demonstrate/exhibit philanthropic and socially responsible business practises beyond compliance and economic self-interest (Liu, 2018). In this framework, servant leadership and corporate social responsibility embody similar basic principles. Corporate social responsibility theory brings together and explains both servant leadership and social sustainability on common grounds. In line with these theoretical connexions and evidence, it is likely that there is a relationship between servant leadership and social sustainability.

In this study, while social sustainability, which has just begun to be conceptualized, is examined at an organizational level from employees' perspective, the concept of servant leadership is discussed as a factor that is expected to be useful and effective in the development of this concept. In the literature, more attention is paid to the organizational output of social sustainability; therefore, prior knowledge of this concept remains limited. In this context, this study aims to determine the critical effect of servant leadership on social sustainability and to provide new perspectives and insights to researchers working in this field.

1. Social Sustainability

In recent years, sustainability has been at the top of the research agenda for academic institutions and industries. Therefore, many businesses have begun to integrate sustainability into their business models (Popovic et. al., 2018). The inclusion of institutional sustainability in the business environment ensures that the business is aware of its environmental, social, and economic capital (Lopes et. al., 2017). The social aspect of sustainability has become more evident because of the public distrust of in business practises exemplified by scandals surrounding Enron and Volkswagen, alongside companies engaging in more actions for social welfare. While the social aspect presents the tension between the interests of the business and society, it also makes it possible to meet the interests of society through the sustainability practises of the businesses. In other words, from a micro perspective, when organisations respond to sustainability, they also respond to a macro–level social concern for habitat and quality of life. Therefore, significant efforts have been made in the academic literature to examine the social aspect of sustainability (Choi & Ng, 2011). According to Basiago (1999), social sustainability includes the concepts of equality, empowerment, accessibility, participation, sharing, cultural identity, and institutional stability. Social sustainability endeavours to protect the environment through economic growth and poverty reduction.

Social sustainability shifts the focus of organisations to both internal and external communities (i.e., employees). Social sustainability means that organisations (and production facilities) provide equal opportunities to people, promote diversity, support connexions within and outside the community, ensure quality of life, and provide democratic processes and accountable governance structures (Gimenez et.al., 2012). It also refers to actively supporting the creation and preservation of the talents of future generations, promoting healthy living, and supporting equal and democratic behaviours that favour quality of life inside

and outside the organization (Longoni & Cagliano, 2015). From a social perspective, society today has become more sensitive to issues that affect human life, dignity, and rights, such as fair labour practises and social justice (Vivoda & Kemp, 2019). Like the concept of sustainability, social sustainability is neither absolute nor fixed. Social sustainability should be considered as a dynamic concept that will change over time (year by year/decade by decade) at a certain point. While there is relatively limited literature focusing specifically on social sustainability, there is a broader literature on the overlapping concepts of social capital, social cohesion, social inclusion, and social exclusion (Dempsey et. al., 2011).

As can be seen, social sustainability is concerned with the human side of sustainability. Social sustainability encompasses the impact of organisations on the social systems in which they conduct business and maintain relationships with various stakeholders. (Hussain et. al., 2018). Social sustainability measurement requires a balance between quantitative and qualitative indicators. In addition, there is still uncertainty about what social sustainability really means. In these debates, it is seen that the determinants of the 'social' factor depend on the determining framework. In this context, businesses are being further examined daily regarding the social impacts they create. In parallel with this, Staniškienė and Stankevičiūtė (2018) developed a measurement system that can evaluate social sustainability from the perspective of the employee. Six aspects that make up this conceptualization are briefly explained below.

Employee Participation: Employee participation in organisations equips individuals with the skills, knowledge, and resources to generate new ideas, contribute to making informed strategic decisions, and apply them effectively through the distribution of power and knowledge and building motivation (Wohlgemuth et al., 2019). The basic principle behind management-led initiatives to increase employee participation in organisations is to ensure that low–level employees are more actively involved in decision-making and work processes, while simultaneously giving employees more autonomy and control over their job duties and working methods.

Employee Collaboration: Employee collaboration is the opposite of employee competition (Staniškienė & Stankevičiūtė, 2018). Collaboration at work is a crucial social behavior in the workplace, especially when work is interdependent. It is a key mechanism for employees to find solutions to work–related problems with the support of their colleagues. Collaboration in organisations with social sustainability is a phenomenon that occurs not only between employees but also between management and employees (Balser & Winkler, 2012).

Equal Opportunity: Equal opportunity is an ideal situation where everyone has the chance to participate in any form of organizational activities and achieve success (Jonsen et. al., 2015). Ensuring equal opportunities in organisations includes tolerating differences, adopting a management approach based on human rights, and developing policies to enhance the representation of women and minorities in senior management (Sharma, 2016).

Employee Development: Employee development is vital to maintaining and developing the capabilities of both individual employees, and the organization as a whole. The primary basis of the investment, which is perceived as something intended for employee development, is creating conditions for employees to believe their organization values their contributions and cares about their employability (Lee & Bruvold, 2003).

Occupational Health and Safety: Employed adults spend a quarter of their life at work, and work pressure and demands could affect their physical and mental health. Workplace hazards continue to take their toll on society in terms of employee morbidity and mortality and financial and social costs, which are part of the ongoing public responsibility to protect the well–being of the workforce (Schulte, 2007). Working in a healthy organizational climate under these changing unsafe working conditions has been one of the greatest needs of employees. Organisations with social sustainability practises are constantly improving their occupational safety and health practises by giving importance to those needs of their employees.

External Collaboration: Collaborations between global businesses and local communities are essential for meeting the challenges of well–being and sustainable growth. Collaborations can focus on different levels of planning, such as local, regional, or national, depending on the goal, and often include nonprofit organizations, businesses, communities, academies, and other external stakeholders (Cavicchi & Vagnoni, 2017). From a social perspective, sustainability both enables organisations to attract and retain skilled workforce and ensures access to the source of these human resources (Staniškienė & Stankevičiūtė, 2018).

2. Servant Leadership

At first glance, the idea of 'servant as leader' is perceived as an oxymoron; servant and leader appear to be contradictory concepts. This is because it is difficult to think and act as a leader and a servant at the same time (Sendjaya & Sarros, 2002). A person is either a leader or a servant. It does not seem logical to be both at the same time. However, Greenleaf has combined these seemingly contradictory concepts into a practical and powerful combination. According to Greenleaf, servant leadership is a management style in which leadership and service are in harmony with each other and in a logical interaction with the environment. The servant leader has a strong will to serve as well as strong leadership ability. Most importantly, the servant leader can combine these

two traits in a way that positively reinforces each other (Trompenaars & Voerman, 2009). Greenleaf based his view of 'servant leadership' on the philosophical traditions and teachings of Judaism and Christianity (Reinke, 2004). He stated that the idea came about when he read Hermann Hesse's book 'Journey to the East', and after reading this book, he came up with the idea that a person (the Leo character in the story) can be a servant and a leader at the same time (Greenleaf, 2002). There, he discovers that Leo, known as the servant, is actually the head of the community, the spiritual guide, and the great and noble leader (Greenleaf, 1998). A person who strongly supports the idea of serving the needs of others and then fulfils his duties conscientiously, that is, the person with the understanding of 'servant first' is more likely to be a natural servant than the person who is the 'leader first' (Greenleaf, 2002). This difference manifests itself in the concern of the one who makes servanthood a priority and ensures that other people's primary needs are met. In addition, the understanding of 'going beyond one's own personal interests' is adopted as one of the main characteristics of the servant leader. Although there are similar understandings in other leadership theories, this is the first to include this concept in the centre of the model (Van Dierendonck, 2011).

King (1994), emphasized that in the servant leadership approach, a leader's primary responsibility is to serve the organization by establishing a fundamental connexion between himself/herself and his/her followers. According to Kouzes and Posner (1993), the admired leader does not place himself in the centre; he places his followers there. The servant leader does not seek people's attention; instead, they show concern for others. Spears (1995) defined the characteristics of a servant leader as listening, empathy, healing, awareness, persuasion, conceptualization, foresight, stewardship, dedication to people's development, and community building. Graham (1991) states that servant leadership goes one step beyond transformational leadership; followers not only improve their intellectual and skill development but also their spiritual questioning capacity. Sendjaya and Cooper (2011) defined servant leadership as a holistic and multidimensional leadership approach that encompasses the rational, relational, ethical, emotional, and spiritual aspects of both leaders and followers.

There are many studies in the literature dealing with the consequences of servant leadership in organisations. Empirical studies have found that servant leadership, which is positively related to, demonstrated the capacity to produce favourable individual and organizational outcomes, such as organizational commitment (Hoveida et. al., 2011;Harwiki, 2016), work satisfaction (Mehta & Pillay, 2011), organizational citizenship behavior (Bambele et al, 2012;Harwiki, 2016), organizational justice and commitment to change (Kool & Van Dierendonck, 2012), organizational trust (Pouramiri, & Mehdinezhad, 2017), workplace spirituality (Herman, 2010; Williams Jr., 2017), team performance (Song et.al., 2015), employee performance (Harwiki, 2016), employee satisfaction (Donia et al., 2016), creativity (Williams Jr., 2017), and needs satisfaction (Peachey, 2018).

Servant leadership comprises religious terms such as God, spirit, and spirituality; psychological concepts such as personal development and self-awareness; and contemporary management approaches such as horizontal/flat organization, shared vision, and sustainability at the same time (Wong & Page, 2003). Servant leadership is essentially a phenomenon that is too complex to be defined simply. Thus, servant leadership has a multidimensional meaning as it freely uses terms from different disciplines.

3. Relationship Between Servant Leadership and Social Sustainability

In this study, the relationship between servant leadership and social sustainability is examined within the framework of corporate social responsibility theory. From an economic perspective, it can be argued that for profit-seeking businesses, corporate success equates to profit maximization (Toker, 2023). However, the corporate social responsibility approach emphasizes that success for businesses involves more than just achieving economic objectives; it also involves contributing to social solutions (Carroll, 1991). In its simplest form, CSR can be defined as a set of management practises that minimize the negative impacts of a business' activities on society while maximizing its positive impact (Pinney, 2001). In this context, CSR expresses the overall relationship of the business with all its stakeholders. Stakeholders include customers, employees, communities, owners/investors, the government, suppliers, and rivals. Elements of social responsibility include allocating resources for social assistance, employee relations, creating and maintaining employment, environmental management, and financial performance (Khoury et al., 1999). In this regard, corporate social responsibility forms the theoretical basis of social sustainability. The corporate social responsibility efforts of businesses are significant steps towards ensuring social sustainability, so much so that supporting the welfare and development of societies is one of the key objectives of social sustainability.

Corporate social responsibility is related to a business treating its stakeholders ethically or responsibly. Being ethical or responsible means behaving in acceptable ways in contemporary societies, which involves both social and economic responsibilities. Stakeholders exist both within and outside the business. Accordingly, the broader aim of social responsibility is to create higher living standards for both those inside and outside the business while maintaining profitability (Hopkins, 2003). In this respect, servant leaders attach greater importance to corporate social responsibility. By behaving ethically and responsibly in their relationships with employees and stakeholders, servant leaders contribute to the development of a servant leadership culture within the organization through their corporate social responsibility efforts. Servant leaders also motivate employees to contribute to society and the environment by providing the motivation and support necessary for corporate social responsibility practises. The

combined implementation of these two approaches can help businesses achieve sustainable success that not only focuses on profit but also benefits society and the environment.

Since corporate social responsibility encompasses actions that go beyond the interests of the business and promote social volunteering benefits and actions required by the laws (McWilliams & Siegel, 2001), it creates the theoretical foundation and connexions necessary to determine the impact of servant leadership on social sustainability. Therefore, the corporate social responsibility approach contributes significantly to the formulation of the research question and the development of hypotheses.

Servant leadership is essentially a long-term and transformational approach to life and work life, and a way that has the potential to create positive change in society (Spears, 1995; Spears, 2004). Incorporated into the leadership vision, the leader identifies other appropriate individuals in the organization who will embrace the mission, organizational goals, and values. When this is complete, the organizational pyramid is inverted. Therefore, the servant leadership approach represents a *pull model* rather than a *push model* in achieving the vision (Page, & Wong, 2017). According to Van Dierendonck (2011), servant leadership is effective on followers at the individual, team and organizational levels. Servant leadership provides a stronger focus on sustainability and social responsibility, especially at the organizational level, than other leadership types. In this direction, servant leadership emphasizes the importance of philanthropy, stewardship, which form the basis of investment in the development and transformation of society, and community building, which are the main components of corporate social responsibility (Kincaid, 2012). Similarly, studies on social sustainability show that the main components of corporate social responsibility are philanthropy (Mani et.al, 2018; Sudusinghe & Seuring, 2020), social development (Uttam et. al., 2022), and social responsibility (Afshari et. al., 2022). According to Toussaint et al., corporate social responsibility is an antecedent of social sustainability, while social sustainability is a broader concept that includes social responsibility (Toussaint et al., 2021). For this reason, there are few studies in the literature dealing with the relationship between servant leadership and social sustainability. Batool et al. (2022) established a new relationship by investigating the roles of psychological resilience and creativity in the correlation between servant leadership and organizational sustainability, encompassing its economic, environmental, and social dimensions. Sher and Nawaz (2021), on the other hand, identified the mediating role of green human resources management in facilitating the positive impact of servant leadership on enterprises' social sustainability performance. In a similar vein, Alafeshat and Tanova (2019) explored the connexion between servant leadership and organizational sustainability, discovering a positive influence of servant leadership on employee satisfaction and retention, which is an indicator of organizational sustainability.

In sum, when studies related to social sustainability are examined, some empirical studies on the relationship between social sustainability and organizational performance show positive associations (Goel vd., 2020; Hale vd., 2019; Lee vd., 2021; Mani vd., 2020; Rotondo vd., 2019; Schönborn vd., 2019). In addition, studies in the literature have evaluated and examined the performance indicators and criteria of social sustainability, the impact of social sustainability on financial performance, and how businesses are assessed and examined in terms of social sustainability. There are very few studies on the relationship between servant leadership and social sustainability. It is important to consider and determine the relationship between these two variables for businesses to achieve their corporate social sustainability goals and objectives.

The originality of this study is derived from the fact that the relationship between servant leadership and social sustainability was examined. This research fills an important theoretical gap in the relevant field. Thus, it is likely that it would be beneficial for organisations that want to enhance their social sustainability practises to highlight the servant leadership approach as a leadership style. It is expected that the results of this research will be used by social sustainability practitioners and researchers within the framework of leadership approaches.

From this empirical evidence framework, servant leadership and its organizational results are conceptually related to the previously described social sustainability dimensions (employee participation, employee collaboration, equal opportunity, employee development, occupational safety and health, and external collaborations). For this reason, the potential role of servant leadership in social sustainability is reasonable. Hence, in this study, this research was conducted to test the following hypothesis.

Hypothesis: A positive relationship between servant leadership and social sustainability within organisations.

4. Research

4.1. Research Purpose and Model

This study examines the effect of servant leadership on social sustainability in organisations within the framework of the model shown in Figure 1. In this regard, cross-sectional data were collected from employees working in the institution. In the following sections, the methods and findings will be explained in detail.

Figure 1. Research Model

4.2. Data Collection Tools

The questionnaire method was used as a data collection tool for the variables in the research model of this study. The questionnaire form was compiled from scales previously used in the literature. For the 'Servant Leadership' independent variable, the 'Servant Leadership Scale' consisting of seven aspects and 28 statements developed by Liden and colleagues (2008) was used by Görmezoğlu Gökçen (2019) with its Turkish adaptation. For 'Social Sustainability', which is the dependent variable of the model, The 'Social Sustainability Scale' consisting of six aspects and 31 statements developed by Staniskiene and Stankeviciute (2018), was used. This scale is one of the first instruments based on the perspective of employees in the evaluation of social sustainability in organisations. This scale was adapted from English to Turkish for the first time by the author (Görmezoğlu Gökçen, 2019). Nyhan and Marlowe's (1997) four-statement scale was used for the 'Organisational Trust' variable, which was used as a control variable in the model. The reason for choosing this control variable is that the phenomenon of organizational trust reflects the positive expectations of the employees that an organization will implement policies that care about its employees, are transparent towards them and take their needs into account (Börü et.al., 2007), and the assumption that this will be directly related to social sustainability. In addition, demographic variables such as gender, tenure, and department were used as control variables.

The original scales were translated from English to Turkish and back to English by a team of Bezmialem Foundation University Foreign Languages Department lecturers in order to adapt to cultural differences. After the final cheque, the statements were finalized. In addition, demographic questions were added to the questionnaire to measure the descriptive statistics of the sample group. A pilot study was conducted with 105 personnel working at Bezmialem Foundation University to evaluate the statements in the scales. At this stage, the respondents were asked to indicate incomprehensible or incomplete statements, and reliability analyses were performed using the collected data. In line with the findings, it was seen that there was no need to make any changes in the statements, and it was decided to apply the questionnaire.

4.3. Sampling and Data Collection

The data collected from personnel who worked at the academic units of Bezmialem Foundation University (faculty of medicine, faculty of dentistry, faculty of pharmacy, faculty of health sciences, institute of health sciences, vocational school of health services), the general secretariat, its affiliated administrative units, the university hospital, and Bezmialem Hospital were used as the primary sources. This is a study in the social sciences and was conducted with informed consent in accordance with ethical standards and guidelines. Before questionnaire forms were sent to participants, permission and ethical approval was obtained from the Rectorate of Bezmialem Foundation University so that questionnaires could be distributed to academic and administrative staff (Permission document no: 54022451-044-5047/ 05 July 2019). Informed consent was obtained by all participants, and all methods were carried out in accordance with relevant guidelines and regulations. Questionnaire forms were sent to all 2,614 personnel at the institution, and 730 of the responses were edited to form the final data set. Thus, the questionnaire response rate is approximately 28%. To understand why Bezmialem Foundation University was chosen for this research, it would be appropriate to briefly provide information about the history of the institution (Görmezoğlu Gökçen, 2019).

In the establishment of foundation (vakif) institutions, serving the community through foundations and diversifying the services offered to contribute to the development of society, "Female Sultans" had an undeniably significant role in the Ottoman Empire. As an example of female sultans who founded foundation institutions and contributed to the development of society, Bezmialem Valide Sultan, the founder of Bezmialem University, will be briefly mentioned.

Bezmialem Valide Sultan holds the distinction of being the sultan who founded the most foundations in the Ottoman Empire. Between 1840 and 1853, Bezmialem Valide Sultan commissioned a wide variety of significant charitable works ranging from schools to mosques, fountains, and hospitals (Terzi, 2018). Her contributions were particularly notable for Istanbul. The first modern hospital for public health, the "Valide Sultan Gureba-y Müslimin Hospital," was established in her name in 1845, based on

a rich endowment. In addition to the hospital, a mosque and a fountain exist. In 1845, the opening of the hospital commissioned by Valide Sultan was reported, and the following comment about the hospital is significant: "T*o set a good example for philanthropists, a new and excellent hospital was built in Istanbul for the poor by the Sultan's mother, Bezmialem Sultan, and ever since then, every day, impoverished and destitute patients have come here for treatment. The hospital in Yenibahçe is a beneficial act of charity*" (Sakaoğlu, 2008). Bezmialem Valide Sultan can be considered as an exemplary servant leader in history because of her charitable works and accomplishments aimed primarily at meeting the needs of the people and attaining the pleasure of Allah, based on the understanding of "Serve the people so that you may serve God." (Sakaoğlu, 2008).

In 2010, the decision to establish Bezmialem Vakif University instead of Bezmialem Vakif Gureba Hospital was made by the General Directorate of Foundations, in accordance with Article 130 of the Constitution and the provisions of Law No. 2547 on Higher Education. The university was founded on three well-established foundations, namely Bezm-i Alem Valide Sultan, Abdullah Silahtar Agha, and Abdülhamid Sâni, following publication in the Official Gazette dated 24.10.2010 and numbered 27561. Thus, Bezmialem Vakif Gureba Hospital was transformed into a genuinely non-profit foundation university, Bezmialem Vakif University. Today, Bezmialem Vakif Gureba Hospital continues to serve the community as a university hospital, providing uninterrupted health care services to the public.

Today, on the land of Bezmialem Foundation University Hospital, there are the Faculty of Medicine, Dentistry, Pharmacy, and other institutes affiliated to Bezmialem Foundation University, as well as Istanbul University Faculty of Medicine and Dentistry. Benevolence of the founder continues to spread throughout the country with the health services offered and the health professionals trained here (Yıldırım, 2013), and meeting the needs of society still maintains its importance and has an impact in terms of improving and developing the society. In addition, the mission of caring for the poor and orphans and educating students with scholarships, as outlined in the Foundation Deed, continues to this day. These ongoing efforts contribute to the social sustainability of society (Görmezoğlu Gökçen, 2019).

Greenleaf and Spears emphasized that the servant leadership approach can be applied at universities, churches, foundations and foundation trustees, businesses, and nursing services organisations (Spears, 1995; Greenleaf, 2002). Derived from this idea, Bezmialem Foundation University was selected for the research, which is an exemplary organization in Turkey established based on a thematic, non-profit, semi-public, semi-private model in the field of health as it offers education and health care services to society and has the characteristics of being a real foundation institution at the same time. Another reason for choosing a real foundation university with faculties and hospitals related to the health care sector in which the research would be conducted is that research on servant leadership has been carried out mostly in educational institutions, and less research has been conducted in health institutions. In addition, no academic research has been conducted at universities, health institutions, foundations, or other institutions on social sustainability in Turkey. Because Bezmialem Foundation University is a foundation university offering health education and health care services, it is possible to have a servant leadership approach and characteristics in this organization, since it contains all three of the characteristics of being an educational institution, a health institution, and a foundation. What is relatively less known here is the level of social sustainability at the institution and the effect of servant leadership on it (Görmezoğlu Gökçen, 2019).

4.4. Research Results

The descriptive statistics of the sample group are presented in Table 1.

Validity and Reliability: To ensure the validity and reliability of the scales used in the research, previously tested scales in the literature were used; translation-back translation method was used for the linguistic and cultural adaptation. In addition, a pilot survey was conducted. In the next step, confirmatory factor analyses were performed using the collected data.

Before the analysis, the skewness and kurtosis values of the data were measured. Since the values were within the range of ±2.00 reflecting the normal distribution (George, & Mallery, 2010). It was deemed appropriate to apply parametric tests.

Because of the confirmatory factor analysis of the Servant Leadership scale, the standard factor loads of each item were initially examined, and three items with factor loadings below 0.50 were removed. Following repeated analysis with 25 items, the model fit indices were examined, and it was seen that the fit indices were within acceptable limits ($\chi 2$ / df = 3.55; p=0.0001; RMR=0.026; GFI=0.905; TLI= 0.946; CFI=0.954; RMSEA = 0.059). To test the convergent validity of the scale, Composite Reliability (CR, Composite Reliability) and Average Variance (AVE, Average Variance Extracted) were examined. Accordingly, the composite reliability should be above 0.70, and the average variance should be above 0.50 (Hair et. al., 2010). Consequently, the average variance in the subscales is above 0.50. It was determined that the composite reliability value of only one subscale was below 0.70. Values above 0.60 are also acceptable for convergent validity (Fornell & Larcker, 1981). Because of the confirmatory factor analysis of the Social Sustainability scale, an item that showed high correlation with more than one factor at the same time was removed from the model.

Table 1. Descriptive statistics for sampling

Characteristics	**Frequency (n=730)**	**%**
Gender		
Females	429	59
Males	301	41
Age		
18-30	349	48
31-40	213	29
41-50	115	16
51 and above	53	7
Department		
Academic	315	43
Administrative	415	57
Working time at the institution		
1-5 years	521	71
6-10 years	192	26
11 years and above	17	3

Following repeated analysis with 30 items, the fit indices of the model were found to be within acceptable limits ($\chi 2$ / df = 3.05; p=0.0001; RMR=0.037; GFI=0.905; TLI= 0.940; CFI=0.947; RMSEA= 0.053). When the convergent validity of the scale was examined, the composite reliability was above 0.70, and the average variance was above 0.50. Only one subscale was 0.49. However, because this value is very close to 0.50, the item was not deleted from the relevant subscale. According to Fornell and Larcker (1981), if the explained variance is less than 0.50, but the construct reliability coefficient is higher than 0.60, the convergent validity of the construct is still established. Factor analysis was carried out using the maximum likelihood method for the one-dimensional Organisational Trust scale, and a single factor explaining 65% of the variance was obtained.

Correlations: After taking the arithmetic average of the statements of the subscales in the scales, the average, standard deviation, and correlations between the variables are presented in Table 2. Accordingly, there are positive and significant relationships among all variables. In addition, the average scores of the dimensions of Servant Leadership are in the range of 4-4.5, and the average scores of the dimensions of Social Sustainability vary in the range of 3.5-4 values.

Regression Analysis: Hierarchical linear regression was used to test the hypothesis of 'there is a positive relationship between servant leadership and social sustainability'. The model's dependent variable was Social Sustainability, and the independent variable was Servant Leadership. Values were calculated by taking the average of all statements belonging to the subscales. In the first block, dummy coded gender (female=0, male=1), tenure (less than two years of service=0, others=1), and department (academic=0, administrative=1) variables were analysed as a set of controls. The first model was significant with an R-square value of 0.023. In the second block, Organisational Trust was added to the model as another control variable. The new model accounted for a significant amount of variance in social sustainability with an adjusted R square value of 0.575. Servant Leadership was added to the model as the independent variable in the third block. In this final model, the adjusted R square value was 0.648, which significantly increased by 0.073 ($p<.001$) compared with model 2. This means that the inclusion of Servant Leadership in the model accounts for 7.3 percent variation in Social Sustainability. Table 3 summarises the analysis.

Looking at the coefficients for the final regression model, Gender, Tenure, and Department variables were insignificant. Organisational Trust (B=0.432, $p<.001$) and Servant Leadership (B=0.325, $p<.001$) were significant. In other words, when Gender, Tenure, Department, and Organisational Trust were controlled, for every 1 unit increase in Servant Leadership, Social Sustainability was expected to increase by 0.325 units. Table 4 displays the coefficients for each model.

Based on this finding, it was concluded that the research hypothesis was supported.

Table 2. Descriptive statistics and correlations for the variables

Variables		Subscale	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Servant Leadership	1	Emotional Healing	4,14	0,77	1													
	2	Creating Value for the Community	4,23	0,65	,666**	1												
	3	Conceptual Skills	4,36	0,67	,668**	,688**	1											
	4	Empowerment	4,19	0,76	,695**	,632**	,698**	1										
	5	Helping Subordinates Grow	4,10	0,81	,690**	,655**	,684**	,734**	1									
	6	Prioritising Subordinates	3,98	0,84	,728**	,661**	,696**	,752**	,787**	1								
	7	Ethical Behaviour	4,39	0,68	,636**	,637**	,728**	,661**	,632**	,695**	1							
Social Sustainability	8	Employee Participation	4,02	0,68	,541**	,534**	,508**	,566**	,571**	,588**	,523**	1						
	9	Employee Collaboration	4,01	0,71	,470**	,485**	,501**	,526**	,543**	,519**	,496**	,745**	1					
	10	Equal Opportunity	3,48	0,94	,328**	,346**	,347**	,397**	,418**	,453**	,421**	,549**	,557**	1				
	11	Employee Development	3,83	0,88	,333**	,337**	,363**	,385**	,436**	,436**	,425**	,516**	,512**	,688**	1			
	12	Occupational Health and Safety	3,85	0,77	,397**	,398**	,439**	,418**	,401**	,456**	,484**	,503**	,533**	,626**	,669**	1		
	13	External Collaboration	3,94	0,68	,380**	,417**	,415**	,418**	,407**	,441**	,486**	,520**	,524**	,594**	,660**	,726**	1	

** $p < ,01$; two-tailed test. $N = 730$

Table 3. Model Fit Measures and Comparison

Model	R	R^2	Adj. R^2	ΔR^2	ΔF	df1	df2	P
1	0,153	0,023	0,019	0,023	5,821	3	726	< .001
2	0,760	0,577	0,575	0,554	949,225	1	725	< .001
3	0,806	0,650	0,648	0,073	151,543	1	724	< .001

Table 4. Model Coefficients: Social Sustainability

Model	Predictor	Unstandardised Coefficients B	Std. Error	Standardised Coefficients Beta	t	p
1	Intercept	3,677	0,052		71,038	< .001
	Gender	0,181	0,049	0,139	3,713	< .001
	Tenure	0,056	0,048	0,043	1,169	0,243
	Department	0,094	0,048	0,073	1,955	0,051
2	Intercept	1,671	0,073		22,744	< .001
	Gender	0,042	0,032	0,033	1,303	0,193
	Tenure	0,033	0,032	0,025	1,036	0,301
	Department	0,036	0,032	0,028	1,144	0,253
	Organisational Trust	0,559	0,018	0,752	30,810	< .001
3	Intercept	0,801	0,097		8,225	< .001
	Gender	0,057	0,029	0,044	1,923	0,055
	Tenure	0,029	0,029	0,022	1,019	0,308
	Department	0,004	0,029	0,003	0,131	0,895
	Organisational Trust	0,432	0,019	0,582	22,206	< .001
	Servant Leadership	0,325	0,026	0,321	12,310	< .001

5. Conclusion

Especially since the 2000s, unethical practises and scandals that have emerged in multinational enterprises have reduced the trust of society and employees to organisations and leaders/managers and revealed the necessity of switching to a virtuous leadership model that gives importance to human and ethical values instead of the economic rational model. During the transition to this human model, the issue of which leadership styles can be more effective in the sustainability of organisations has been brought to the agenda and discussed in the literature. In this context, the need for ethical values, trust, and creating value for the community has brought the concept of servant leadership to the fore. Servant leadership, which primarily focuses on serving people, its followers, and society, has started to take its place in the literature as a leadership approach that gives importance to ethical and moral values.

Studies have been conducted on the relationship between servant leadership and many different concepts such as organizational trust, organizational citizenship behavior, individual differences, workplace spirituality, organizational justice, optimism, commitment to change, employee empowerment, leader-member interaction, collaborative attitude, organizational commitment, employee satisfaction, employee performance, creativity, and many others. It is observed that these studies started in the early 2000s and have increased by accelerating since 2010. In the literature review, approximately one-fourth of the studies covered the United States of America, and it was determined that these studies set an example in countries and geographies of different cultures such as Indonesia, China, India, Pakistan, Iran, Turkey, South Korea, Germany, Spain, and Australia. In addition, it is understood that studies were carried out in a wide range from education to tourism, hotel management, communication, banking, food industry, textile, retail, automobile, electric power, petrochemistry, military, cosmetics, and health care sectors. Although it has been determined that servant leadership has relationships with many variables at the employee, team, and organizational level, how it will relate to more current phenomena remains a mystery.

While the concept of sustainability primarily started with the discourse that a balance should be established between the environmental, economic, and social aspects of sustainability, the level of social sustainability has been relatively neglected and developed much less than the discourses surrounding its economic and environmental dimensions because the meaning and purposes of the social basis remain unclear. In fact, the studies that conceptualise the phenomenon theoretically are very recent (Atanda, 2019; Hutchins vd., 2019; Kumar ve Anbanandam, 2020; Montalbán-Domingo vd., 2018; Popovic vd., 2018).

Social sustainability is concerned with the human aspect of sustainability. Social sustainability includes concepts such as equality, empowerment, accessibility, participation, sharing, cultural identity, and institutional stability. Hicks and colleagues (2016) stated that there are four basic indicators for measuring social sustainability: welfare, values, institutions, and social inequality. Although social sustainability does not affect the financial performance of the organization in the short term, a sustainability and leadership strategy that is presented systematically in the long term forms the basis for improving social security and business life along with the competence of social sustainability. Empirical studies on the relationship between social sustainability and organizational performance show positive associations (Goel vd., 2020; Hale vd., 2019; Lee vd., 2021; Mani vd., 2020; Rotondo vd., 2019; Schönborn vd., 2019). On the other hand, if social sustainability is considered beneficial, information on its antecedents is very limited. In this study, a question was asked to fill this gap.

The main result of this research is that there is a statistically significant relationship between servant leadership and social sustainability in organisations. Thus, it is likely that it would be beneficial for organisations that want to strengthen their social sustainability practises to highlight the servant leadership approach as a leadership style. In other words, social sustainability policies can be implemented more effectively in organisations with managers who have servant leadership qualities. Therefore, hiring candidates who demonstrate servant leadership qualities in businesses will facilitate the implementation and development of social sustainability. In addition, it has been revealed in this research that managers should give importance to organizational trust as much as the importance given to servant leadership while implementing social sustainability practises within the enterprise.

In ensuring and maintaining social sustainability, human resources practises that are created and placed by servant leaders in the organization, which care about and take the participation and collaboration of employees into consideration, the development of employees, occupational health and safety of employees, and equal opportunity, have a rather important place. Because the research was conducted in only one organization, it is not possible to generalize the results to all organisations and businesses.

Ethics Committee Approval: This study was approved by the ethics committee of the Rectorate of Bezmialem Foundation University so that questionnaires could be distributed to academic and administrative staff (Permission document no: 54022451-044-5047/ 05 July 2019).
Peer Review: Externally peer-reviewed.
Informed Consent: Was obtained from all participants, and all methods were performed in accordance with relevant guidelines and regulations.
Conflict of Interest: The author has no conflicts of interest to declare that are relevant to the content of this article.
Financial Disclosure: Author declared no financial support.

ORCID:

Zeynep Görmezoğlu 0000-0002-0197-0653

REFERENCES

Afshari, H., Agnihotri, S., Searcy, C., & Jaber, M.Y. (2022). Social Sustainability indicators: A comprehensive review with application in the energy sector. *Sustainable Production and Consumption*, 31, 263-286. https://doi.org/10.1016/j.spc.2022.02.018.

Alafeshat, R., & Tanova, C. (2019). Servant Leadership Style and High-Performance Work System Practices: Pathway to a Sustainable Jordanian Airline Industry. *Sustainability*, 11, 6191. DOI:10.3390/su11226191.

Atanda, J. O. Developing A Social Sustainability Assessment Framework. *Sustainable Cities and Society*, 2019, 44, 237-252.

Balser, D. B., & Winkler, A.E. (2012). Worker Behavior on The Job:A Multi-methods Study of Labor Cooperation with Management. *Journal of Labor Research*, 33(3), 388-413.DOI 10.1007/s12122-012-9133-1.

Bambale, A.J., Shamsudin, F.M., & Subramaniam, C.A.L. (2012). Servant Leadership as Employee-Organization Approach for Performance of Employee Citizenship Behaviors in the Nigeria's Electric Power Sector. Journal of Marketing and Management, 3(1), 1-21.

Basiago, A. D. (1999). Economic, social, and environmental sustainability in development theory and urban planning practice. *Environmentalist*, 19(2), 145-161.

Batool, F., Mohammad, J., & Awag, S.R. (2022). The effect of servant leadership on organizational sustainability: the parallel mediation role of creativity and psychological resilience. *Leadership & Organization Development Journal*, 43(1), 71-95. DOI 10.1108/LODJ-06-2021-0264.

Bormane, S., Škiltere, D., & Batraga, A. (2017). Sustainability: economic, environmental and public issues. Marketing possibilities. *Regional Formation and Development Studies*, 3(23), 21-35. http://dx.doi.org/10.15181/rfds.v23i3.1582.

Broch., F.F.M., Escrig, E.D., Gomez, R.C., & Alcami, R.L. (2020). Promoting firm innovativeness through servant leadership and corporate social responsibility to employees. *Leadership & Organization Development Journal*, 41(4), 615-633. https://doi.org/10.1108/LODJ-03-2019-0127.

Buchen, Irving H. (1998). Servant Leadership: A Model for Future Faculty and Future Institutions. *The Journal of Leadership Studies*, 5(1), 125-134.

Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, 34(4), 39-48.

Cavicchi, C., & Vagnoni, E. (2017). Does Intellectual Capital Promote The Shift of Healthcare Organizations Towards Sustainable Development? Evidence from Italy. *Journal of Cleaner Production*, 153, 275-286. http://dx.doi.org/10.1016/j.jclepro.2017.03.175.

Cella-de-Oliveira, F.A. (2013). Indicators of Organizational Sustainability: A Proposition from Organizational Competences. *International Review of Management and Business Research*, 2(4), 962-979.

Choi, S., & Ng, A. (2011). Environmental and Economic Dimensions of Sustainability and Price Effects on Consumer Responses. *Journal of Business Ethics*, 104(2), 269-282. DOI 10.1007/s10551-011-0908-8.

Coetzer, M. F., Bussin, M. & Geldenhuys, M. (2017). The Functions of a Servant Leader. *Administrative Sciences*, 7 (5), 1-32. https://doi.org/0.3390/admsci7010005.

Dempsey, N., Bramley, G., Power, S., & Brown, C. (2011). The Social Dimension of Sustainable Development: Defining Urban Social Sustainability. *Sustainable Development*, 19(5), 289-300. DOI: 10.1002/sd.417.

Donia, M.B.L., Raja, U., Panaccio, A., & Wang, Z. (2016). Servant leadership and employee outcomes: the moderating role of subordinates' motives. *European Journal of Work and Organizational Psychology*, 25(5), 722-734.

Farling, Myra, L., Stone, A. Gregory, & Winston, Bruce E. (1999). Servant Leadership: Setting The Stage for Empirical Research. *The Journal of Leadership Studies*, 6, (1/2), 49-72.

Fornell, C., & Larcker, D. F. (1981). Evaluating Structural Equation Models With Unobservable Variables And Measurement Error. *Journal Of Marketing Research*, 18(1), 39-50.

Geissdoerfer, M., Vladimirova, D. & Evans, S. (2018). Sustainable business model innovation: A review, Journal of Cleaner Production, 198, 401-416. https://doi.org/10.1016/j.jclepro.2018.06.240.

George, D., & Mallery, M. (2010). *SPSS for Windows Step by Step: A Simple Guide and Reference*, 17.0 update (10a ed.) Boston: Pearson.

Gimenez, C., Sierra, V., & Rodon, J. (2012). Sustainable Operations: Their Impact on The Triple Bottom Line. *International Journal of Production Economics*, 140(1), 149-159. doi:10.1016/j.ijpe.2012.01.035.

Goel, A., Ganesh, L. S. ve Kaur, A. Social Sustainability Considerations in Construction Project Feasibility Study: A Stakeholder Salience Perspective. *Engineering, Construction and Architectural Management*. 2020.

Görmezoğlu Gökçen, Z. (2019). A Research on The Investigation of the Relationships between Servant Leadership, Social Sustainability, Organizational Trust, and Organizational Identification. İstanbul University, Unpublished Doctoral Dissertation.

Graham, J. W. (1991). Servant-Leadership in Organizations: Inspirational and Moral. *The Leadership Quarterly*, 2(2), 105-119. https://doi.org/10.1016/1048-9843(91)90025-W.

Greenleaf, R. K. (1970). *The Servant as Leader*. Indianapolis: The Robert K. Greenleaf Center.

Greenleaf, R. K. (1998). *The Power of Servant Leadership*.; L.C. Spears (Ed.), San Francisco: Berrett-Koehler Publishers.

Greenleaf, R.K. (2002). *Servant Leadership: A Journey into the Nature of Legitimate Power & Greatness.* "The Servant as Leader". L.C. Spears (Ed.), NJ: Paulist Press.

Hair, J. F., Anderson, R. E., Tatham, R. L., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis Seventh Edition*. In Pearson Prentice Hall.

Hale, J., Legun, K., Campbell, H., & Carolan, M. (2019). Social Sustainability Indicators as performance. *Geoforum*, 103, 47-55.

Harwiki, W. (2016). The Impact of Servant Leadership on Organizational Culture, Organizational Commitment, Organizational Citizenship Behavior (OCB) and Employee Performance in Women Cooperatives. *Procedia Social and Behavioral Sciences*, 219, 283-290.

Herman, R.L. (2010). The Promise of Servant Leadership for Workplace Spirituality. *International Journal of Business Research*, 10(6), 83-102.

Hicks, C.C., v.d. (2016). Engage Key Social Concepts for Sustainability, *Science*, 2016, Volume 352, No.6281.

Hopkins M. (2003). The Planetary Bargain: Corporate Social Responsibility Matters. 1st Edition. Routledge: London.

Hoveida, R., Salari, S., & Asemi, A. (2011). A Study on the Relationship among Servant Leadership and the Organizational Commitment: A Case Study. *Interdiciplinary Journal of Contemporary Research in Business*, 3(3), 499-509.

Hussain, M., Ajmal, M. M., Gunasekaran, A., & Khan, M. (2018). Exploration of Social Sustainability in Healthcare Supply Chain." *Journal of Cleaner Production*, 203, 977-989.

Hutchins, M. J., Richter, J. S., Henry, M. L., ve Sutherland, J. W. Development of Indicators for The Social Dimension of Sustainability in a US Business Context. *Journal of Cleaner Production*, 2019, 212, 687-697.

Jonsen, K., Tatli, A., Özbilgin, M. F., & Dietz, J. (2015). Equal Opportunity. *Wiley Encyclopedia of Management*, 1-4.

Kamali, F. P., Borges, J.A.R., Osseweijer, P., & Posada, J. A. (2018). Towards social sustainability: Screening potential social and governance issues for biojet fuel supply chains in Brazil. *Renewable and Sustainable Energy Reviews*, 92, 50-61. https://doi.org/10.1016/j.rser.2018.04.078.

Kincaid, M. (2012). Building Corporate Social Responsibility Thorough Servant-Leadership. *International Journal of Leadership Studies*, 7(2), 151-171.

King, S. (1994). What is the Latest on Leadership. *Management Development Review*, 7(6), 7-9, https://doi.org/10.1108/09622519410074163.

Khoury G, Rostami J, Turnbull JP. (1999). Corporate Social Responsibility: Turning Words into Action. Conference Board of Canada: Ottawa.

Kool, M., & Van Dierendonck, D. (2012). Servant Leadership and Commitment to Change, The Mediating Role of Justice and Optimism. *Journal of Organizational Change Management*, 25(3), pp.422-433. https://doi.org/10.1108/09534811211228139.

Kouzes, J.M. & Posner, B.Z. (1993). *Credibility: How Leaders Gain and Lose It, Why People Demand It, San Francisco*: Jossey-Bass. 185.

Kumar, A., ve Anbanandam, R. *Assessment of Environmental and Social Sustainability Performance of the Freight Transportation Industry: An Index-based Approach.* Transport Policy. 2020.

Lee, C.H., & Bruvold, N.T. (2003). Creating Value for Employees: Investment in Employee Development. *The International Journal of Human Resource Management*, 14(6), 981-1000. DOI: 10.1080/0958519032000106173.

Lee, C. M. J., Che-Ha, N. ve Alwi, S. F. S. Service Customer Orientation and Social Sustainability: The Case of Small Medium Enterprises. *Journal of Business Research*, 2021, 122, 751-760.

Liden, R. C., Wayne, S. J., Zhao, H., & Henderson, D. F. (2008). Servant Leadership: Development of a Multidimensional Measure and Multi-Level Assessment. *The Leadership Quarterly*, 19(2), 161-177. DOI:10.1016/j.leaqua.2008.01.006.

Liu, J.Y. (2018). An internal Control System that Includes Corporate Social Responsibility for Social Sustainability in the New Era. *Sustainability*, 10, 3382. DOI:10.3390/su10103382.

Longoni, A., & Cagliano, R. (2015). Environmental and Social Sustainability Priorities: Their Integration in Operations Strategies. *International Journal of Operations & Production Management*, 35(2), 218. DOI 10.1108/IJOPM-04-2013-0182.

Lopes, C. M., Scavarda, A. J., Hofmeister, L. F., Thomé, A. M. & Vaccaro, G. L. (2017). An Analysis of the Interplay Between Organizational Sustainability, Knowledge Management, and Open Innovation. *Journal of Cleaner Production*, 142, 476-488. http://dx.doi.org/10.1016/j.jclepro.2016.10.083.

Mani, V., Gunasekaran, A., & Delgado, C. (2018a). Enhancing supply chain performance through supplier social sustainability: An emerging economy perspective. International Journal of Production Economics, 195, 259-272. https://doi.org/10.1016/j.ijpe.2017.10.025.

Mani, V., Jabbour, C. J. C. ve Mani, K. T. Supply Chain Social Sustainability In Small And Medium Manufacturing Enterprises And Firms' Performance: Empirical Evidence From An Emerging Asian Economy. *International Journal of Production Economics*, 2020, 227, 107656.

Markham, J. W. (2015). *A Financial History of United States from Enron-Era Scandals to the Great Recession (2004-2009)*, NY: Routledge.

McWilliams A., & Siegel, D. (2001). Corporate social responsibility: A theory of the firm perspective. *The Academy of Management Review, 26*(1), 117–127.

Mehta, S., & Pillay, R. (2011). Revisiting Servant Leadership: An Empirical Study in Indian Context. *The Journal Contemporary Management Research*, 5(2), 24-41.

Mejia, C., Bak, M., Zientara, P., & Orlowski, M. (2022). Importance-performance analysis of socially sustainable practices in U.S. restaurants: A consumer perspective in the quasi-post-pandemic context. *International Journal of Hospitality Management*, 103, 103209, 1-10. https://doi.org/10.1016/j.ijhm.2022.103209.

Montalbán-Domingo, L., García-Segura, T., Sanz, M. A., & Pellicer, E. (2018). Social Sustainability Criteria in Public-work Procurement: An International Perspective. *Journal of Cleaner Production*, 198, 1355-1371.

Murphy, K. (2012). The social pillar of sustainable development: a literature review and framework for policy analysis. *Sustainability: Science, practice and policy*, 8(1), 15-29.

Nyhan, R. C. & Marlowe H. A. (1997). Development and Psychometric Properties of the Organizational Trust Inventory, *Evalnation Review*, 21(5), 614-635.

Omann, I., & Spangenberg, J. H. (2002). Assessing social sustainability the social dimension of sustainability in a socio-economic scenario. *Sustainable Europe Research Institute SERI*, Proceedings of the 7th Biennial Conference of the International Society for Ecological Economics, Sousse, 6-9 March, 1-20.

Page, D., & Wong, P.T.P. (2017). A Conceptual Framework for Measuring Servant Leadership, *The Human Factor In Shaping The Course Of History And Development.* Ed. S. Adjibolooso. American University. 2000. Press. Access from website address on July 7, 2017. http://www.drpaulwong.com/wp-content/uploads/2013/09/Conceptual-Framework.pdf.

Peachey, J.W., Burton, L., Wells, J. & Chung, M.R. (2018). Exploring Servant Leadership and Needs Satisfaction in the Sport for Development and Peace Context. *Journal of Sport Management*, 32, 96-108.

Pinney, C. (2001). How to manage corporate social responsibility and reputation in a global marketplace: the challenge for Canadian business. Toronto, ON: Canadian Centre for Philanthropy.

Popovic, T., Barbosa-Póvoa, A., Kraslawski, A., & Carvalho, A. (2018). Quantitative Indicators for Social Sustainability Assessment of Supply Chains. *Journal of Cleaner Production*, 180, 748-768. https://doi.org/10.1016/j.jclepro.2018.01.142.

Pouramiri, T., & Mehdinezhad, V. (2017). Servant Leadership as a Predictor of Hig School Principal's Organizational Trust. *The New Educational Review*, 116-121. DOI:10.5804/tner.2017.47.1.09.

Reinke, S. J. (2004). Service Before Self: Towards a Theory of Servant-Leadership. *Global Virtue Ethics Review*, 5(3-4), 30-57.

Rotondo, F., Corsi, K., & Giovanelli, L. (2019). The Social Side of Sustainable Business Models: An Explorative Analysis of The Low-cost Airline Industry. *Journal of Cleaner Production*, 225, 806-819.

Sakaoğlu, N. (2008). Bu Mülkün Kadın Sultanları: Valide Sultanlar, Hatunlar, Hasekiler, Kadınefendiler, Sultanefendiler, Oğlak Bilimsel Kitaplar, 4. Baskı, İstanbul, 387.

Schulte, P. A., Wagner, G. R., Ostry, A., Blanciforti, L. A., Cutlip, R. G., Krajnak, K. M., & Miller, D. B. (2007). Work, Obesity, and Occupational Safety and Health. *American Journal of Public Health*, 97(3), 428-436.

Schönborn, G., Berlin, C., Pinzone, M., Hanisch, C., Georgoulias, K., & Lanz, M. (2019). Why Social Sustainability Counts: The Impact of Corporate Social Sustainability Culture On Financial Success. *Sustainable Production and Consumption*, 17, 1-10.

Sendjaya, S. & Cooper, B. (2011). Servant Leadership Behaviour Scale: A Hierarchical Model and Test of Construct Validity. *European Journal of Work and Organizational Psychology*, 20(3), 416-436, https://doi.org/10.1080/13594321003590549.

Sendjaya, S., & Sarros, J. C. (2002). Servant Leadership: Its Origin, Development, and Application in Organizations. Journal of Leadership & Organizational Studies, 9(2), 57-64, https://doi.org/10.1177/107179190200900205.

Sharma A. (2016). Managing Diversity and Equality in The Workplace. *Cogent Business & Management*, 3(1), 1212682, DOI: 10.1080/23311975.2016.1212682.

Sher, S., & Nawaz, S. (2021). Impact of Green Servant Leadership on Organizational Sustainability: The mediating Role of Green Human Resource Management Practices. *İRASD Journal of Management*, 3(3), 448-457. https://doi.org/10.52131/jom.2021.0303.0057.

Song, C., Park, K.R., & Kang, S-W. (2015). Servant Leadership and Team Performance: The Mediating Role of Knowledge-Sharing Climate. *Social Behavior and Personality*, 43(10), 1749-1760.

Spears, L. (1995). *Servant-Leadership and The Greenleaf Legacy. In L.C. Spears (Ed.), Reflections on Leadership: How Robert K. Greenleaf's Theory of Servant Leadership Influenced Today's Top Management Thinkers*, John Wiley & Sons, Inc.

Spears, L.C. (2004). Practicing Servant-Leadership. *Leader to Leader*, (34), 7–11. https://doi.org/10.1002/ltl.94 .

Staniškienė, E., & Stankevičiūtė, Ž. (2018). Social Sustainability Measurement Framework: The Case of Employee Perspective in a CSR-Committed Organisation. *Journal of Cleaner Production*, 188, 708-719. https://doi.org/10.1016/j.jclepro.2018.03.269.

Sudusinghe, J.I., & Seuring, S. (2020). Social Sustainability Empowering the Economic Sustainability in the Global Apparel Supply Chain. *Sustainability*, 12, 2595, 1-18. https://doi.org/10.3390/su12072595.

Terzi, A. (2018). Bezmialem Valide Sultan, Timaş Yayınları, İstanbul, p.240.

Toker, K. (2023). Non-Profit Organizations: A Path for Social Economy. (in). Pekdemir M. I. (ed.) Making the Planet More Habitable: Business Perspectives for Social Economy. İstanbul - Türkiye: IU Press, Chapter 2, 17-53.

Toussaint, M., Cabanelas, P., & Blonco-Gonzalez, A. (2021). Social Sustainability in the food value chain: An integrative approach beyond corporate social responsibility. *Corporate Social Responsibility and Environmental Management*. 28, 103-115. DOI:10.1002/csr.2035.

Trompenaars, F., & Voerman, E. (2009). Servant Leadership Across Cultures: Harnessing the Strength of the World's Most Powerful Leadership Philosophy. *Oxford: Infinite Ideas Ltd.*

Uttam, N., Dutta, P., & Singh, A. (2022). Micro, small, medium suppliers' perspectives on supply chain social sustainability: New evidence from India. *Journal of Cleaner Production*, 379, 134473, 1-19. https://doi.org/10.1016/j.jclepro.2022.134473.

Van Dierendonck, D. (2011). Servant Leadership: A Review and Synthesis. *Journal of Management*, 37(4), 1228-1261,

https://doi.org/10.1177/0149206310380462.

Vivoda, V., & Kemp, D. (2019). How Do National Mining Industry Associations Compare on Sustainable Development? *The Extractive Industries and Society*, 6(1), 22-28. https://doi.org/10.1016/j.exis.2018.06.002.

Williams Jr. W.A., Brandon, R-S., Hayek, M., Haden, S.P., & Atinc, G. (2017). Servant leadership and followership creativity: The influence of workplace spirituality and political skill. *Leadership & Organization Development Journal*, Vol.38, No.2, 178-193.

Wong, P.T.P., & Page, D. (2003). Servant Leadership: An Opponent-Process Model and the Revised Servant Leadership Profile. *Servant Leadership Roundtable*, October, 1-13.

Wohlgemuth, V., Wenzel, M., Berger, E.S.C., & Eisend, M. (2019). Dynamic Capabilities and Employee Participation: The Role of Trust and Informal Control. *European Management Journal*, 37, 760-771. https://doi.org/10.1016/j.emj.2019.02.005.

Yıldırım, N. (2013). From The Charity Hospital to The Bezmialem Vakif University, *İstanbul: Bezmiâlem Vakif University Publications*.

How to cite this article

Görmezoğlu, Z. (2024). The relationship between servant leadership and social sustainability: a case of a health-dedicated university. *Istanbul Management Journal*, 96, 74-87. http://doi.org/10.26650/imj.2024.96.1441303

AIMS AND SCOPE

Istanbul Management Journal (IMJ) is an open access, peer-reviewed, scholarly and international journal of Istanbul University Graduate School of Business (İşletme İktisadı Enstitüsü). It is published biannually in June and December.

Between the years 1975-2016, the journal was a print publication publishing accepted studies in Turkish and English. In 2018, in line with internationalization vision, the title of İstanbul Üniversitesi İşletme Fakültesi İşletme İktisadı Enstitüsü- YÖNETİM dergisi was changed into Istanbul Management Journal and the print version was stopped. The journal has been an online only publication since then. As of 2023 issues, the publication language of the journal has become only English.

IMJ is published biannually in June and December. The journal is covered in DOAJ, Tubitak Ulakbim TR Index, Proquest, EBSCO, RePEc IDEAS, RePEc EconPapers.

The aim of the journal is to provide a platform for exploring issues in business management and publish high-quality research articles from both international and national communities. In line with the aim, the journal focuses on publications that bring together the theoretical background that contributes to the literature for professionals, researchers and other interested parties and practical information for practitioners. The audiences of the journal are academics, researchers, business-life professionals, university students, related trade associations, academic bodies, and institutions. The journal is open to interdisciplinary studies related to the field.

The following fields are in the scope of IMJ:

- Management and Organization
- Strategic Management
- Human Resources Management
- Organizational Behavior
- Organization Theory
- Organization History
- Business History
- Management History

EDITORIAL POLICIES AND PEER REVIEW PROCESS

Publication Policy

The journal is committed to upholding the highest standards of publication ethics and pays regard to Principles of Transparency and Best Practice in Scholarly Publishing published by the Committee on Publication Ethics (COPE), the Directory of Open Access Journals (DOAJ), the Open Access Scholarly Publishers Association (OASPA), and the World Association of Medical Editors (WAME) on https://publicationethics.org/resources/guidelines-new/principles-transparency-and-best-practice-scholarly-publishing

The subjects covered in the manuscripts submitted to the journal for publication must be in accordance with the aim and scope of the journal. Only those manuscripts approved by every individual author and that were not published before or sent to another journal, are accepted for evaluation.

Changing the name of an author (omission, addition or order) in papers submitted to the Journal requires written permission from all the declared authors.

Plagiarism, duplication, fraudulent authorship/denied authorship, research/data fabrication, salami slicing/salami publication, breaching copyrights, and prevailing conflicts of interest are unethical behaviors. All manuscripts that are not in accordance with accepted ethical standards will be removed from publication. This also includes any possible malpractice discovered after publication.

Plagiarism:

Submitted manuscripts that pass the preliminary control are scanned for plagiarism using iThenticate software. If plagiarism/self-plagiarism is found, the authors will be informed of it. Editors may resubmit the manuscript for a

similarity check at any peer-review or production stage if required. High similarity scores may lead to rejection of the manuscript before and even after acceptance. Depending on the type of article and the percentage of the similarity score taken from each article, the overall similarity score is generally expected to be less than 15 or 20%.

Double Blind Peer-Review:

After the plagiarism check, the eligible ones are evaluated by the editors-in-chief for their originality, methodology, importance of the subject covered and compliance with the journal scope. The editor provides a fair double-blind peer review of the submitted articles and hands over the papers matching the formal rules to at least two national/international external referees for evaluation and gives green light for publication upon modification by the authors in accordance with the referees' claims.

General Principles:

Only those manuscripts approved by its every individual author and that were not published before in or sent to another journal, are accepted for evaluation. Submitted manuscripts that pass preliminary control are scanned for plagiarism using iThenticate software. After plagiarism check, the eligible ones are evaluated by editor-in-chief for their originality, methodology, the importance of the subject covered and compliance with the journal scope. Short presentations that took place in scientific meetings can be referred if indicated in the article. The editor hands over the papers matching the formal rules to at least two national/ international referees for evaluation and gives green light for publication upon modification by the authors in accordance with the referees' claims. Changing the name of an author (omission, addition or order) in papers submitted to the Journal requires written permission of all declared authors. Refused manuscripts and graphics are not returned to the author.

Copyright Notice

Authors publishing with the journal retain the copyright to their work licensed under the Creative Commons Attribution-NonCommercial 4.0 International license (CC BY-NC 4.0) (https://creativecommons.org/licenses/by-nc/4.0/) and grant the Publisher non-exclusive commercial right to publish the work. CC BY-NC 4.0 license permits unrestricted, non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Open Access Statement

The journal is open access and all content is freely available without charge to the user or his/her institution. Except for commercial purposes, users are allowed to read, download, copy, print, search, or link to the full text of the articles in this journal without asking prior permission from the publisher or author. This is in accordance with the BOAI definition of open access.

The open access articles in the journal are licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) license.

Article Processing Charge

All expenses of the journal are covered by İstanbul University. The processing and publication are free of charge. There are no article processing charges or submission fees for any submitted or accepted articles.

Correction, Retraction, Expression of Concern

The editor should consider publishing corrections if minor errors that do not affect the results, interpretations and conclusions of the published paper are detected. The editor should consider retraction if major errors and/or misconduction invalidate results and conclusions are detected.

The editors should consider issuing an expression of concern if there is evidence of research or publication misconduct by the authors; there is evidence that the findings are not reliable and institutions of the authors do not investigate the case or the possible investigation seems to be unfair or nonconclusive.

The COPE and ICJME guidelines are considered for correction, retractions or expression of concern.

Archiving Policy

To guarantee that all papers published in the journal are maintained and permanently accessible, articles are stored in Dergipark, which serves as a national archival website and simultaneously permits LOCKSS to collect, preserve, and serve content.

Additionally, the authors are encouraged to self-archive the final PDF version of their articles in open electronic archives, which conform to the standards of the Open Archives Initiative (https://www.openarchives.org/). Authors should provide a link from the deposited version to the URL of IUPress journal website.

PEER REVIEW

Peer Review Policies

Only those manuscripts approved by every individual author and that were not published before or submitted to another journal, are accepted for evaluation.

Submitted manuscripts that pass the preliminary control are scanned for plagiarism using iThenticate software. After the plagiarism check, the eligible ones are evaluated by the editor-in-chief for their originality, methodology, importance of the subject covered, and compliance with the journal scope.

The editor hands over the papers matching the formal rules to at least two national/international referees for double-blind peer review evaluation and gives green light for publication upon modification by the authors in accordance with the referees' claims.

Responsibility for the Editor and Reviewers

The editor-in-chief evaluates manuscripts for their scientific content without regard to ethnic origin, gender, sexual orientation, citizenship, religious beliefs or the authors'political philosophy. He/She provides a fair double-blind peer review of the submitted articles for publication and ensures that all the information related to submitted manuscripts is kept as confidential before publishing.

The editor-in-chief is responsible for the content and overall quality of publications. He/She must publish errata pages or make corrections when needed. The editor-in-chief does not allow any conflicts of interest between the authors, editors and reviewers. Only he has the full authority to assign a reviewer and is responsible for the final decision to publish the manuscripts in the journal.

The reviewers must have no conflict of interest with respect to the research, authors and/or research funders. Their judgment must be objective.

Reviewers must ensure that all information related to submitted manuscripts is kept confidential and must report to the editor if they are aware of copyright infringement and plagiarism on the author's side.

A reviewer who feels unqualified to review the topic of a manuscript or knows that its prompt review will be impossible should notify the editor and excuse him/herself from the review process.

The editor informs the reviewers that the manuscripts are confidential information and that this is a privileged interaction. The reviewers and editorial board cannot discuss the manuscripts with other people. The anonymity of referees must be ensured. In particular situations, the editor may share a review by one reviewer with other reviewers to clarify a particular point.

Peer Review Process

Only those manuscripts approved by every individual author and that were not published before or submitted to another journal, are accepted for evaluation.

Submitted manuscripts that pass the preliminary control are scanned for plagiarism using iThenticate software. After the plagiarism check, the eligible ones are evaluated by the editor-in-chief for their originality, methodology, importance of the subject covered and compliance with the journal scope. Editor-in-chief evaluates anuscripts for their scientific content without regard to ethnic origin, gender, sexual orientation, citizenship, religious belief or political philosophy of the authors and ensures a fair double-blind peer review of the selected manuscripts.

The selected manuscripts are sent to at least two national/international external referees for evaluation, and publication decision is made by the editor-in-chief upon modification by the authors in accordance with the referees' claims.

Editor-in-chief does not allow any conflicts of interest between the authors, editors, and reviewers and is responsible for the final decision for publication of the manuscript in the journal.

The reviewers' judgments must be objective. Reviewers' comments on the following aspects are expected during the review.

- Does the manuscript contain new and significant information?
- Does the abstract clearly and accurately describe the content of the manuscript?
- Is this problem significant and concisely stated?
- Are the methods comprehensively described?
- Are the interpretations and conclusions justified by the results?
- Is adequate reference made to other works in the field?
- Is the language acceptable?

Reviewers must ensure that all information related to submitted manuscripts is kept confidential and must report to the editor if they are aware of copyright infringement and plagiarism on the author's side.

A reviewer who feels unqualified to review the topic of a manuscript or knows that its prompt review will be impossible should notify the editor and excuse him/herself from the review process.

The editor informs the reviewers that the manuscripts are confidential information, and that this is a privileged interaction. The reviewers and editorial board cannot discuss the manuscripts with other people. The anonymity of the referees is important.

ETHICS

PUBLICATION ETHICS AND PUBLICATION MALPRACTICE STATEMENT

Istanbul Management Journal is committed to upholding the highest standards of publication ethics and pays regard to Principles of Transparency and Best Practice in Scholarly Publishing published by the Committee on Publication Ethics (COPE), the Directory of Open Access Journals (DOAJ), the Open Access Scholarly Publishers Association (OASPA), and the World Association of Medical Editors (WAME) on https://publicationethics.org/resources/guidelines-new/principles-transparency-and-best-practice-scholarly-publishing

All submissions must be original, unpublished (including full text in conference proceedings), and not under the review of any other publication. The authors must ensure that the submitted work is original in nature. They must certify that the manuscript has not already been published or submitted elsewhere, in any language. Applicable copyright laws and conventions must be followed. Copyright materials (e.g., tables, figures or extensive quotations) must be reproduced only with appropriate permission and acknowledgement. Any work or words by other authors, contributors, or sources must be appropriately credited and referenced.

Each manuscript is reviewed by at least two referees using a double-blind peer review process. Plagiarism, duplication, fraudulant authorship/ denied authorship, research/data fabrication, salami slicing/salami publication, breaching of copyrights, and prevailing conflicts of interest are unethical behaviors. All manuscripts that are not in accordance with accepted ethical standards will be removed from publication. This also includes any possible malpractice discovered after publication.

Research Ethics

Istanbul Management Journal adheres to the highest standards in research ethics and follows the principles of international research ethics as defined below. The authors are responsible for the compliance of the manuscripts with ethical rules.

- Principles of integrity, quality and transparency should be sustained in designing the research, reviewing the design and conducting the research.
- The research team and participants should be fully informed about the aims, methods, possible uses, requirements of the research, and risks of participation in research.
- The confidentiality of the information provided by the research participants and the confidentility of the respondents should be ensured. The research should be designed to protect the autonomy and dignity of the participants.
- Research participants should voluntarily participate in the research, not under any coercion.
- Any possible harm to the participants must be avoided. Research should be planned in such a way that the participants are not at risk.
- The independence of research must be clear, and any conflicts of interest must be disclosed.
- In experimental studies with human subjects, written informed consent from the participants who decided to participate in the research must be obtained. In the case of children and those under wardship or with confirmed insanity, legal custodian assent must be obtained.
- If the study is to be carried out in any institution or organization, approval must be obtained from that institution or organization.
- In studies with human subjects, it must be noted in the method section of the manuscript that the informed consent of the participants and ethics committee approval from the institution where the study was conducted have been obtained.

Author's Responsibilities

The authors are responsible for ensuring that the article is in accordance with scientific and ethical standards and rules. The authors must ensure that the submitted work is original in nature. They must certify that the manuscript has not already been published or submitted elsewhere, in any language. Applicable copyright laws and conventions must be followed. Copyright materials (e.g., tables, figures or extensive quotations) must be reproduced only with appropriate permission and acknowledgement. Any work or words by other authors, contributors, or sources must be appropriately credited and referenced.

All the authors of the submitted manuscript must have direct scientific and academic contributions to the manuscript. The author(s) of the original research articles is defined as a person who is significantly involved in "conceptualization and design of the study", "collecting the data", "analyzing the data", "writing the manuscript", "reviewing the manuscript with a critical perspective" and "planning/conducting the study of the manuscript and/or revising it". Fund raising, data collection and supervision of the research group are not sufficient roles to be accepted as authors. The author(s) must meet all these criteria described above. The order of names in the author list of an article must be a co-decision and must be indicated in the Copyright Agreement Form.

Individuals who do not meet the authorship criteria but have contributed to the study must take place in the acknowledgement section. Individuals providing technical support, general support, material, financial support and assisting in writing are examples to be indicated in the acknowledgement section.

All authors must disclose any issues concerning financial relationships, conflicts of interest, and competing interests that may potentially influence the results of the research or scientific judgment. When an author discovers a significant error or inaccuracy in his/her own published paper, it is the author's obligation to promptly cooperate with the editor-in-chief to provide retractions or corrections of mistakes.

Responsibility for the Editor and Reviewers

The editor-in-chief evaluates manuscripts for their scientific content without regard to ethnic origin, gender, sexual orientation, citizenship, religious beliefs or the authors'political philosophy. He/She provides a fair double-blind peer review of the submitted articles for publication and ensures that all the information related to submitted manuscripts is kept as confidential before publishing.

The editor-in-chief is responsible for the content and overall quality of publications. He/She must publish errata pages or make corrections when needed.

The editor-in-chief does not allow any conflicts of interest between the authors, editors and reviewers. Only he has the full authority to assign a reviewer and is responsible for the final decision to publish the manuscripts in the journal.

The reviewers must have no conflict of interest with respect to the research, authors and/or research funders. Their judgment must be objective.

Reviewers must ensure that all information related to submitted manuscripts is kept confidential and must report to the editor if they are aware of copyright infringement and plagiarism on the author's side.

A reviewer who feels unqualified to review the topic of a manuscript or knows that its prompt review will be impossible should notify the editor and excuse him/herself from the review process.

The editor informs the reviewers that the manuscripts are confidential information and that this is a privileged interaction. The reviewers and editorial board cannot discuss the manuscripts with other people. The anonymity of referees must be ensured. In particular situations,the editor may share a review by one reviewer with other reviewers to clarify a particular point.

AUTHOR GUIDELINES

Manuscript Organization and Format

All correspondence will be sent to the first-named author unless otherwise specified. Manuscpript is to be submitted online via http://imj.istanbul.edu.tr/en/_ and it must be accompanied by a cover letter indicating that the manuscript is intended for publication, specifying the article category (i.e. research article, review etc.) and including information about the manuscript (see the Submission Checklist). Manuscripts should be prepared in Microsoft Word 2003 and upper versions. In addition, Copyright Agreement Form that has to be signed by all authors must be submitted.

1. The manuscripts should be in A4 paper standards: having 2.5 cm margins from right, left, bottom and top, Times New Roman font style in 12 font size, line spacing of 1.5 and "justify align" format. For indented paragraph, tab key should be used. One line spacing should be used for the tables and figures, which are included in the text.
2. The title of the text should be centered on the page, in lower-case letter, bold, Times New Roman font and 14 font size.
3. Information about the author is to be written on the left part of the page skipping one line space after the title, and it should be in Times New Roman font, 10 font size, with one line spacing. After indicating the name of the author in lower-case letter and surname in capital letter, the title, affiliation, and e-mail address should be included.
4. Before the introduction part, there should be an abstract of 150-200 words both in the language of the article and in English. An extended abstract in English between 600-800 words. Underneath the abstracts, 5-8 keywords that inform the reader about the content of the study should be specified.
5. The manuscripts should contain mainly these components: title, abstract and keywords. Sections, footnotes and references.
6. Tables, graphs and figures can be given with a number and a defining title if and only if it is necessary to follow the idea of the article. Otherwise features like demographic characteristics can be given within the text.
7. A title page including author information must be submitted together with the manuscript. The title page is to include fully descriptive title of the manuscript and, affiliation, title, e-mail address, ORCID, postal address, phone and fax number of the author(s) (see The Submission Checklist).
8. Authors are responsible for all statements made in their work submitted to the Journal for publication.
9. The author(s) can be asked to make some changes in their articles due to peer reviews.
10. The studies that were sent to the journal will not be returned whether they are published or not.

REFERENCES

Although references to review articles can be an efficient way to guide readers to a body of literature, review articles do not always reflect original work accurately. Readers should therefore be provided with direct references to original research sources whenever possible. On the other hand, extensive lists of references to original work on a topic can use excessive space on the printed page. Small numbers of references to key original papers often serve as well as more exhaustive lists, particularly since references can now be added to the electronic version of published papers, and since electronic literature searching allows readers to retrieve published literature efficiently. Papers accepted but not yet included in the issue are published online in the Early View section and they should be cited as "advance online publication". Citing a "personal communication" should be avoided unless it provides essential information not available from a public source, in which case the name of the person and date of communication should be cited in parentheses in the text. For scientific articles, written permission and confirmation of accuracy from the source of a personal communication must be obtained.

Reference Style and Format

Istanbul Management Journal complies with APA (American Psychological Association) style 6th Edition for referencing and quoting. For more information:
- American Psychological Association. (2010). Publication manual of the American Psychological Association (6th ed.). Washington, DC: APA.
- http://www.apastyle.org

Citations in the Text

Citations must be indicated with the author surname and publication year within the parenthesis. If more than one citation is made within the same paranthesis, separate them with (;).

Samples:

More than one citation;
(Esin, et al., 2002; Karasar, 1995)

Citation with one author;
(Akyolcu, 2007)

Citation with two authors;
(Sayıner & Demirci, 2007)

Citation with three, four, five authors;
First citation in the text: (Ailen, Ciambrune, & Welch, 2000) Subsequent citations in the text: (Ailen, et al., 2000)

Citations with more than six authors;
(Çavdar, et al., 2003)

Citations in the Reference

All the citations done in the text should be listed in the References section in alphabetical order of author surname without numbering. Below given examples should be considered in citing the references.

Basic Reference Types

Book

a) Turkish Book
Karasar, N. (1995). *Araştırmalarda rapor hazırlama* (8th ed.) [Preparing research reports]. Ankara, Turkey: 3A Eğitim Danışmanlık Ltd.

b) Book Translated into Turkish
Mucchielli, A. (1991). *Zihniyetler* [Mindsets] (A. Kotil, Trans.). İstanbul, Turkey: İletişim Yayınları.

c) Edited Book
Ören, T., Üney, T., & Çölkesen, R. (Eds.). (2006). *Türkiye bilişim ansiklopedisi* [Turkish Encyclopedia of Informatics]. İstanbul, Turkey: Papatya Yayıncılık.

d) Turkish Book with Multiple Authors
Tonta, Y., Bitirim, Y., & Sever, H. (2002). *Türkçe arama motorlarında performans değerlendirme* [Performance

evaluation in Turkish search engines]. Ankara, Turkey: Total Bilişim.

e) Book in English

Kamien R., & Kamien A. (2014). *Music: An appreciation.* New York, NY: McGraw-Hill Education.

f) Chapter in an Edited Book

Bassett, C. (2006). Cultural studies and new media. In G. Hall & C. Birchall (Eds.), *New cultural studies: Adventures in theory* (pp. 220–237). Edinburgh, UK: Edinburgh University Press.

g) Chapter in an Edited Book in Turkish

Erkmen, T. (2012). Örgüt kültürü: Fonksiyonları, öğeleri, işletme yönetimi ve liderlikteki önemi [Organization culture: Its functions, elements and importance in leadership and business management]. In M. Zencirkıran (Ed.), *Örgüt sosyolojisi* [Organization sociology] (pp. 233– 263). Bursa, Turkey: Dora Basım Yayın.

h) Book with the same organization as author and publisher

American Psychological Association. (2009). Publication manual of the American psychological association (6th ed.). Washington, DC: Author.

Article

a) Turkish Article

Mutlu, B., & Savaşer, S. (2007). Çocuğu ameliyat sonrası yoğun bakımda olan ebeveynlerde stres nedenleri ve azaltma girişimleri [Source and intervention reduction of stress for parents whose children are in intensive care unit after surgery]. *Istanbul University Florence Nightingale Journal of Nursing, 15*(60), 179–182.

b) English Article

de Cillia, R., Reisigl, M., & Wodak, R. (1999). The discursive construction of national identity. *Discourse and Society, 10*(2), 149–173. http://dx.doi.org/10.1177/0957926599010002002

c) Journal Article with DOI and More Than Seven Authors

Lal, H., Cunningham, A. L., Godeaux, O., Chlibek, R., Diez-Domingo, J., Hwang, S.-J. ... Heineman, T. C. (2015). Efficacy of an adjuvanted herpes zoster subunit vaccine in older adults. *New England Journal of Medicine, 372*, 2087–2096. http://dx.doi.org/10.1056/NEJMoa1501184

d) Journal Article from Web, without DOI

Sidani, S. (2003). Enhancing the evaluation of nursing care effectiveness. *Canadian Journal of Nursing Research, 35*(3), 26–38. Retrieved from http://cjnr.mcgill.ca

e) Journal Article wih DOI

Turner, S. J. (2010). Website statistics 2.0: Using Google Analytics to measure library website effectiveness. *Technical Services Quarterly, 27*, 261–278. http://dx.doi.org/10.1080/0731713 1003765910

f) Advance Online Publication

Smith, J. A. (2010). Citing advance online publication: A review. *Journal of Psychology*. Advance online publication. http://dx.doi.org/10.1037/a45d7867

g) Article in a Magazine

Henry, W. A., III. (1990, April 9). Making the grade in today's schools. *Time, 135*, 28–31.

Doctoral Dissertation, Master's Thesis, Presentation, Proceeding

a) Dissertation/Thesis from a Commercial Database

Van Brunt, D. (1997). *Networked consumer health information systems* (Doctoral dissertation). Available from ProQuest Dissertations and Theses database. (UMI No. 9943436)

b) Dissertation/Thesis from an Institutional Database

Yaylalı-Yıldız, B. (2014). *University campuses as places of potential publicness: Exploring the politicals, social and cultural practices in Ege University* (Doctoral dissertation). Retrieved from Retrieved from: http://library.iyte.edu.tr/tr/hizli-erisim/iyte-tez-portali

c) Dissertation/Thesis from Web

Tonta, Y. A. (1992). *An analysis of search failures in online library catalogs* (Doctoral dissertation, University of California, Berkeley). Retrieved from http://yunus.hacettepe.edu.tr/ tonta/ yayinlar /phd/ickapak.html

d) Dissertation/Thesis abstracted in Dissertations Abstracts International

Appelbaum, L. G. (2005). Three studies of human information processing: Texture amplification, motion representation, and figure-ground segregation. *Dissertation Abstracts International: Section B. Sciences and Engineering, 65*(10), 5428.

e) Symposium Contribution

Krinsky-McHale, S. J., Zigman, W. B., & Silverman, W. (2012, August). Are neuropsychiatric symptoms markers of prodromal Alzheimer's disease in adults with Down syndrome? In W. B. Zigman (Chair), *Predictors of mild cognitive impairment, dementia, and mortality in adults with Down syndrome.* Symposium conducted at the meeting of the American Psychological Association, Orlando, FL.

f) Conference Paper Abstract Retrieved Online

Liu, S. (2005, May). *Defending against business crises with the help of intelligent agent based early warning solutions.* Paper presented at the Seventh International Conference on Enterprise Information Systems, Miami, FL. Abstract retrieved from http://www.iceis.org/iceis2005/ abstracts_2005.html

g) Conference Paper - In Regularly Published Proceedings and Retrieved Online

Herculano-Houzel, S., Collins, C. E., Wong, P., Kaas, J. H., & Lent, R. (2008). The basic nonuniformity of the cerebral cortex. *Proceedings of the National Academy of Sciences, 105,* 12593–12598. http://dx.doi.org/10.1073/pnas.0805417105

h) Proceeding in Book Form

Parsons, O. A., Pryzwansky, W. B., Weinstein, D. J., & Wiens, A. N. (1995). Taxonomy for psychology. In J. N. Reich, H. Sands, & A. N. Wiens (Eds.), *Education and training beyond the doctoral degree: Proceedings of the American Psychological Association National Conference on Postdoctoral Education and Training in Psychology* (pp. 45–50). Washington, DC: American Psychological Association.

i) Paper Presentation

Nguyen, C. A. (2012, August). *Humor and deception in advertising: When laughter may not be the best medicine.* Paper presented at the meeting of the American Psychological Association, Orlando, FL.

Other Sources

a) Newspaper Article

Browne, R. (2010, March 21). This brainless patient is no dummy. *Sydney Morning Herald, 45.*

b) Newspaper Article with no Author

New drug appears to sharply cut risk of death from heart failure. (1993, July 15). *The Washington Post,* p. A12.

c) Web Page/Blog Post

Bordwell, D. (2013, June 18). David Koepp: Making the world movie-sized [Web log post]. Retrieved from http://www.davidbordwell.net/blog/page/27/

d) Online Encyclopedia/Dictionary

Ignition. (1989). In *Oxford English online dictionary* (2nd ed.). Retrieved from http://dictionary. oed.com

Marcoux, A. (2008). Business ethics. In E. N. Zalta (Ed.). *The Stanford encyclopedia of philosophy.* Retrieved from http://plato.stanford.edu/entries/ethics-business/

e) Podcast

Dunning, B. (Producer). (2011, January 12). *in Fact: Conspiracy theories* [Video podcast]. Retrieved from http://itunes.apple.com/

f) Single Episode in a Television Series

Egan, D. (Writer), & Alexander, J. (Director). (2005). Failure to communicate. [Television series episode]. In D. Shore (Executive producer), *House*; New York, NY: Fox Broadcasting.

g) Music

Fuchs, G. (2004). Light the menorah. On *Eight nights of Hanukkah* [CD]. Brick, NJ: Kid Kosher.

SUBMISSION CHECKLIST

Ensure that the following items are present:

- Cover letter to the editor
  - ✓ The category of the manuscript
  - ✓ Confirming that "the paper is not under consideration for publication in another journal".
  - ✓ Including disclosure of any commercial or financial involvement.
  - ✓ Confirming that the statistical design of the research article is reviewed.
  - ✓ Confirming that last control for fluent English was done.
  - ✓ Confirming that journal policies detailed in Information for Authors have been reviewed.
  - ✓ Confirming that the references cited in the text and listed in the references section are in line with APA 6.
- Copyright Agreement Form
- Permission of previously published copyrighted material if used in the present manuscript
- Title page
  - ✓ The category of the manuscript
  - ✓ The title of the manuscript
  - ✓ All authors' names and affiliations (institution, faculty/department, city, country), e-mail addresses
  - ✓ Corresponding author's email address, full postal address, telephone and fax number
  - ✓ ORCIDs of all authors.
- Main Manuscript Document
  - ✓ The title of the manuscript
  - ✓ Abstract (150-200 words)
  - ✓ Keywords: 5 to 8 words
  - ✓ Main article sections
  - ✓ Grant support (if exists)
  - ✓ Conflict of interest (if exists)
  - ✓ Acknowledgement (if exists)
  - ✓ References
  - ✓ All tables, illustrations (figures) (including title, description, footnotes)

İstanbul University
İstanbul Üniversitesi

Journal name: Istanbul Management Journal
Dergi Adı: Istanbul Management Journal

Copyright Agreement Form
Telif Hakkı Anlaşması Formu

Responsible/Corresponding Author *Sorumlu Yazar*	
Title of Manuscript *Makalenin Başlığı*	
Acceptance date *Kabul Tarihi*	
List of authors *Yazarların Listesi*	

Sıra No	**Name - Surname** *Adı-Soyadı*	**E-mail** *E-Posta*	**Signature** *İmza*	**Date** *Tarih*
1				
2				
3				
4				
5				

Manuscript Type (Research Article, Review, Short communication, etc.) *Makalenin türü (Araştırma makalesi, Derleme, Kısa bildiri, v.b.)*	

Responsible/Corresponding Author:
Sorumlu Yazar:

University/company/institution	*Çalıştığı kurum*	
Address	*Posta adresi*	
E-mail	*E-posta*	
Phone; mobile phone	*Telefon no; GSM no*	

The author(s) agrees that:
The manuscript submitted is his/her/their own original work, and has not been plagiarized from any prior work,
all authors participated in the work in a substantive way, and are prepared to take public responsibility for the work,
all authors have seen and approved the manuscript as submitted,
the manuscript has not been published and is not being submitted or considered for publication elsewhere,
the text, illustrations, and any other materials included in the manuscript do not infringe upon any existing copyright or other rights of anyone.
ISTANBUL UNIVERSITY will publish the content under Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) license that gives permission to copy and redistribute the material in any medium or format other than commercial purposes as well as remix, transform and build upon the material by providing appropriate credit to the original work.
The Contributor(s) or, if applicable the Contributor's Employer, retain(s) all proprietary rights in addition to copyright, patent rights.
I/We indemnify ISTANBUL UNIVERSITY and the Editors of the Journals, and hold them harmless from any loss, expense or damage occasioned by a claim or suit by a third party for copyright infringement, or any suit arising out of any breach of the foregoing warranties as a result of publication of my/our article.
I/We also warrant that the article contains no libelous or unlawful statements, and does not contain material or instructions that might cause harm or injury.
This Copyright Agreement Form must be signed/ratified by all authors. Separate copies of the form (completed in full) may be submitted by authors located at different institutions; however, all signatures must be original and authenticated.

Yazar(lar) aşağıdaki hususları kabul eder:
Sunulan makalenin yazar(lar)ın orijinal çalışması olduğunu ve intihal yapmadıklarını,
Tüm yazarların bu çalışmaya asli olarak katılmış olduklarını ve bu çalışma için her türlü sorumluluğu aldıklarını,
Tüm yazarların sunulan makalenin son halini gördüklerini ve onayladıklarını,
Makalenin başka bir yerde basılmadığını veya basılmak için sunulmadığını,
Makalede bulunan metnin, şekillerin ve dokümanların diğer şahıslara ait olan Telif Haklarını ihlal etmediğini kabul ve taahhüt ederler.
İSTANBUL ÜNİVERSİTESİ'nin bu fikri eseri, Creative Commons Atıf-GayrıTicari 4.0 Uluslararası (CC BY-NC 4.0) lisansı ile yayınlamasına izin verirler. Creative Commons Atıf-GayrıTicari 4.0 Uluslararası (CC BY-NC 4.0) lisansı, eserin ticari kullanım dışında her boyut ve formatta paylaşılmasına, kopyalanmasına, çoğaltılmasına ve orijinal esere uygun şekilde atıfta bulunmak kaydıyla yeniden düzenleme, dönüştürme ve eserin üzerine inşa etme dâhil adapte edilmesine izin verir.
Yazar(lar)ın veya varsa yazar(lar)ın işvereninin telif dâhil patent hakları, fikri mülkiyet hakları saklıdır.
Ben/Biz, telif hakkı ihlali nedeniyle üçüncü şahıslarca vuku bulacak hak talebi veya açılacak davalarda İSTANBUL ÜNİVERSİTESİ ve Dergi Editörlerinin hiçbir sorumluluğunun olmadığını, tüm sorumluluğun yazarlara ait olduğunu taahhüt ederim/ederiz.
Ayrıca Ben/Biz makalede hiçbir suç unsuru veya kanuna aykırı ifade bulunmadığını, araştırma yapılırken kanuna aykırı herhangi bir malzeme ve yöntem kullanılmadığını taahhüt ederim/ederiz.
Bu Telif Hakkı Anlaşması Formu tüm yazarlar tarafından imzalanmalıdır/onaylanmalıdır. Form farklı kurumlarda bulunan yazarlar tarafından ayrı kopyalar halinde doldurularak sunulabilir. Ancak, tüm imzaların orijinal veya kanıtlanabilir şekilde onaylı olması gerekir.

Responsible/Corresponding Author; *Sorumlu Yazar;*	**Signature** / *İmza*	**Date** / *Tarih*
		……../……../……