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SUSTAINABILITY IN LARGE BUSINESSES:

EXAMINATION OF WEBSITES AND COMPARATIVE ANALYSIS

Engin YURDASEVER[1]

ABSTRACT

Purpose: The main aim of this research is to identify the topics related to sustainability that are featured on the websites of the large 20 businesses listed in the İSO500-2023. Another objective of the research is to examine the similarities in the sustainability content shared on the businesses' websites, both within the same industries and across different industries, and to test whether the content varies according to the businesses' rankings in the İSO list.

Method: The study employs content analysis, a qualitative research method. The data used in this research were obtained by examining the official websites of the 20 large industrial businesses listed in the İSO500-2023. The data collected from the websites were analyzed using the MAXQDA v.24.6.0 software.

Findings: The analysis revealed findings related to all three dimensions of sustainability: social, environmental, and economic. In the social dimension, occupational health and safety were the most frequently addressed topics; in the environmental dimension, energy management and energy efficiency; and in the economic dimension, sustainable supply chains. Similarities were found in the sustainability content of businesses operating within the same industry as well as across different industries. The most addressed sustainability dimension across all industries was "social sustainability". It was also observed that as businesses' rankings in the İSO500 list declined, the amount of sustainability content on their websites also decreased.

Conclusion: This research provides insight into the areas that large businesses in Turkey focus on in their sustainability strategies, offering guidance for other businesses considering the development of sustainability policies. The findings also help businesses that plan to feature sustainability content on their websites in establishing a framework for sustainability communication with their stakeholders.

Keywords: Sustainability, Business, Website, Content Analysis

INTRODUCTION

As the transition of societies around the world to modern life accelerates, many issues such as population growth, the widespread adoption of consumption culture, the uncontrolled and unplanned use of natural resources, poverty, and hunger have emerged. The irreversible damage to the world's natural balance, the uncontrolled use of natural resources, and the increasing climate crisis have brought the concept of sustainability to the forefront (Giovannoni & Fabietti, 2013). Particularly in recent years, global disasters, pandemics, and economic crises, which are environmental, social, and economic issues, have made the concept of sustainability, which dates back to the 18th century, the central agenda of the world. While sustainability has become the central topic of the global agenda, businesses, which are expected to be sensitive to the systems they are part of just like countries and individuals, are also required to act responsibly within this scope. Therefore, it has become necessary for organizations to incorporate the principle of

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"sustainability" into their strategies, business processes, and corporate decisions in terms of economic, social, and environmental aspects (Aktaş, 2017:64).

Today, many businesses engage in sustainability initiatives, which has led to the sharing of information with the external environment at certain intervals regarding these initiatives and their results. The information produced by businesses to ensure the sustainability of economic, social, and environmental resources is referred to as sustainability information or sustainability communication (Rowbottom & Lymer, 2009:176). In providing this information, businesses use various tools such as written reports, advertisements, and websites.

This study examines the topics related to sustainability featured on the websites used by businesses for sustainability communication. The businesses analyzed in the study were selected from the İSO500-2023 list, which is published annually by the İstanbul Chamber of Industry (İSO) and includes Turkey's 500 largest industrial businesses. The study reveals which areas of sustainability large businesses focus on by examining their websites. Additionally, comparisons are made between businesses and industries, and similarities across websites are tested. Furthermore, the study also examines whether businesses ranked higher in the İSO500 list focus more on sustainability-related topics.

1. CONCEPTUAL FRAMEWORK

Climate disasters, famine, poverty, hunger, and wars have escalated concerns about ensuring that the limited resources available today are passed on to future generations. In order to address the global impacts of these issues, the UN World Commission on Environment and Development published the "Our Common Future" Brundtland Report in 1987. In this report, the concept of sustainable development was first defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs". According to the report, the key objectives of sustainable development include bringing together environmental awareness, economic activity, and social justice in a conciliatory approach, and creating opportunities for everyone to fulfill their basic needs and desires (Brundtland Report, 1987).

The concept of sustainability is defined by Henriques (2001:32) as the ability of a society (or organization) to continue its activities indefinitely while considering its impact on economic, social, and environmental capital. In other words, sustainability requires not only meeting the needs of today but also considering the needs of future generations in economic, social, and environmental terms. As the definition suggests, sustainability encompasses three fundamental dimensions: economic, environmental, and social. The first of these, social sustainability, can be defined as the extent to which societal values, social identities, social relationships, and social institutions can persist into the future. Social sustainability requires the preservation of societal cohesion and the ability to work toward common goals. It should address individual needs such as health and well-being, nutrition, housing, education, and cultural expression (Moldan et al., 2012:5). Environmental sustainability can be defined as creating and maintaining conditions in which humans and nature can coexist productively, while allowing future generations to meet their social, economic, and environmental needs (U.S. Department of Energy, 2020). Environmental sustainability also involves meeting human needs without compromising the health of ecosystems (Morelli, 2011:2). Finally, economic sustainability is economic development that does not negatively affect ecological or social sustainability. Therefore, an increase in economic capital

should not come at the expense of natural or social capital (KTH Royal Institute of Technology, 2018). Consequently, achieving environmental, economic, and social sustainability is one of the most urgent goals societies face today (Bansal, 2019), and since sustainability is a complex and multidimensional issue, it has not yet been fully realized. However, the UN World Commission on Environment and Development states that in order to achieve sustainability's goal of ensuring intergenerational and cross-temporal equity, the simultaneous adoption of environmental, economic, and social principles is necessary (Slawinski & Bansal, 2015).

The concept of sustainability is addressed at the global and national levels as sustainable development, and at the business level as corporate sustainability. The principles developed for sustainable development policies and activities at the macro level put pressure on businesses (Labuschangne & Brent, 2005:159), and businesses are expected to carry out their activities in line with these principles. Due to the sustainability approach encompassing all economic, social, and environmental systems, the business world now benefits from corporate sustainability strategies that prioritize both profit generation and environmental and social interests. The three principles supporting sustainable development (environmental, social, and economic) are also valid at the business level. In order for businesses to ensure corporate sustainability, they must reflect these three principles in their products, policies, and practices (Bansal, 2005:199-200). This is because corporate sustainability requires managers to address distinct yet interconnected issues related to the natural environment, social welfare, and economic well-being simultaneously (Hahn et al., 2014).

The increasing awareness of sustainability worldwide also affects the business world. The activities of businesses now lead to consequences on a global scale, not just a regional one. Therefore, the heightened awareness and expectations of individuals and communities affected by these outcomes have increased businesses' responsibilities toward these outcomes. In other words, society expects businesses not only to generate economic value but also to address the negative impacts that arise during the value creation process. Even if businesses are not the source of the problems, society expects them to be sensitive to these issues and to be part of the solution. For this reason, sustainability has become an important area of responsibility for businesses (Baumgartner, 2009:102). Thus, in achieving sustainability, the efforts of only governments and states are not sufficient; the activities of businesses are also of vital importance for the realization of sustainability goals.

As a result, businesses are required to have accountability mechanisms regarding sustainability not only for economic but also for social and environmental resources. Therefore, businesses engage in activities on various topics, ranging from biodiversity and human rights to sustainable production and occupational health and safety, in order to ensure their accountability regarding sustainability (Laine & Unerman, 2021:3-5). In doing so, they are also obliged to share their values, priorities, goals, and initiatives related to sustainability with the external environment. At this point, businesses need a communication approach that guides relationships between stakeholders to ensure accountability and transparency regarding sustainability, raise awareness, and create behavioral change (Saydam, 2016:117). Today, businesses communicate their sustainability activities and their contributions to stakeholders through various tools, using the approach known as sustainability communication.

The communication established by businesses regarding their actions for sustainability can also be used to develop corporate interests or corporate reputation. In this regard, both corporate sustainability reports and websites are commonly used. Additionally, some businesses may also

use advertisements for this purpose. Since the 1990s, it has been observed that businesses have started publishing environmental reports within the framework of accountability (Kolk, 2004:51). After the 2000s, the reports addressing environmental issues have been replaced by sustainability reports that include environmental, economic, and social indicators (White, 2005:36-37). Today, businesses are widely reporting according to GRI Standards.

Another platform through which businesses convey sustainability-related information is their own websites. The content related to sustainability on businesses' websites reflects their perspective on sustainability, while also enabling the visibility of their sustainability goals, priorities, and initiatives. A review of the literature reveals numerous studies analyzing sustainability reports prepared by businesses (Esen & Esen, 2018; Kaya, 2022; Kılınç & Uysal, 2023). However, the number of studies analyzing sustainability-related topics through the examination of businesses' websites is quite limited. One such study by Demirci (2022) conducted a qualitative analysis of the sustainability reports and websites of five private and public-sector banks operating in Turkey, using the case study method. Mısırdalı Yangil (2021) examined the environmental, social, and economic sustainability statements included in the sustainability reports of the 100 largest industrial businesses determined by İSO, using content analysis. Similar studies in the foreign literature are also scarce. For instance, Paul (2008) focused on the accessibility of content and how the content is produced, rather than analyzing the sustainability content on the websites of businesses listed in the Global 100 Sustainable Companies ranking. Sobhani et al. (2012) examined the state of corporate sustainability disclosures and practices in the annual reports and corporate websites of the banking sector in Bangladesh but concluded that most content was conveyed through reports. In their study, Dade & Hassenzahl (2013) assessed how U.S. higher education institutions communicate sustainability through their websites, while Da Giau et al. (2016) analyzed the environmental and social sustainability practices adopted by businesses in the Italian fashion industry and how they communicated them through corporate websites.

As seen, there is a gap in the literature regarding studies that conduct a content analysis solely through businesses' websites on sustainability-related topics. This study aims to contribute to filling this gap in the literature by analyzing the sustainability-related content on businesses' websites. Additionally, the data obtained from the research is significant for determining the priorities of large businesses in Turkey regarding sustainability and, through the codes, categories, and themes derived, guiding future theoretical and practical studies.

2. METHOD

2.1. Purpose of Research

The main objective of this research is to reveal which topics related to sustainability are found on the websites of the 20 large businesses listed in the İSO500-2023 list. Another aim of the research is to test whether there are similarities in the sustainability-related content shared on businesses' websites between businesses or industries and whether the content varies according to the businesses' rankings in the İSO list. The research questions, formulated in line with the research objectives, are as follows:

1. What topics related to sustainability are found on the businesses' websites?

2. What are the similarities between the sustainability-related content on the websites of businesses operating in the same industry?

3. What are the similarities between the sustainability-related content on the websites of businesses operating in different industries?

4. What are the similarities between the sustainability-related content on the websites of businesses in the top 50 rankings and those in the second 50 rankings of the İSO500 list?

2.2. Population and Sample

The population and sample for the study were determined through purposive sampling. In qualitative studies, purposive sampling involves the researcher selecting individuals, locations, and situations that are appropriate for the phenomenon being studied (Baltacı, 2018: 266). Furthermore, in qualitative research, the sample should consist of the richest sources of information that meet the research objectives and can provide detailed data, rather than large groups (Morgan & Morgan, 2008).

In this context, the population of the study consists of the top 100 businesses listed in the İSO500-2023 list. These businesses were selected for the population because they are the largest industrial businesses in Turkey, and it is assumed that these businesses typically display more advanced sustainability policies and practices by offering more resources and transparency. Moreover, since these large businesses have a broader environmental, social, and economic impact, they address sustainability more comprehensively and can serve as models for other businesses. The value added by these businesses to the national economy leads to economic and social impacts, while the results of the resources they use during production contribute to significant environmental impacts. Therefore, the approaches of large businesses to sustainability provide valuable and comprehensive data for this study.

The first criterion for selecting the sample from the population was to examine whether the businesses' websites had a "Sustainability" menu in their main navigation. The presence of a separate "Sustainability" menu in the main navigation is considered an indicator of the business's emphasis on sustainability. Upon review, it was found that although some businesses' websites contained sustainability-related information under various menus, they did not have a separate sustainability menu. When all business websites were examined, it was found that 70 businesses had a "Sustainability" menu on their websites. The second criterion was to check whether the businesses' websites addressed sustainability not only from an environmental perspective but also from social and economic dimensions. While many businesses had a "Sustainability" menu on their websites, some were excluded from the evaluation due to the content only addressing certain dimensions of sustainability and containing superficial text rather than detailed explanations, or insufficient information for content analysis. Therefore, the websites of 20 businesses that met the relevant criteria, had content most suitable for analysis, and represented a broad range of industries as much as possible, were selected as the sample.

2.3. Data Collection

In the study, the data were obtained from the content of the "Sustainability" menus on the official websites of the businesses selected for the sample. There are some limitations regarding data collection in the study. Some of the businesses included in the study operate under a holding

business. However, in such cases, the data were collected from the official website of the individual business, not the holding business's website. Additionally, some of the businesses are foreign-invested, and they have websites in different languages prepared for the country where the business's headquarters is located. However, for these businesses, the data were collected from the Turkish-language website prepared for Turkey.

The information obtained from the websites consists of publicly accessible data that is not contained in an image file or a PDF document, but can be directly accessed. The websites were accessed between October 16 and October 31, 2024, and data were collected during this period. Any changes that might occur on the websites after this date were not considered. All the information was obtained from the Sustainability menu, and no information related to sustainability was taken from other menus on the websites. Since the content was obtained from publicly accessible websites through content analysis, the study does not require ethical approval.

2.4. Data Analysis

In this study, the businesses selected for analysis, their rankings in the İSO500-2023 list, and the addresses of the websites from which the data were obtained are shown in Table 1.

Table 1. List of Businesses Included in the Analysis and Their Websites

İSO500-2023 Ranking	Business Name	Website
1	TÜPRAŞ-Türkiye Petrol Rafinerileri A.Ş.	https://www.tupras.com.tr/tr/
2	Ford Otomotiv Sanayi A.Ş.	https://www.fordotosan.com.tr/tr
3	Star Rafineri A.Ş.	https://www.starrafineri.com.tr/
7	Arçelik A.Ş.	https://www.arcelikglobal.com/
11	TOFAŞ Türk Otomobil Fabrikası A.Ş.	https://www.tofas.com.tr/
16	Türkiye Şişe ve Cam Fabrikaları A.Ş.	https://www.sisecam.com.tr/tr
22	BSH Ev Aletleri San. ve Tic. A.Ş.	https://www.bsh-group.com/tr/
26	KARDEMİR Karabük Demir Çelik San.Tic.A.Ş.	https://www.kardemir.com/
29	Sasa Polyester Sanayi A.Ş.	https://www.sasa.com.tr/
31	Borçelik Çelik San. Tic. A.Ş.	https://www.borcelik.com/
39	Hayat Kimya Sanayi A.Ş.	https://www.hayat.com/
43	Coca-Cola İçecek A.Ş.	https://www.cci.com.tr/
53	Nadir Metal Rafineri San. ve Tic. A.Ş.	https://www.nadirmetal.com.tr/
54	SÜTAŞ Süt Ürünleri A.Ş.	https://www.sutas.com.tr/
59	Otokar Otomotiv ve Savunma Sanayi A.Ş.	https://www.otokar.com.tr/
64	Toros Tarım San. ve Tic. A.Ş.	https://www.toros.com.tr/tr/toros-kurumsal
65	Borusan Birleşik Boru Fabr. San. ve Tic. A.Ş.	https://www.borusanboru.com/anasayfa
79	Abdi İbrahim İlaç San. ve Tic. A.Ş.	https://www.abdiibrahim.com.tr/
83	Limak Çimento San. ve Tic. A.Ş.	https://www.limakcimento.com/tr/index.php
84	Akçansa Çimento San. ve Tic. A.Ş.	https://www.akcansa.com.tr/

In this study, the information found under the "Sustainability" main menu on the official websites of the businesses listed in Table 1 was first transferred to Microsoft Word documents. During this process, all main and sub-menu contents under the "Sustainability" menu were fully considered. However, information stored in image files or PDF documents was excluded from the analysis.

After transferring the data into Word documents, these files were uploaded to the MAXQDA v.24.6.0 program for further analysis. Once the upload was complete, the coding process began. Coding, in brief, is the process of assigning meaningful labels to sections of the data. However, it is not enough to just code the collected data; the next step involves identifying themes that can explain the data at a general level and grouping the codes under specific categories (Yıldırım & Şimşek, 2013:268).

In this study, inductive coding, as proposed by Strauss & Corbin (1990), was chosen. In inductive coding, the approach proceeds sequentially from data to codes, from codes to categories, and from categories to themes. Therefore, in this study, the coding process started by thoroughly examining the data and using the website's menu, main headings, subheadings, and contents to create codes. Afterward, similar codes were grouped together to form categories, and ultimately, these categories were consolidated into three main themes (social, environmental, and economic sustainability), allowing for a holistic perspective.

To ensure the reliability of the research, the codes obtained from the analyzed data, along with the categories and themes, were reviewed by two academic experts in management who have experience in content analysis and sustainability studies. As a result of this evaluation, some codes were merged and renamed, and consensus on coding, categories, and themes was achieved, ensuring the reliability of the study. In the final stage, the data were analyzed according to the research questions, the results were reported, and the findings were visualized and presented in the findings section.

3. FINDINGS

The findings obtained as a result of analyzing the data in accordance with the research objectives are explained separately for each research question below.

Q1: What topics related to sustainability are covered on businesses' websites?

As a result of the content analysis and coding of the data obtained from websites in the study, three themes, namely *"Social Sustainability", "Environmental Sustainability" and "Economic Sustainability"* were created based on the codes and categories derived from the data. Table 2 presents the first theme of the study, "Social Sustainability", along with its categories, codes, and the frequency values associated with these codes.

Table 2. Categories and Subcodes Related to the Social Sustainability Theme

THEME 1. SOCIAL SUSTAINABILITY					
Category 1. Employee Sustainability			Category 2. Societal Sustainability		
Code Name	Codes	%	Code Name	Codes	%
Human Capital	1	0,6	Donations and Aids	7	3,6
Employee Engagement	6	3,6	Information Security	8	4,1

Employee Development/ Training	15	9,1	Ethics and Compliance	26	13,3
Employee Volunteering Activities	1	0,6	Human Rights	24	12,2
Employee Participation	5	3,0	Partnerships	13	6,6
Employee Satisfaction	8	4,8	Corporate Social Responsibility	7	3,6
Employee Recognition	1	0,6	Customer Relations and Satisfaction	20	10,2
Employee Suggestions and Feedback	4	2,4	Stakeholder Analysis and Engagement	12	6,1
Diversity, Equity and Inclusion	41	24,8	Stakeholder Communication	13	6,6
Human Resources Management	11	6,7	Anti-bribery and Anti-corruption	9	4,6
Occupational Health and Safety	51	30,9	Volunteering/Awareness Activities	18	9,2
Health Services	3	1,8	Contribution to Social Development	20	10,2
Labor Rights	5	3,0	Social Investments	8	4,1
Talent Management	13	7,9	Support for Local Communities	11	5,6
Total	**165**	**100**	**Total**	**196**	**100**

Upon examining Table 2, it can be seen that the most frequently coded sections related to social sustainability on the websites are "*occupational health and safety (51), diversity, equality, and inclusion (41), ethics and compliance (26), and human rights (24)*". A total of 28 different codes were used in this theme, with a total of 361 (165+196) codings. Additionally, when the codings related to social sustainability are considered together, two categories, "employee sustainability" and "societal sustainability", were created, taking into account the relationship between the codes. These categories demonstrate that social sustainability concerns both the employees of businesses and other segments of society.

Table 3 shows the second theme of the research, "Environmental Sustainability", along with its related codes and frequency values.

Table 3. Environmental Sustainability Theme and Subcodes

THEME 2. ENVIRONMENTAL SUSTAINABILITY		
Code Name	**Codes**	**%**
Waste Management	21	8,7
Biodiversity	13	5,4
Environmental Management	25	10,4
Conservation of Natural Resources	5	2,1
Transition to a Low Carbon Economy	12	5,0
Greenhouse Gas Emission Reduction	17	7,1
Energy Management and Energy Efficiency	44	18,3

Air Quality	3	1,2
Climate Change Mitigation	32	13,3
Plastic Pollution Prevention	3	1,2
Carbon Neutrality (Decarbonization)	11	4,6
Zero Waste	11	4,6
Water Management	31	12,9
Renewable Energy	13	5,4
Total	**241**	**100**

Upon examining Table 3, it can be seen that the most frequently coded topics related to environmental sustainability in the website content are "*energy management and energy efficiency (44), combating climate change (32), water management (31), and environmental management (25)*". A total of 14 different codes were used in this theme. The total number of codings is 241. However, when all the codes are considered together, no need for categorization arises as all the codes are meaningfully related to each other.

Table 4 presents the third and final theme of the research, "Economic Sustainability", along with its categories, codes, and the frequency values of these codes.

Table 4. Categories and Subcodes Related to the Economic Sustainability Theme

THEME 3. ECONOMIC SUSTAINABILITY					
Category 1. General Economic Sustainability			**Category 2. Product/Service Sustainability**		
Code Name	**Codes**	**%**	**Code Name**	**Codes**	**%**
Circular Economy	21	31,3	Six Sigma	2	1,1
Impact on Economic Development	4	6,0	Packaging Management	10	5,4
Youth Employment	3	4,5	R&D and Innovation	24	13,0
Women's Employment and Rights	16	23,9	Dealers	4	2,2
Sustainable Development Goals	17	25,4	Agile Transformation	1	0,5
Sustainable Economic Performance	1	1,5	Value Chain	5	2,7
Sustainable Economic Growth	3	4,5	Digitalization	14	7,6
Support for Local Employment	2	3,0	Integrated Management System	4	2,2
			Business Continuity	7	3,8
			Quality Management	17	9,2
			Logistics Efficiency	4	2,2
			Cost Optimization	1	0,5
			Process Safety	3	1,6
			Risk Management	12	6,5
			Responsible Marketing	2	1,1
			Sustainable Business Models	6	3,2
			Sustainable Supply Chain	31	16,8

				Sustainable Production	7	3,8
				Sustainable Product Management	10	5,4
				Sustainability Management/ Governance	12	6,5
				Product Safety	7	3,8
				Data Security/Cybersecurity	2	1,1
Total		**67**	**100**	**Total**	**185**	**100**

Upon examining Table 4, it can be seen that the most frequently coded topics related to economic sustainability in the website content are "*sustainable supply chain (31), R&D and innovation (24), circular economy (21), and sustainable development goals (17)*". A total of 30 different codes were used in this theme. The total number of codings is 252 (67+185). Additionally, when the economic sustainability codes are evaluated together, considering the relationships among the codes, two categories were created: "general economic sustainability" and "product/service sustainability". These categories show that, from the perspective of businesses, economic sustainability involves topics related to both the sustainability of general well-being and sustainability in production and technology, which are key factors.

As a result of the website content coding and classification process, the Hierarchical Code-Subcode Model, prepared by taking into account the most frequently used codes across all themes and categories, is shown in Figure 1. The five codes with the highest frequency values in each category are visualized.

Figure 1. Hierarchical Code-Subcode Model
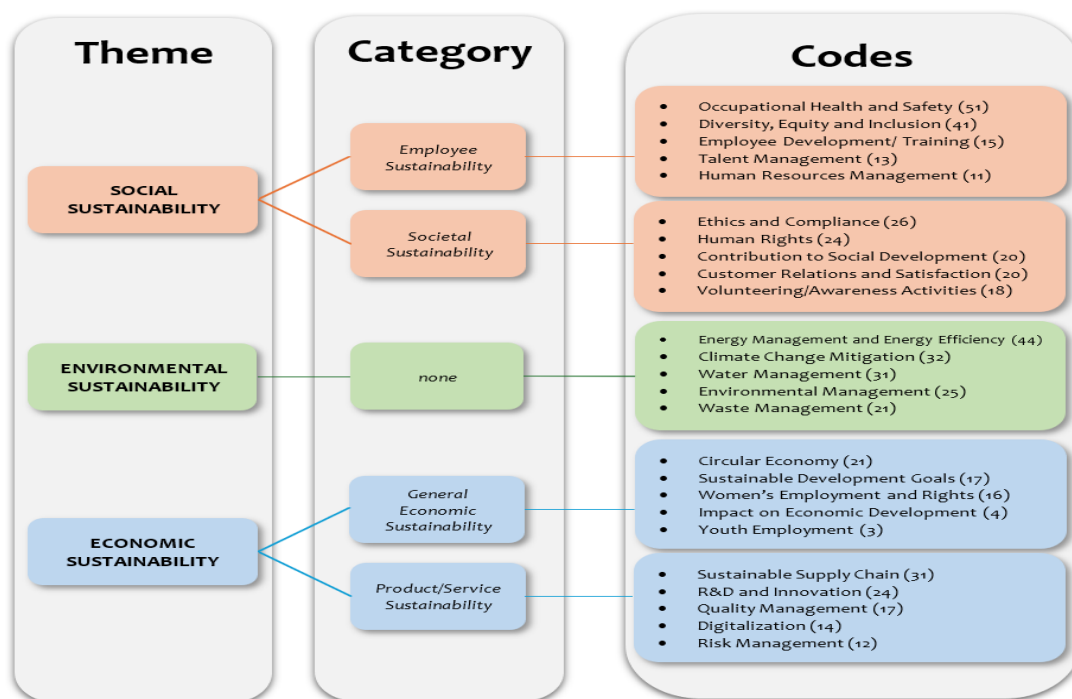
Upon examining Figure 1, it can be observed that the most frequently used codes are as follows: "Ethics and Compliance" in the Social Sustainability category, "Occupational Health and Safety" in the Employee Sustainability category, "Energy Management and Energy Efficiency" in the Environmental Sustainability theme, "Sustainable Supply Chain" in the Product/Service Sustainability category, and "Circular Economy" in the General Economic Sustainability category. *(The numbers next to the code, category, and theme names indicate the code frequency.)*

The Code Matrix prepared to show the sustainability themes that emerged based on the content shared on businesses' websites is shown in Figure 2.

Figure 2. Code Matrix Based on Business and Theme

CODES	TÜPRAŞ	FORD	STAR RAFİNE	ARÇELİK	TOFAŞ	ŞİŞE CAM	BSH	KARDEMİR	SASA POLYESTER	BORÇELİK	HAYAT KİMYA	COCA-COLA	NADİR METAL	SÜTAŞ	OTOKAR	TOROS TARIM	BORUSAN	ABDİ İBRAHİM	LİMAK	AKÇANSA	TOTAL
ENVIRONMENTAL SUSTAINABILITY	22	10	18	14	10	20	4	14	13	16	4	15	6	13	6	6	4	14	15	17	241
SOCIAL SUSTAINABILITY	24	20	27	28	15	23	14	18	23	17	5	31	6	16	17	6	11	16	20	24	361
ECONOMIC SUSTAINABILITY	10	10	26	30	9	21	4	11	14	12	8	26	3	9	10	3	5	22	6	13	252
TOTAL	56	40	71	72	34	64	22	43	50	45	17	72	15	38	33	15	20	52	41	54	854

Upon examining Figure 2, it can be observed that the top three businesses with the highest number of codes are Arçelik (72), Coca-Cola (72), and Star Rafineri (71). It is also evident that the business with the most content on environmental sustainability is Tüpraş (22), on social sustainability is Coca-Cola (31), and on economic sustainability is Arçelik (30). With a total of 361 codes, it is apparent that the Social Sustainability theme is the most frequently covered topic on the businesses' websites.

Q2: What are the similarities between the sustainability-related content on the websites of businesses operating in the same industry?

Comparative analyses were conducted to demonstrate the similarities in sustainability-related content across the websites of the businesses selected for the sample in the study. Although there are numerous similar codes between businesses, the number of similar codes in the comparisons has been limited to five to better illustrate the visuals and highlight the codes with higher frequency values.

Figure 3 shows the Two Case Model comparing the sustainability codes of Tüpraş and Star Rafineri, which operate in the petroleum industry *(the numbers on the lines leading to the codes in the model indicate the frequency values of those codes).*

Figure 3. Tüpraş-Star Rafineri Comparison Two Case Model

Upon examining Figure 3, it can be seen that in the social dimension, the common codes with the most content for both businesses are Occupational Health and Safety, Human Rights, and Diversity, Equality, and Inclusion. In the environmental dimension, the most common codes are Energy Management and Energy Efficiency, as well as Combating Climate Change. However, it is notable that there is no common code in the economic dimension. The findings suggest that businesses prioritize social and environmental issues in their sustainability strategies, and they have developed a shared approach, particularly in areas such as occupational health and safety, diversity, energy management, and climate change. However, the gap in economic sustainability indicates that businesses may need more standardization or focus in this area.

Figure 4 shows the Two Case Model comparing the sustainability codes of Ford and Tofaş, operating in the vehicle manufacturing industry:

Figure 4. Ford-Tofaş Comparison Two Case Model

Upon examining Figure 4, it can be seen that in the social dimension, the common codes with the most content for both businesses are Occupational Health and Safety, and Diversity, Equality, and Inclusion. In the environmental dimension, the common codes are Energy Management and Energy Efficiency, as well as Environmental Management. In the economic dimension, the most common code is Sustainable Supply Chain for both businesses.

Figure 5 shows the Two Case Model comparing the sustainability codes of Arçelik and BSH, operating in the electrical appliances industry:

Figure 5. Arçelik-BSH Comparison Two Case Model

Upon examining Figure 5, it can be seen that all common codes between the two businesses are in the social dimension. This result indicates that both businesses prioritize social factors and place a strong emphasis on corporate social responsibility efforts. However, it also suggests that they need to develop more collaboration or similar strategies in the environmental and economic areas.

Figure 6 shows the Two Case Model comparing the sustainability codes of Kardemir and Borçelik, operating in the iron and steel industry:

Figure 6. Kardemir - Borçelik Comparison Two Case Model
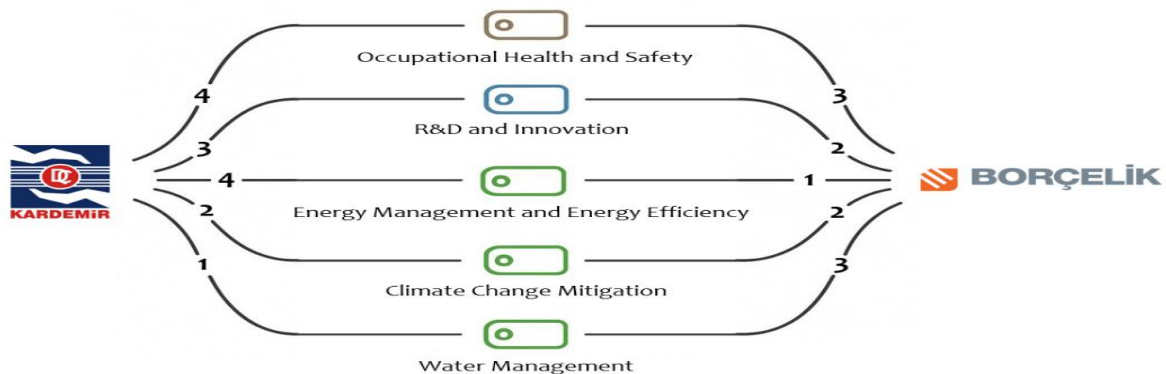
Upon examining Figure 6, it can be seen that in the social dimension, occupational health and safety; in the economic dimension, R&D and innovation; and in the environmental dimension, energy management and energy efficiency, climate change mitigation, and water management are the most commonly shared codes between the two businesses. These findings indicate that both businesses follow a comprehensive strategy in their sustainability efforts, addressing both social and environmental aspects. However, they are continuing to take innovative steps in the area of economic sustainability.

Figure 7 shows the Two Case Model comparing the sustainability codes of Sasa and Abdi İbrahim, operating in the chemical industry:

Figure 7. Sasa-Abdi İbrahim Comparison Two Case Model

Upon examining Figure 7, it can be observed that in the environmental dimension, energy management and energy efficiency, as well as greenhouse gas emission reduction; in the social dimension, diversity, equality, and inclusivity; and in the economic dimension, sustainable supply chain and circular economy are the most commonly shared codes between the two businesses. These findings suggest that the businesses have adopted a comprehensive and cohesive approach to sustainability. However, it also indicates that these strategies could be further customized to better address industry-specific needs.

Figure 8 shows the Two Case Model comparing the sustainability codes of Limak and Akçansa, operating in the mineral industry:

Figure 8. Limak - Akçansa Comparison Two Case Model

Upon examining Figure 8, it can be observed that in the social dimension, occupational health and safety, ethics and compliance, diversity, equality, and inclusivity, and in the environmental dimension, biodiversity are the most commonly shared codes between the two businesses. The absence of a common code in the economic dimension is noteworthy. The lack of a shared code in the economic sustainability area indicates that both businesses follow different strategies or priorities in this field, highlighting the need for greater focus on economic sustainability.

Q3: What are the similarities in the sustainability-related content on the websites of businesses operating in different industries?

In the study, comparisons were also made to show the similarities between the topics addressed on the websites of businesses operating in different industries. To make industrial comparisons more meaningful, at least two businesses operating within the same industry were considered. As in previous comparisons, the number of similar codes was limited to five.

Figure 9 shows the Two Case Model comparing sustainability codes from the petroleum industry and the chemical industry:

Figure 9. Petroleum Industry - Chemical Industry Comparison Two Case Model

Upon examining Figure 9, it can be seen that in the economic dimension, sustainable supply chain, in the social dimension, diversity, equality, and inclusivity, along with occupational health and safety, and in the environmental dimension, energy management and energy efficiency are the most common shared codes between the two industries. This finding suggests that the petroleum industry and chemical industry share similar core priorities in their sustainability strategies, although industrial differences may become more pronounced in the environmental and economic areas. These common areas indicate that both industries follow similar strategies in contributing to sustainable development goals.

Figure 10 presents the Two Case Model comparing the sustainability codes from the vehicle manufacturing industry and the electrical appliances industry:

Figure 10. Vehicle Manufacturing Industry - Electrical Appliances Industry Comparison Two Case Model

Upon examining Figure 10, it can be observed that in the economic dimension, sustainable supply chain; in the social dimension, diversity, equality and inclusivity, occupational health and safety, and customer (consumer) relations and satisfaction; and in the environmental dimension, energy management and energy efficiency are the most common shared codes between the two industries. It is also noticeable that these findings largely overlap with the shared codes from the previous comparison between the petroleum industry and the chemical industry.

Figure 11 presents the Two Case Model comparing the sustainability codes from the iron and steel industry and the mineral industry:

Figure 11. Iron and Steel Industry - Mineral Industry Comparison Two Case Model
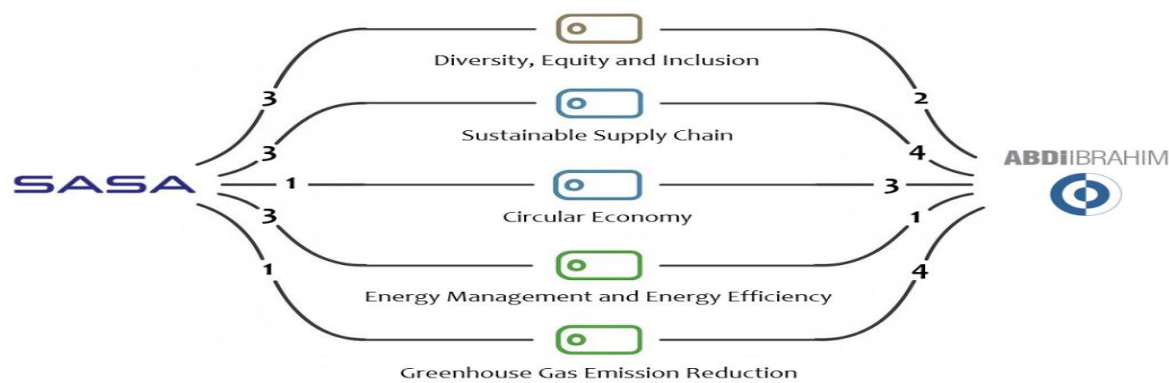

Upon examining Figure 11, it can be seen that in the social dimension, occupational health and safety, as well as diversity, equality, and inclusivity, and in the environmental dimension, environmental management, water management, and energy management and energy efficiency are the most common shared codes between the two industries. The absence of a shared code in the economic dimension is noteworthy. This suggests that both industries may have different priorities in their economic sustainability strategies, indicating the need for further collaboration or the development of similar strategies in this area. This also highlights that while the industries show strong similarities in social and environmental sustainability, they adopt different approaches in economic sustainability.

Figure 12 presents the Code Trend Model, which includes all the industries in which the selected businesses operate, showing the prominent sustainability dimensions by industry:

Figure 12. Inter-Industrial Code Trends
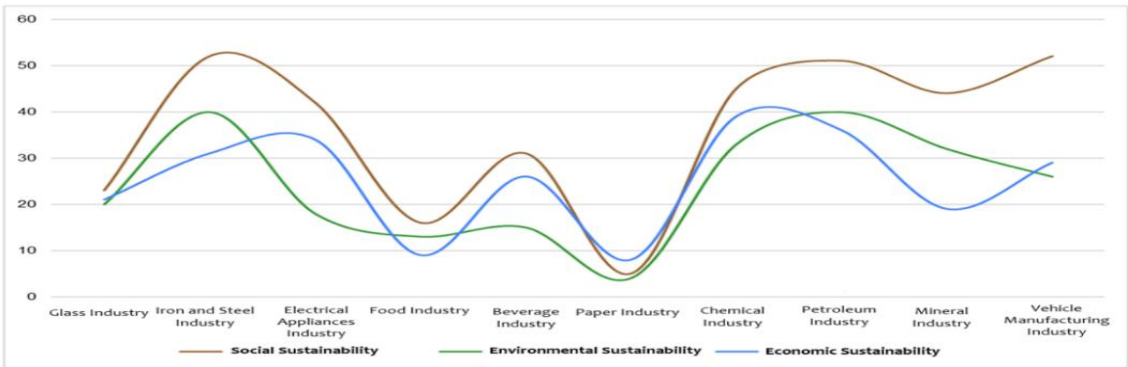
Upon examining Figure 12, it can be seen that the industries with the highest sustainability codes are the iron and steel industry and the petroleum industry. In the paper industry, on the other hand, sustainability codes across all dimensions are relatively low. Overall, social sustainability appears to be at a higher level in all industries. Additionally, environmental and economic sustainability tend to move in a similar direction.

Q4: What are the similarities between the sustainability-related content on the websites of businesses ranked in the top 50 and those ranked in the second 50 of the İSO 500 list?

A comparison was also made to show the similarities between the sustainability-related content on the websites of businesses ranked in the top 50 and those ranked in the second 50 on the İSO500 list. For this comparison, two separate groups were created: businesses ranked in positions 1–50 and businesses ranked in positions 51–100, and these two groups were compared. In this comparison, the number of similar codes was limited to five.

Figure 13 presents the Two-Case Model comparing the sustainability codes of businesses ranked 1–50 and businesses ranked 51–100 in the İSO500 list:

Figure 13. İSO500:1.-50. Ranked – İSO500:51.-100. Ranked Comparison Two Case Model

Upon examining Figure 13, it can be observed that the most common shared codes between the two groups in the social dimension are "occupational health and safety" and "diversity, equality, and inclusivity", while in the environmental dimension, "climate change mitigation", "water management" and "energy management and energy efficiency" are the most frequently coded areas. No shared codes are found in the economic dimension. This suggests that both groups place significant importance on social and environmental factors in their sustainability efforts, but they follow different approaches when it comes to economic sustainability.

To better illustrate the impact of İSO500 rankings on the level of sustainability-related content on businesses' websites, the number of groups was increased from two to four. Businesses were categorized into four different groups: 1-25, 26-50, 51-75, and 76-100, and comparisons were made among these groups. Figure 14 shows the code trend model that presents the sustainability content on the websites of the groups, broken down by themes according to their rankings:

Figure 14. Code Trends Across Ranking Groups
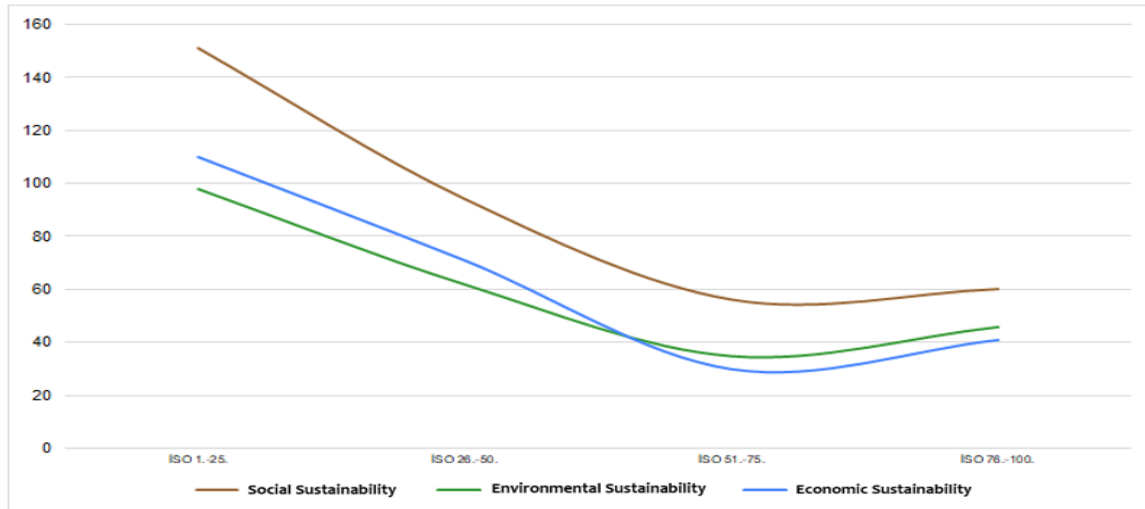
Upon examining Figure 14, it can be observed that as the İSO500 ranking decreases, the frequency values of all sustainability codes also show a decreasing trend. This indicates that businesses ranked higher in the İSO500 list are more focused on sustainability. Additionally, although sustainability content generally decreases with lower rankings across all businesses, consistent with the results shown in Figure 13, the content related to the social sustainability dimension remains higher than that of the other dimensions.

4. CONCLUSION AND DISCUSSION

The concept of sustainability in the world emerged particularly in crisis situations where economic, natural, or social resources are scarce and/or the work and activities may lead to the depletion or harm of these resources in the long term (Ehnert, 2009). However, sustainability also leads to a paradigm shift in management research. Initially, business and business-related research focused on the economic and ecological dimensions of sustainability, but recently, the social dimension of sustainability has become increasingly important (Dyllick & Hockerts, 2002). In this study, it was examined which dimensions of sustainability were addressed on the websites of the businesses selected as examples and what topics were covered.

As a result of the content analysis of the websites within the scope of the research, the data revealed that businesses place the most emphasis on social sustainability and provide more content related to "occupational health and safety, diversity, equity and inclusion, ethics and compliance, and human rights". This shows that businesses focus on ensuring their employees' rights, health, and safety by prioritizing ethical principles in order to achieve social sustainability. This result is consistent with the findings of a study by Esen & Esen (2018), which examined the most frequently repeated expressions related to human resources in the context of sustainability. Similarly, this result supports the claim made in a study by Mısırdalı Yangil (2021) that occupational health and safety ranks first within the social dimension.

Regarding environmental sustainability, it was observed that businesses' websites provided more content on topics such as "energy management and energy efficiency, combating climate change, water management, and environmental management". This indicates that businesses prioritize the fight against climate change and focus on using water and energy resources efficiently. Again, this result supports the findings of Mısırdalı Yangil (2021), which indicate that climate change ranks first within the environmental dimension.

Regarding economic sustainability, it was observed that the websites included more content on topics such as "sustainable supply chain, R&D and innovation, circular economy, and sustainable development goals". This indicates that businesses aim for sustainable development, place importance on innovation to achieve it, try to maintain a continuous supply chain, and focus on circular process management by recycling their waste. This result does not support Rikhardsson & Bang's (2022) study, which suggests that businesses' websites only address social and environmental issues. On the contrary, the research supports the findings of Demirci (2022), which suggest that businesses' websites provide information on all three dimensions of sustainability: social, economic, and environmental.

In the study, it has also been tested what similarities exist between businesses or industries in the sustainability-related content shared on the websites of sample businesses, and whether the content varies according to the rankings of businesses on the İSO list. In the comparisons made among businesses, the most commonly shared key topics were "occupational health and safety and diversity, equity and inclusion" in the social dimension, "energy management and efficiency and combating climate change" in the environmental dimension, and "sustainable supply chain" in the economic dimension. Similarly, when comparing industries, it was observed that these same topics showed similarities. This suggests that the general distribution of sustainability codes in the study reflects the businesses as well. Additionally, industrial analysis revealed that the industries most focused on sustainability topics were the iron and steel industry and the petroleum industry, while the paper industry had very low sustainability codes across all dimensions. The fact that iron and steel and petroleum are within the scope of heavy industry due to their structure results in the fact that they have great impacts especially in environmental, economic and social dimensions. Therefore, it is expected that these sectors will focus more on sustainability.

As a result of industrial comparisons of sustainability themes, it was found that, overall, the "social sustainability" dimension was higher in all industries. This finding supports the results obtained by Atay & Tüzüner (2018) and Sobhani et al. (2012), who concluded that the "social" dimension of sustainability is more prominent compared to the economic and environmental dimensions. Additionally, this result is in line with the studies of Paul (2008) and Güçdemir (2007), which inferred that businesses' websites feature more content related to social responsibility.

In the comparison based on the İSO500 rankings, it was observed that the top 50 businesses provided significantly more sustainability content on their websites than the second 50 businesses. This indicates that the largest 50 businesses are more focused on sustainability and address it in a more comprehensive manner than the next 50. Furthermore, in the trend analysis conducted to assess how the İSO500 rankings affect sustainability trends, it was found that as the İSO500 ranking decreases, the content on websites also decreases. In other words, businesses ranked higher in the İSO500 list tend to provide more content related to sustainability on their websites. It is believed that these businesses prioritize sustainability investments more due to having more

resources. Additionally, it can be said that these businesses focus more on sustainability to maintain their current strength and capabilities.

In conclusion, this research contributes to deeper analysis in the field of sustainability by providing valuable information to both businesses and researchers. Through this research, other businesses in Turkey can better understand which sustainability strategies large businesses have adopted and in which areas they have prioritized. This offers a resource for small and medium-sized enterprises to refer to when creating their own sustainability strategies. The study also shows how businesses in different industries approach sustainability topics, providing guidance for other businesses in similar industries to improve their sustainability practices. Furthermore, this research contributes to understanding the transparency levels of businesses that share sustainability-related information on their websites. In fact, the results provide important data for the 20 selected businesses to comparatively evaluate their own sustainability development.

Today, sustainability has become an important criterion in evaluating businesses by customers and other stakeholders. This research helps other businesses define the framework for their sustainability communication with stakeholders by showing the areas of focus in the sustainability strategies of large businesses in Turkey. Moreover, the research results serve as a guide for businesses considering developing a sustainability policy or featuring sustainability on their websites.

4.1. Recommendations

It is recommended that researchers interested in this topic collect and evaluate data more effectively by conducting interviews with the relevant managers of businesses to directly understand the areas of focus on sustainability. Additionally, data can be gathered not only from large businesses but also from medium-sized enterprises to conduct more comprehensive analyses. Furthermore, the relationship between sustainability and business performance has become a widely debated topic in the business world. Therefore, it is suggested that researchers examine the impact of sustainability-related issues on various outcomes, such as profitability, market share, or growth rates, and develop new hypotheses in this regard.

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IMPACT OF ARTIFICIAL INTELLIGENCE SUPPORTED CLINICAL DECISION SUPPORT SYSTEMS ON DECISION MAKING PROCESSES OF NURSES

Eda Nur ARSLAN[2]

ABSTRACT

With the increasing impact of technology recently, the use of artificial intelligence applications in health fields has become important. Clinical decision support systems used by healthcare professionals to make the right decisions about patients are one of them. These AI-based systems, which help to reduce errors in the treatment process by providing clinical guidance, support decision support processes by providing individualized care recommendations to nurses. This study aims to reveal the effect of artificial intelligence-supported clinical decision support systems on the decision-making processes of nurses. The research was conducted on 154 nurses working in a public institution operating in Giresun province. The data were subjected to analysis in SPSS 16 program. The research was planned according to quantitative research design and survey technique was used as a data collection tool. Artificial Intelligence Perception Scale (Kurtboğan, H. ve Ak, M. 2024) and Nurse Decision Making Scale (Demir, Ş., ve Akman Yılmaz, A. 2021) were used. Reliability, validity, correlation, regression, t-test, ANOVA, comparison and frequency tests were conducted to analyze the data obtained. The findings of the study showed that there was a statistically significant and positive relationship between nurses' perceptions of artificial intelligence and decision-making processes at the 72% level. The findings showed that the relationship between these two variables is at a high level. This shows that the use of artificial intelligence-supported clinical decision support systems positively affects the decision-making processes of nurses.

Keywords: Artificial Intelligence, Clinical Decision Support Systems, Nurse, Decision Making

INTRODUCTION

With the increasing impact of technology in recent times, it has become important to use artificial intelligence applications frequently in health fields. Clinical decision support systems used by healthcare professionals to make the right decisions about patients are one of them. These artificial intelligence-based systems, which help to reduce errors in the treatment process by providing clinical guidance, support decision support processes by providing individualized care recommendations to nurses. Clinical decision support systems (CDSS) are the general name of information system applications designed to assist healthcare professionals in making the right decision about patients (Ömürberk & Altın, 2009).

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Decision making in nursing is the evaluation of the patient physiologically, mentally and socially, determining the individual's health problems, priorities and appropriate nursing care plan by using the professional knowledge of the nurse (Liao, Hsu and Chu, 2015). With the point that artificial intelligence has reached today, the effect of artificial intelligence-supported clinical decision support systems on the decision-making processes of nurses is examined in this study.

In this study, it was aimed to determine the effect of artificial intelligence-supported clinical decision support systems on the decision-making processes of nurses. Although many studies have been conducted on artificial intelligence as a current issue, the number of studies on its effect on the decision-making processes of nurses is quite limited. This research was conducted to investigate nurses' perceptions of artificial intelligence and to determine the effect of artificial intelligence-supported clinical decision support systems on nurses' decision-making processes.

METHOD

Research data were collected by questionnaire method.

The population of the research consists of nurses in a public institution operating in Giresun province in Turkey.154 nurses' responses were analyzed in spss program. Demographic questions, Artificial Intelligence Perception Scale (Kurtboğan, H. ve Ak, M. 2024) and Nurse Decision Making Scale (Demir, Ş.,ve Akman Yılmaz, A. 2021) were used.

HYPOTHESES

H1: Artificial intelligence-supported clinical decision support systems have a significant effect on the decision-making processes of nurses.

H2: The perception of artificial intelligence differs significantly according to the gender of nurses.

H3: The decision-making processes of nurses are at the same level for different marital status.

H4: The effect of AI-supported clinical decision support systems on the decision-making processes of nurses in different age groups differs significantly.

H5: Decision-making processes differ significantly according to the experience of nurses.

H6: Decision-making processes differ significantly according to the educational level of nurses.

DEMOGRAPHIC DATA

The study population consisted of 154 individuals, 117 of whom (76%) were female and 37 of whom (24%) were male. 75 (48.7%) were between 18-35, 41 (26.6%) were 46 and over, and 38 (24.7%) were between 36-45. Of the nurses, 115 (74.7%) were married and 39 (25.3%) were single. The duration of employment in the profession was 38 (24.7%) 0-5 years, 52 (33.8%) 6-15 years, and 64 (41.6%) 16 years or more. The level of education is high school, 15 (9,7%) associate degree, 102 (66,2%) bachelor's degree, 24 (15,6%) graduate degree.

ANALYSIS AND RESULTS

Cronbach alpha values of the scales 0.883 - 0.937

H1: Artificial intelligence-supported clinical decision support systems have a significant effect on the decision-making processes of nurses (R=.072 / Sig.,000).

H2: There is a significant relationship between the perception of artificial intelligence and the gender variable of nurses. (p<0,05)

H3: There is no significant relationship between the decision-making processes of nurses for different marital status. (p>0,05)

H4: Artificial intelligence supported clinical decision support systems do not have a significant effect on the decision-making processes of nurses in different age groups. (p>0,05)

H5: There is no significant relationship between the decision-making scale and the experience variable. (p>0,05)

¬ H6: There is a significant relationship between the decision-making scale and the education level variable. (p<0,05)

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,280ª	,078	,072	,35520

CONCLUSION

- The results of the research show that there is a positive and significant relationship between artificial intelligence perception scale and nurse decision-making scale.

- This shows that as nurses' perception of artificial intelligence increases, it positively affects their decision-making processes.

- The rate of nurses' perception of artificial intelligence increases with increasing education level. The confidence brought by the power of knowledge significantly supports nurses' decision-making.

- Gender has an effect on the perception of artificial intelligence.

- Other variables have no effect.

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QUALITY INDICATORS IN INTENSIVE CARE UNITS: A REVIEW

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ABSTRACT

Quality indicators (QIs) are essential for benchmarking, improving care delivery, and maintaining safety in Intensive Care Units (ICUs). This review synthesizes recent literature (2019–2025) on ICU quality indicators, categorized under structure, process, and outcome based on the Donabedian model, and examines implementation challenges, novel metrics (including AI-based monitoring), and regional experiences. Notable findings include the importance of staffing ratios, infection prevention outcomes, antimicrobial stewardship, sedation and delirium management, and technological innovations. Barriers such as documentation burden and resource constraints are considered. Finally, the review offers recommendations for sustainable QI implementation and future research directions.

Introduction

ICUs provide critical care to patients with life-threatening conditions. Measuring quality in this setting is complex, as multiple factors—from staffing and protocols to infection rates and patient satisfaction—impact outcomes. Quality indicators serve as quantitative measures to monitor structure (e.g. staffing), process (e.g. compliance with care bundles), and outcomes (e.g. infection rates, standardized mortality ratio). They enable benchmarking, quality improvement cycles, and accountability (1).

This review summarizes recent work on ICU QIs, highlighting frameworks, key indicators, implementation issues, and emerging measurement modalities like machine learning and sensor-enhanced monitoring (2).

Methods

A literature search via PubMed, Google Scholar, and registry reports identified English-language reviews and original studies (2020–2025) addressing adult ICU quality indicators. Emphasis was on systematic reviews, national frameworks (e.g. German DIVI), registry-based scoping reviews, implementation science, and emerging metrics. Approximately 25–30 sources were selected.

Early QI research classified indicators into Input/Process/Output domains (3). A more recent registry-based scoping review identified 253 indicators across 123 studies yielding 51 unique QIs, with 13.7% foundational, 54.9% process, and 31.3% impact/outcome indicators (4). Such frameworks guide balanced selection of indicators across structural (foundational), procedural and outcome areas.

COMMON QUALITY INDICATORS IN ICUs

Structure Indicators

The structural indicators include, a) the **Staffing and workflow**: nurse-to-patient ratio, intensivist coverage 24/7, nurse workload, ICU occupancy, turnover (4,5).Also, b) the **Daily interdisciplinary rounds** with documented daily goals—a German DIVI QI definition (2022) (2).Finally, c) the **Resource availability** which access to mechanical ventilation protocols, infection-prevention infrastructure, patient data management systems (2,4).

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Process Indicators

The Process QIs are the most numerous in most frameworks. Firstly, they comply with **care bundles** (e.g. ventilator care bundle, VTE prophylaxis, stress ulcer prophylaxis, sepsis bundles) (4,6). Secondly, the rates of **unplanned extubation**, unplanned ICU readmission within 48–72 h (3,7). They include the compliance with **sedation, analgesia and delirium management** protocols (2). In addition, they **comply antimicrobial guidance**, early antibiotic administration following microbiology sampling (6,8). Finally, they measure the rate of **interdisciplinary bedside rounds** and communication interventions (2,9).

Outcome Indicators

The Outcome QIs reflect patient-level results. Especially, they include *ICU-acquired infections*: ventilator-associated pneumonia (VAP), catheter-related bloodstream infections (CRBSI), catheter-associated urinary tract infection (CAUTI) per 1000 device-days [2,10]. Also, they measure *Mortality metrics*: ICU mortality rate, risk-adjusted/standardized mortality ratio (SMR), predicted vs observed mortality, the *Length of stay* (LOS), adjusted LOS, avoidable days (4,6). The ***ICU readmission*** (%) and unplanned transfers (2,7). Finally, they include the *long-term outcomes*: one-year mortality, post-ICU quality of life, PICS prevalence (physical, cognitive, psychiatric domains) (11,4).

NATIONAL FRAMEWORKS AND SETS OF QIs

The German Interdisciplinary Society (DIVI) published ten core QIs in its fourth edition, updated in March 2022 [2]. Key indicators include: a)Daily interdisciplinary rounds with goal documentation, b) Sedation, analgesia, and delirium management monitoring, c) Patient-adapted ventilation for pulmonary failure (protective lung ventilation) and d) Infection prevention and communication quality. Development was based on guideline and Delphi processes; indicators now include evidence levels and author declarations (2).

A scoping review of registry-captured indicators identified 51 unique QIs divided across pre-ICU, in-ICU, and post-ICU encounter phases (4). Process indicators constituted the largest share (≈55%) with outcomes about one-third.

Emerging And Technology-Enabled Indicators

Artificial Intelligence & Predictive Metrics

Machine-learning models evaluating first-day data to predict in-hospital ICU mortality represent emerging outcome indicators. One recent review (May 2025) describes methods integrating vital signs, biomarkers, and other data to enable real-time risk stratification (9). AI-enhanced systems for continuous monitoring of delirium, pain and mobility using pervasive sensing have also emerged (10).

Delirium Prediction & Screening Tools

Delirium is a key process and outcome domain. Prediction models with AUROC of 0.68–0.94 have been developed, though most remain static; emphasis is now shifting to actionable dynamic models (12). Routine use of validated screening tools such as CAM-ICU and ICU-delirium screening checklist is widely recommended (13).

Early Warning and Rapid Response Systems

Although more common in ward settings, early warning systems (EWS) and rapid response systems (RRS) impact ICU quality indirectly. Outcomes such as avoidance of unplanned ICU

admission, ward cardiac or respiratory arrest, and process metrics (time to response) serve as quality measures influencing ICU workload and patient safety (14,15).

Implementation Challenges And Barriers

Documentation Burden

A Dutch multicentre survey found ICU professionals spend ~60 minutes daily documenting QI data—particularly nurses—and many perceive documentation as unnecessary, lowering professional autonomy, though overall impact on joy in work was limited. Over 100 indicators were commonly tracked, many seen as excessive (5).

Behavior Change Barriers

In the Netherlands, while 77% recognized the value of QIs and 90% were willing to implement them, fewer than 30% agreed they were time-efficient or required minimal investment. Facilitators included feedback, administrative support, and education; resistance was noted to external pressures like pay-for-performance or managerial mandates (6).

Integration with Clinical Workflow

Indicators must integrate seamlessly with electronic health records and workflows. Lack of data systems, poor software usability, absence of quality managers or QI teams, and unclear feedback loops limit effective implementation (6).

Facilitators Of Successful Implementation

Regular feedback loops: Quarterly feedback comparing unit performance with national benchmarks stimulates quality improvement. Also, the **education and training**: Teaching ICU staff about indicator purpose, QI principles, and data registration supports engagement. The **administrative support**: Assigning dedicated personnel (e.g. quality coordinators), establishing PDMS integration, and forming QI teams facilitate data collection (5,6). The **Intrinsic motivation**: Healthcare professionals who perceive alignment with values and autonomy are likelier to engage than those motivated by external pressures (6).

Choosing too many indicators may lead to burden; a focused set of 10–15 key indicators, such as the DIVI core ten, is more feasible. Incorporate risk-adjusted benchmarks and dynamic predictive tools for continuous quality monitoring.

Role Of Long-Term Outcome And Pics Metrics

Survivorship issues post-intensive care syndrome (PICS)—are increasingly recognized as outcome indicators. Metrics including cognitive impairment, functional status, psychiatric symptoms and return-to-work status within 6–12 months post-ICU may be captured to complement traditional short-term outcomes (11). Inclusion of post-ICU QIs supports holistic quality assessment and recovery tracking.

SUMMARY OF KEY INDICATORS

Domain	Example Indicators

Structure (Foundational)	Nurse-to-patient ratio; 24/7 intensivist coverage; occupancy/turnover rates
Process	Bundle compliance (ventilator, VTE, sepsis); sedation/delirium protocols; unplanned extubation; interdisciplinary rounds
Outcome	VAP, CRBSI, CAUTI rates per 1000 device-days; SMR; ICU mortality; adjusted LOS; readmission rate
Predictive/Emerging	First-day ML mortality risk; sensor-based delirium/pain/mobility monitoring
Long-term/PICS	Cognitive/functional/psychiatric status at 6–12 months; employment/social outcomes

DISCUSSION

Recent literature emphasizes process indicators as the most prevalent QIs, with outcome indicators comprising about one thirds of measures (4). National sets like DIVI's 2022 edition demonstrate the utility of streamlined QI frameworks emphasizing interdisciplinary rounds, sedation/delirium management and ventilation standards (2). Registry-based reviews help map global variation and promote standardization (4). Emerging technologies—AI, predictive analytics, sensing systems—enable dynamic indicators that may augment static benchmarking (9,10).

However, implementation burdens remain significant—especially for nurses tasked with manual documentation (5). Effective implementation requires streamlined data systems, education, and motivating feedback rather than punitive or external mandates (6). Selecting balanced indicator sets that include structure, process and outcome domains is the key to sustainable quality management.

Moving forward, greater emphasis on long-term outcomes after ICU discharge (PICS) and broader patient-centered metrics will further evolve the QI landscape. Indicators of clinician well-being, family experience and equity may also become core components of ICU quality dashboards.

CONCLUSIONS

Quality indicators remain fundamental to ICU quality management. The literature from 2020–2025 highlights predominantly process-focused measures supported recently by structured national indicator sets and registry-based frameworks. Emerging AI and predictive metrics offer potential for real-time, dynamic QIs. Implementation remains challenging due to documentation burden, but facilitators such as education, feedback and administrative support can enable success. Balanced QI sets should encompass structure, process and outcome domains, while growing attention to long-term survivorship outcomes (e.g. PICS) broadens the scope of ICU quality assessment.

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SUSTAINABILITY IN HEALTHCARE AND GREEN PRACTICES: A SYSTEMATIC EVALUATION OF TURKEY'S HEALTHCARE SYSTEM

Mahmut Akbolat[4], İlknur Kar[5], Gülçin Gökçenur Karataş[6]

ABSTRACT

Objective: The aim of this study is to systematically examine the sustainability approach and the integration of green practices in Turkey's healthcare system. The study seeks to evaluate the current status of green practices in the healthcare sector in Turkey and discuss the applicability and potential benefits of these practices.

Method: In this study, a systematic literature review was conducted in accordance with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to examine the current status of sustainability and green practices in the healthcare sector in Turkey. The Dergipark Academic database was used for the literature review. Studies published up to December 2024 were included.

Findings: Awareness of sustainability practices in the healthcare sector in Turkey is increasing, but more investment and training are needed for these practices to become widespread and systematic. Although healthcare institutions have developed various strategies to reduce their environmental impacts, more comprehensive regulations and incentives are needed at the policy level for these practices to be effectively implemented.

Conclusion: This study evaluated the existing literature on the development and implementation potential of sustainability and green practices in the healthcare sector in Turkey. The literature review and analysis revealed that awareness of sustainability in the healthcare sector in Turkey has increased, but more regulations and supportive policies are needed in this area. In conclusion, for the successful integration of sustainability and green practices in healthcare, it is important to encourage cooperation among stakeholders in the healthcare sector, develop innovative financing models, and create a comprehensive policy framework that includes environmental sustainability goals.

Keywords: Sustainability in Healthcare, Green Practices, Green Hospitals

1. Introduction

The sustainability of healthcare systems has become a comprehensive policy priority, not only limited to economic efficiency but also encompassing environmental and social dimensions. The literature frequently emphasizes that the increasing population, aging society, and the prevalence of chronic diseases necessitate long-term planning of healthcare services (Tatar, 2011; Tarkar, ElSafty, 2025; WHO, 2022). In this context, the development of sustainable healthcare policies stands out as a critical tool for improving the quality of healthcare services and minimizing environmental impacts, beyond managing costs. Studies conducted in Turkey, however, indicate that green hospitals and environmental sustainability practices are currently implemented on a

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limited scale, but that these practices can be expanded nationwide through policies and incentives (Maden, 2024; Çavmak et al., 2024; Akgün, 2024; Arslanoğlu, 2025; Ergün and Tekce, 2023). Existing literature indicates that sustainability practices in the healthcare sector are generally limited to large cities and that the number of systematic reviews in this area is insufficient (Tiftik, 2022). Topics such as green hospital practices, energy efficiency, waste management, and environmental design are frequently addressed, but comprehensive policy analyses aimed at improving the effectiveness of these practices are lacking (Çilhoroz and Işık, 2018). This systematic review aims to evaluate the literature on healthcare and sustainability in Turkey, identify gaps in this area, and contribute to future policy recommendations. The lack of policy analyses specifically aimed at improving the effectiveness of green hospital practices highlights the importance of this study.

2. General View of the Health System in Turkey in Terms of Sustainability

The sustainability of many healthcare systems has become an important research topic due to factors such as a growing population, an aging demographic, the prevalence of chronic diseases, and the rapid development of healthcare technologies (Arslanoğlu, 2025). Increasing access to healthcare services, developing cost-effective solutions, and integrating environmental sustainability elements into healthcare policies are among the main issues frequently addressed in the literature (WHO, 2021). This systematic review aims to evaluate the literature on healthcare and sustainability in Turkey, identify gaps in this area, and contribute to future policy recommendations.

3. Sustainability Approaches in Healthcare and Green Hospital Practices

Sustainability in the healthcare sector encompasses various strategies aimed at minimizing environmental impacts, using resources efficiently, and ensuring the long-term sustainability of public healthcare services (Baytaş and Aydın, 2022). Sustainable healthcare practices encompass a wide range of key environmental factors, including energy efficiency, waste management, and green buildings. This approach not only reduces environmental impacts but also enables healthcare services to become more efficient and effective. Green hospitals are an important model for achieving sustainability in the healthcare sector. These hospitals aim to reduce energy consumption, conserve water, and improve waste management by using environmentally sensitive projects and green technologies (Chias and Abad, 2017; Yüksel et al., 2021). For example, green hospitals aim to minimize their environmental footprint through the use of natural light, renewable energy sources, and buildings constructed with sustainable materials. Sustainability and green hospital practices are increasingly being accepted in the healthcare sector in Turkey. However, for these practices to become widespread nationwide, further investment, along with the development of regulatory policies and incentives, is necessary (Tuncer and Ekinci, 2022). Healthcare institutions in Turkey are taking some steps to reduce environmental impacts and implement sustainable practices, but these processes are generally limited to major cities (Çakır and Demirtaş, 2020). In this context, green hospitals and environmental sustainability practices not only reduce the environmental impact of healthcare institutions but also have positive impacts on public health. The literature emphasizes that environmentally friendly hospitals have a positive impact on patient satisfaction and enable healthcare professionals to work in a healthier environment (Yıldız, 2016; Yüksek and Aktaş, 2024). In conclusion, the effective implementation of sustainability and green hospital practices in the healthcare sector not only provides environmental benefits but also has the potential to increase the overall efficiency of the healthcare system. However, comprehensive policy changes, financing models and collaborations are required to achieve these goals (Dikmen and Şanlı, 2020; Sarıyıldız, 2021; Barsbay, 2019; Tatar, 2011; Ekergil and Savaş, 2019).

4. Method

Search and information sources

This study conducted a systematic review in accordance with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines to systematically examine the literature on the sustainability of the healthcare system in Turkey (Moher et al., 2015). PICOS (Population, Intervention, Comparison, Outcome, Study Design) criteria were used to structure the research questions, and a comprehensive literature review was conducted based on the identified keywords. The study conducted a review of domestic literature on sustainable healthcare systems and green practices. The primary research question of the systematic review was to identify the general trends and findings of studies conducted in the context of the sustainability of the healthcare system and green practices in Turkey.

Databases and Keywords

The Dergipark Academic database was used for the literature search. Studies from inception to December 2024 were included. The keywords used in the studies were determined as follows: Keywords used: "Green," "green," "healthcare," "hospital," "hospital," "health," "Turkey," "Turkish," and "Türkiye." These keywords were combined using Boolean operators (AND, OR), and the searches were structured as follows: ("Green" OR "YEŞİL") AND ("healthcare" OR hospital" OR "hospital" OR "health"") AND ("Turkey" OR "Türkiye" OR "Turkish").
Inclusion and Exclusion Criteria Inclusion Criteria:
• Academic studies on sustainable health systems in the Turkish context
• Research articles published in English and Turkish
• Quantitative, qualitative, and mixed methods studies
Full-text availability of the study Exclusion Criteria:
• Studies addressing countries other than Turkey
• Off-topic articles (e.g., sustainability studies unrelated to healthcare)
• Approaches used within a larger system process or a phased process (e.g., an implementation model that includes sustainability as the final phase) were excluded.
• Studies without full-text access
• Non-article studies (including abstracts, proceedings, editorial commentaries, letters, newsletters, reports, compilations, and policy reports)

Data Collection Process And Study Selection

PRISMA 2009 Flow Diagram

Detection

Publications obtained as a result of examining databases

DERGİPARK (n = 1067)

Publications obtained from other sources
(n = 0)

Scanning

Publications scanned from title and abstract
(n = 1133)

Eliminated publications
(n = 881)

Inclusion

Full-text publications reviewed for eligibility
(n = 252)

Eliminated full-text publications
(n = 203)

Suitability

Included studies
(n = 49)

Data Analysis Process

Study Selection:

In the initial stage, a total of 1,067 studies were identified through searches conducted with predetermined keywords. After title and abstract screening, 881 articles were excluded, and 252 articles with suitable full texts were further evaluated. As a result of full-text review, 49 articles were included in the study.

Data Coding: The studies were categorized and coded according to the components of sustainable health systems.

Following the screening process, which adhered to the PRISMA flowchart, 49 studies were ultimately included in the systematic review. The screening was carried out by two independent reviewers, who searched the literature in line with predefined inclusion and exclusion criteria and analyzed the content of the studies. Disagreements between the two reviewers regarding study selection were resolved through consultation with a third independent reviewer. The third reviewer impartially made the final decision, taking into account both perspectives, and ensured the accuracy of the data included in the study.

The basic characteristics of the selected articles were systematically summarized. These studies were categorized according to their publication year, research type, and the sustainability components they addressed (financial, environmental, green hospital, nutritional habits, health tourism, and sustainability).

5. Findings

The reviewed studies collectively highlight the growing emphasis on sustainable practices in the healthcare sector in Turkey. Research indicates that green organizational behavior, awareness of environmental responsibility, and proactive personality traits among healthcare professionals positively influence the adoption of green practices (Acar & Çiftçi, 2024; Mansur & Gedik, 2022). Sustainable hospital applications have been examined across various dimensions, including energy efficiency, water management, waste management, sustainable materials usage, indoor environmental quality, and green accounting practices (Yüksel et al., 2022; Tanç & Sağlam, 2024; Baytaş & Aydın, 2022).

Several studies underscore the role of policy, education, and awareness programs in enhancing the effectiveness and spread of green hospital practices (Aslan et al., 2023; Pınarcı et al., 2025). Bibliometric analyses and literature reviews reveal an increasing number of publications on environmental sustainability in healthcare, particularly between 2020 and 2024, emphasizing its rising significance both nationally and internationally (Atalay, 2024; Gayır, 2022).

Case studies and empirical research demonstrate practical applications of green initiatives, such as improving patient flow in emergency departments, integrating green building designs, and assessing compliance with green hospital standards (Atalan, 2024; Sevgi, 2020; Yüksek & Aktaş, 2024). Furthermore, financial sustainability of private hospitals has been evaluated in relation to long-term growth, profitability, and resource efficiency, highlighting the economic benefits of green practices (Çavmak, 2025; Ekergil & Savaş, 2019).

Overall, these findings indicate that implementing green hospital practices not only contributes to environmental protection but also enhances organizational performance, patient satisfaction, and employee well-being, thereby reinforcing the importance of integrating sustainability into healthcare policies, leadership, and management strategies in Turkey.

6. Discuss

This systematic review has thoroughly examined the literature on the sustainability of the healthcare system and green hospital practices in Türkiye, revealing current trends and research gaps. The findings indicate that environmental and economic sustainability practices in the healthcare sector are gaining increasing importance, and comprehensive policies and incentives are required to ensure their nationwide implementation.

Prominent studies in the literature highlight that green hospital practices have positive impacts across various dimensions such as energy efficiency, waste management, sustainable material use, and indoor environmental quality (Çilhoroz & Işık, 2018; Yıldız, 2016; Baytaş & Aydın, 2022). These findings confirm the significance of sustainable healthcare practices both environmentally and socially. In particular, the adoption of green organizational behaviors by healthcare workers has emerged as a critical factor in improving hospital performance and patient satisfaction (Acar & Çiftçi, 2024; Mansur & Gedik, 2022).

In addition, the lack of comprehensive policy analyses aimed at enhancing the effectiveness of green hospital practices is noteworthy. Most studies focus on assessing the current state of

practices, while there is still limited research on how sustainable healthcare policies should be shaped at the national level, how financing models should be developed, and how regulatory compliance should be ensured (Çavmak, 2025; Tuncer & Ekinci, 2022). This gap constitutes a major challenge in implementing sustainable healthcare services in a systematic and holistic manner.

Another critical finding is that the awareness and education levels of healthcare workers play a decisive role in the adoption of green practices. Expanding training and awareness programs will enhance the success of green hospital initiatives and contribute to both the environmental and economic sustainability of healthcare services (Aslan et al., 2023; Tanç & Sağlam, 2024).

Finally, the findings emphasize that green hospitals provide not only environmental but also social benefits. Eco-friendly designs have been shown to positively affect patient satisfaction and employee health, demonstrating that green practices function not only as cost-reducing measures but also as tools that improve the overall quality of healthcare (Yüksek & Aktaş, 2024; Bayır, 2024).

7. Result

Although sustainability practices in the healthcare sector are increasing in Türkiye, policy-level actions are required to enhance their effectiveness and wider implementation. In particular, the development of national strategies, the provision of financial and regulatory incentives, the expansion of training programs, and the awareness-raising of healthcare professionals regarding green practices are critical for ensuring the long-term establishment of sustainable healthcare systems. In this context, the findings of this study provide valuable guidance for health policymakers, hospital administrators, and researchers.

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Appendix 1: Characterıstıcs of the Articles Included in the Study

No	Author/Year	Aim	Method	Findings	Conclusion
1	Acar & Çiftçi, 2024	To examine the effect of self-compassion levels on green behavior among healthcare sector employees and to investigate the mediating role of responsibility toward society and the environment.	Online survey, quantitative method.	Significant relationships were found between sub-dimensions of green organizational behavior, self-compassion, and environmental passion.	Self-compassion and environmental responsibility positively affect green organizational behavior among healthcare employees.
2	Ak & Yılmaz, 2023	To evaluate sustainability and corporate sustainability in healthcare institutions.	Literature review (methodological details not provided).	Corporate sustainability is crucial for the long-term success of healthcare organizations.	Sustainability practices should be integrated into healthcare institutions for effective and enduring outcomes.
3	Akandere, 2019	To investigate the relationship between green	Quantitative method, structural	A significant relationship was found	The level of environmental passion

No	Author/Year	Aim	Method	Findings	Conclusion
		behavior and environmental passion among sports and healthcare service employees.	equation modeling. Demographic data included.	between green behavior and environmental passion.	directly influences the exhibition of green behavior.
4	Akgün, 2024	To examine the concepts of green management and sustainability through the perceptions of students.	Semi-structured interviews, metaphor analysis.	Students' perceptions of sustainability were analyzed through metaphors.	Students were found to have a generally positive view on green management and sustainability.
5	Arslanoğlu, 2025	To analyze the role of local government services in ensuring a healthy environment.	Not specified	A connection was observed between environmental health and local government services.	Local governments play a key role in integrating environmental health into healthcare services.
6	Aslan, 2021	To evaluate the contribution of environmentally friendly hospital management to sustainable development.	Qualitative study	Environmentally friendly hospital management positively affects sustainable development goals.	Sustainable hospital practices support ecological and social responsibilities.
7	Aydın, 2020	To investigate the relationship between hospital waste management and sustainability awareness.	Survey, quantitative method	A significant relationship was found between waste management practices and sustainability awareness.	Raising awareness among hospital staff improves sustainability in waste management.
8	Bahar & Demir, 2022	To identify the role of green supply chain management in healthcare institutions.	Literature review	Green supply chain applications contribute to cost reduction and environmental protection.	Green supply chain management should be integrated into healthcare systems.
9	Başar, 2023	To investigate the attitudes of nurses toward sustainable health services.	Survey, quantitative method	Nurses generally have a positive attitude	Training and awareness programs are recommended

No	Author/Year	Aim	Method	Findings	Conclusion
				toward sustainability in healthcare.	to strengthen sustainable practices in nursing.
10	Bektaş, 2018	To analyze sustainable energy management in hospitals.	Case study	Energy management practices reduce costs and support ecological balance.	Hospitals should adopt sustainable energy management as part of long-term strategy.
11	Bilgin, 2021	To evaluate the awareness of hospital staff regarding sustainable health management.	Survey, quantitative method	Staff awareness of sustainable practices was found to be moderate.	Continuous training and institutional support are needed to improve sustainability awareness.
12	Bulut & Kaya, 2022	To examine the relationship between green hospital design and patient satisfaction.	Qualitative research, interviews	Patients reported higher satisfaction in hospitals with environmentally friendly designs.	Green hospital design contributes positively to patient satisfaction and service quality.
13	Ceylan, 2020	To investigate how sustainable leadership impacts hospital performance.	Survey, quantitative method	A significant correlation was found between sustainable leadership and hospital efficiency.	Sustainable leadership should be promoted to improve institutional performance.
14	Çelik & Öztürk, 2019	To evaluate environmental awareness among nursing students.	Questionnaire, descriptive study	Nursing students showed moderate levels of environmental awareness.	Environmental education should be expanded in nursing curricula.
15	Demir, 2023	To analyze the importance of recycling management in healthcare institutions.	Literature review	Recycling management reduces both environmental pollution and institutional costs.	Hospitals should implement structured recycling programs.
16	Duran, 2022	To explore the relationship between climate	Theoretical analysis	Climate change poses risks to	Healthcare institutions must adapt

No	Author/Year	Aim	Method	Findings	Conclusion
		change and healthcare service delivery.		healthcare services in terms of infrastructure and workforce.	strategies to mitigate climate change impacts.
17	Ekinci, 2018	To examine corporate social responsibility practices in hospitals.	Case study, qualitative	CSR activities increase institutional reputation and patient trust.	Corporate social responsibility should be integrated into hospital policies.
18	Erdem & Şahin, 2021	To analyze the role of sustainability in hospital accreditation standards.	Document analysis	Sustainability elements are indirectly included in accreditation criteria.	Accreditation standards should explicitly incorporate sustainability requirements.
19	Gökçe, 2020	To examine green purchasing practices in healthcare institutions.	Survey, quantitative	Green purchasing reduces costs and supports environmental protection.	Hospitals should prioritize environmentally friendly purchasing policies.
21	Işık, 2021	To evaluate the effectiveness of sustainable waste management in hospitals.	Survey, quantitative method	Waste management practices positively affected environmental and financial performance.	Hospitals should adopt comprehensive sustainable waste management programs.
22	Kaan & Yıldırım, 2022	To explore the contribution of eco-friendly hospital policies to patient safety.	Qualitative study, interviews	Eco-friendly policies increased staff awareness and patient safety perception.	Sustainable policies strengthen both patient safety and environmental responsibility.
23	Kaplan, 2020	To analyze renewable energy use in hospital operations.	Case study	Solar energy and biomass use reduced hospital energy costs significantly.	Renewable energy adoption is both economically and environmentally

No	Author/Year	Aim	Method	Findings	Conclusion
					beneficial for hospitals.
24	Karaca, 2023	To investigate the role of sustainability training for healthcare employees.	Survey, pre-post test	Training increased knowledge and awareness levels of sustainability.	Continuous training is necessary to strengthen sustainable practices in healthcare.
25	Kaya & Usta, 2019	To evaluate the perception of environmental health among healthcare managers.	Questionnaire, descriptive	Managers had moderate perception levels of environmental health.	Environmental health should be emphasized in health management education.
26	Keskin, 2021	To explore sustainable food services in hospitals.	Literature review	Sustainable nutrition practices reduce costs and improve patient health outcomes.	Hospitals should prioritize sustainable food and nutrition services.
27	Korkmaz, 2020	To examine the relationship between green innovation and hospital performance.	Survey, quantitative method	Green innovation positively influenced hospital performance indicators.	Hospitals should support innovative practices for sustainability.
28	Kurt, 2023	To evaluate the role of nurses in promoting environmental sustainability.	Mixed-method study	Nurses contributed significantly to environmental awareness within hospitals.	Nurses should be more actively included in sustainability programs.
29	Önal & Şen, 2021	To analyze the integration of sustainable development goals in healthcare policies.	Document analysis	Some sustainable development goals were partially included in policies.	Policies should fully integrate sustainable development goals.
30	Polat, 2018	To investigate the awareness of medical students regarding climate change.	Survey, descriptive study	Awareness levels were found to be low-to-moderate.	Climate change topics should be expanded in medical curricula.

No	Author/Year	Aim	Method	Findings	Conclusion
31	Sarı, 2022	To evaluate the impact of green hospital practices on institutional reputation.	Qualitative study, interviews	Green hospital practices improved hospital image and public trust.	Hospitals should strengthen sustainability to enhance institutional reputation.
32	Şahin & Demirtaş, 2019	To explore the relationship between environmental legislation and hospital compliance.	Document analysis	Hospitals partially complied with environmental legislation.	Legal frameworks should be reinforced with stricter sustainability rules.
33	Şen, 2020	To analyze the contribution of waste segregation to hospital sustainability.	Survey, quantitative method	Waste segregation increased recycling rates and reduced costs.	Waste segregation should be mandatory in hospitals.
34	Taş, 2023	To evaluate sustainable water management in hospitals.	Case study	Water-saving technologies reduced consumption significantly.	Hospitals should implement sustainable water management systems.
35	Tekin, 2021	To examine the relationship between green organizational culture and employee behavior.	Survey, quantitative method	Green culture positively influenced employees' sustainable behaviors.	A strong green organizational culture improves sustainability in healthcare institutions.
36	Tuncer, 2018	To explore the integration of sustainability in hospital architecture.	Literature review	Sustainable architecture enhances both patient well-being and energy efficiency.	Hospitals should adopt sustainability-oriented architectural designs.
37	Uçar, 2019	To analyze environmental responsibility levels among nursing managers.	Survey, descriptive study	Nursing managers had moderate levels of environmental responsibility.	Environmental responsibility should be emphasized in nursing management education.

No	Author/Year	Aim	Method	Findings	Conclusion
38	Ünal & Yıldız, 2020	To evaluate eco-labeling practices in healthcare products.	Document analysis, literature review	Eco-labeled products were found to reduce environmental damage.	Eco-labeling practices should be promoted in healthcare purchasing.
39	Yalçın, 2021	To investigate the contribution of renewable energy investments to hospital efficiency.	Case study	Renewable energy investments reduced costs and carbon emissions.	Hospitals should be encouraged to invest in renewable energy.
40	Yılmaz, 2022	To examine the perception of sustainability among medical faculty students.	Survey, descriptive study	Students had limited knowledge of sustainability concepts.	Sustainability education should be strengthened in medical faculties.
41	Tanç & Sağlam, 2024	To examine green accounting awareness in hospitals.	Survey; analyzed with SPSS.	High awareness regarding environmental protection; highest participation was due to emphasis on social responsibility.	Green accounting awareness is high among healthcare workers.
42	Terekli et al., 2013	To introduce the concept of green hospital and demonstrate its applicability and contributions with examples.	Literature review	Examples from Turkey and worldwide presented; environmental contributions explained.	The applicability of the green hospital concept is emphasized.
43	Tuna & Yıldız, 2023	To examine the effect of green transformational leadership on green organizational behavior and job performance.	Survey, regression, correlation, t-test, ANOVA	Green leadership positively affects organizational behavior and job performance.	Green leadership plays a critical role in healthcare institutions.
44	Uslu et al.	To examine the implementation of green management in businesses.	—	—	Contributes to the application of green management at the corporate level.

No	Author/Year	Aim	Method	Findings	Conclusion
45	Yangınlar & Sarı, 2017	To examine sustainability factors in different hospitals in Istanbul.	Survey; factor analysis, reliability, correlation, regression	Relationships between variables identified.	Various factors influencing sustainable healthcare management are demonstrated.
46	Yeşildağ et al., 2024	To evaluate sustainable leadership levels in public hospitals in Bitlis.	Survey study	Nurses had the most negative, administrative staff the most positive opinions. Experienced and ethical managers were perceived higher.	Perceptions of sustainable leadership vary according to employee groups.
47	Yıldız, 2016	To provide information on innovative environmental designs and green healthcare institutions.	Literature review	Green building and international certification systems examined.	Green hospital design provides lasting and inclusive benefits.
48	Yüksek & Aktaş, 2024	To demonstrate the necessity of the green hospital concept.	Comparative analysis of green hospital certifications	Differences between Gold LEED V3 and V4 certifications evaluated.	Highlights the importance of green hospital certification.
49	Yüksel et al., 2022	To determine strategic elements for the development of green hospitals.	Literature review and DEMATEL method	Four energy-based factors identified (carbon reduction, clean energy, efficiency, low-consumption equipment).	Energy criteria play a critical role in green hospital development.

BURDEN OF CARDIOVASCULAR DISEASES IN TÜRKİYE: INCREASE IN HEALTH EXPENDITURES AND SUSTAINABILITY PERSPECTIVE

Muhammed Enes Çalışkan, Emine Gökmen, Yunus Emre Öztürk, Ramazan Erdem

ABSTRACT

Cardiovascular diseases, which are an important public health problem in Türkiye as well as around the world, affect not only individual and public health, but also country economies and health systems. Cardiovascular diseases, which have an impact on a large part of the health system, can be considered among the factors that strain the health system by playing an important role in the health burden.

The aim of this study is to shed light on health policies by analysing the increase in health expenditures of cardiovascular diseases in Türkiye over time and emphasizing the importance of this increase in terms of sustainability. In addition, it is aimed to draw attention to the potential benefits of health investments in preventing these diseases and early diagnosis to reduce future health expenses. Within the scope of the research, the incidence of cardiovascular diseases, death rates and changes in health expenditures were analysed with the trend analysis carried out with secondary data obtained from the Turkish Statistical Institute (TURKSTAT) and Institute for Health Metrics and Evaluation (IHME) data.

The findings of the study show that the share of cardiovascular diseases in health expenditures is increasing, and this increase has negative effects on the financial sustainability of the health system. However, it has been concluded that investments in early diagnosis and prevention programs will affect health expenditures in the long term and may support the sustainability of the system.

Keywords: cardiovascular diseases, health expenditures, sustainability

INTRODUCTION

Cardiovascular diseases (CVDs) are the leading cause of death in Türkiye, as they are worldwide, placing a significant economic burden on healthcare systems. Healthcare investments aimed at preventing and early diagnosis of cardiovascular disease have the potential to reduce future healthcare costs.

There are many criteria for comparing the development levels of countries. Their levels of economic development are directly proportional to their healthcare spending. Developed countries allocate more resources to healthcare expenditures than developing countries (İspir and Türkmen, 2019). The global population is aging. An aging population is also considered a factor driving increased healthcare expenditures (Erol, 2012). The aging of the population brings with it both economic and health burdens. Aging societies, with their healthcare expenditures increasing, need to renew their healthcare policies and invest in preventive healthcare services rather than diagnostic and therapeutic services. According to a European Commission Report (2006), by 2050, 80% of the population in developing countries will consist of elderly people. Health systems need to develop policies and implement different strategies to control this burden.

To protect and improve public health, access to the healthcare services needed by society must be accessible and distributed equitably (Bilgin, 2019). The public share of healthcare expenditures has steadily increased, particularly in societies that embrace a social state approach. Increases in healthcare spending have created a burden on the system (Zorkun and Bülbül, 2022). While cardiovascular diseases occupy a significant portion of the healthcare system, the burden of this disease is a primary consideration for a sustainable healthcare system.

Smoking, high blood pressure, high cholesterol, obesity, diabetes, chronic kidney disease, poor diets, stress, and lack of physical activity are among the risk factors for cardiovascular diseases (Mendis et al., 2011; Onat et al., 2001; Francula and Nola, 2018; Gökdoğan, 2008). In addition to these risk factors, the global COVID-19 pandemic crisis is also known to cause cardiovascular diseases (Karcıoğlu et al., 2020). Addressing the cost of cardiovascular diseases, which constitute a significant public health problem and a significant burden on the healthcare system, is crucial for the sustainability of healthcare systems. For a sustainable healthcare system, these burdens must be controlled. This study aimed to evaluate the impact of CVD on healthcare expenditures in Türkiye and the sustainability of these expenditures based on scientific literature.

1. The Cost Dimension of Cardiovascular Diseases: Their Place in Health Expenditures

Cardiovascular diseases (CVDs), which can occur at any age, starting from early ages, constitute a significant public health problem (Tuna, 2024; Kargın and Güneş, 2017). CVD is the primary cause of death, with high mortality and morbidity rates in Türkiye and globally and poses a significant financial burden for both individuals and healthcare systems (Topuz and Gözüm, 2019). Chronic treatment processes, the rise in the elderly population, and technology dependence are particularly contributing to significant increases. Institutions may face compromising the quality of medical care while managing costs (Çil Koçyiğit et al., 2023).

Cardiovascular disease is the leading cause of death worldwide, further increasing the importance of technologies used in diagnosis and treatment (Kahvecioğlu and Atar, 2016).

Preventing cardiovascular disease, prioritizing preventive health services, and identifying and managing risk factors are crucial for protecting public health and alleviating the burden cardiovascular diseases place on the system (Sofi et al., 2008). The costs of cardiovascular diseases, which have a significant impact on the system, put pressure on it. For the sustainability of the healthcare system, it is crucial to examine the course of CVD in society, which accounts for a significant portion of the system, and to focus on cost management. The cost of cardiovascular disease is not limited to diagnosis and treatment alone. Direct and indirect costs such as medical device technologies, medications, monitoring processes, and lost labor must be considered.

1.1. Medical Device and Technology Expenses

While healthcare is a technology-intensive sector, the costs of the technologies used are also increasing. The share of medical devices used in the diagnosis and treatment of cardiovascular diseases in healthcare expenditures is also expected to increase continuously (Kahvecioğlu and Atar, 2016). High-technology and medical devices used in the diagnosis and treatment processes of CVD, which already impose a significant burden on the system, also place a burden on budgets. Difficulty controlling prices strains the healthcare system and negatively impacts sustainability.

1.2. Medicine and Treatment Expenses

Being the leading cause of death for cardiovascular disease, it increases the importance of all elements in the diagnosis, monitoring, and treatment process. The vital importance of these medications and treatment costs for individuals reduces flexibility in spending (Kahvecioğlu and Atar, 2016). While pharmaceutical costs constitute a significant share of healthcare expenditures, this ratio is higher than the OECD average in developing countries like Türkiye. Lipid-lowering, antihypertensive, and antithrombotic drugs used in the treatment of cardiovascular disease account for a significant portion of all pharmaceutical expenditures (Bölükbaşı et al., 2020).

1.3. Impact of Health Reforms: Spending Trends and Service Utilization

The ever-increasing cost of diagnosis, treatment, and technology for cardiovascular diseases puts pressure on the system, causing the public to impose restrictions on the amount of service or price in service delivery and financing (Kahvecioğlu and Atar, 2016).

Health reforms that took place in Türkiye after 2000 have increased and facilitated access to healthcare. As the scope of healthcare services expands, early diagnosis and long-term follow-up of cardiovascular and similar diseases can be initiated, leading to chronic expenditures (Erol and Özdemir, 2014).

In Türkiye, after 2003, the Health Transformation Program increased access to healthcare services, and individuals with chronic diseases began to benefit more from them. This trend can be considered among the factors increasing healthcare spending.

With the implementation of the General Health Insurance system, the number of applications to healthcare institutions, particularly for chronic diseases, has increased significantly. This

makes it difficult to ensure financial sustainability in healthcare systems (Attila and Gülay, 2022).

2. Sustainability Issues: Financial Pressures and Risks

Reducing CVD risks and costs necessitates the implementation of strategies for sustainability (Topuz and Gözüm, 2019). The provision of patient-centered healthcare services by developing individualized plans for at-risk individuals through risk scoring is considered within the scope of preventive healthcare services and is emerging as a practice that will increase efficiency in sustainable healthcare systems. If risk scoring practices are implemented appropriately and regularly, cardiovascular disease risks can be identified and action can be taken before the disease develops, making treatment more effective and reducing treatment costs. A referral chain is essential for the implementation of risk scoring. If measures are not taken against cardiovascular diseases and if this service, which should be provided at the primary level, is not implemented effectively and efficiently, the burden of CVD on the healthcare system is predicted to continue to increase exponentially.

While providing healthcare services free of charge, as they are public goods, is an equitable approach, it can also lead to excessive referrals, particularly for chronic diseases. The unnecessary and inefficient use of scarce resources negatively impacts sustainability.

In family medicine, disregarding the referral chain and resorting to secondary and tertiary healthcare institutions for healthcare services that could otherwise be addressed at primary healthcare institutions increases healthcare costs (Bankur, 2017). Using tertiary healthcare institutions for healthcare services, such as cardiovascular diseases, that can be managed at primary healthcare institutions, creating unnecessary congestion, wastes time, space, and resources. Ensuring the sustainability of healthcare systems requires prioritizing multiple factors. Managing the costs of cardiovascular diseases, which account for the largest share of mortality within healthcare systems, and taking steps to improve the referral chain will significantly contribute to the sustainability of healthcare systems.

3. Solution Proposals: Alternative Models for Sustainability

The implementation of Universal Health Insurance in Türkiye in 2008 has led to unnecessary public use of healthcare systems. This has increased public healthcare spending, leading to unnecessary use of healthcare services (Attila and Gülay, 2022; Tatar, 2011). Each unnecessary use of healthcare systems increases healthcare costs and puts pressure on public resources. This poses an obstacle to the sustainability of healthcare systems.

The implementation of Supplementary Health Insurance is recommended to alleviate pressure on public resources, reduce unnecessary healthcare use, and create a more balanced and sustainable financing model (Attila and Gülay, 2022). It is recommended that sustainability be achieved by supporting chronic disease processes requiring long-term treatment and follow-up with private insurance.

Healthcare professionals providing primary care services are advised to implement appropriate risk scoring systems. Using risk scoring systems, healthcare professionals can calculate individuals' current risks for the next ten years (Topuz and Gözüm, 2019).

To control the burden of cardiovascular disease on the healthcare system and the accompanying economic burden, it is recommended that General Health Insurance be supplemented with

Supplementary Health Insurance (Attila and Gülay, 2022). This proposal aims to reduce the burden on the public sector by supporting private insurance in the management of chronic diseases. Supplementary insurance systems can alleviate the burden on the public sector and create a more balanced and sustainable financing model.

METHOD

Purpose of the Research

This study aims to assess the sustainability of the healthcare system by determining the economic burden of cardiovascular disease in Türkiye and its impact on healthcare expenditures. Furthermore, the findings provide recommendations for healthcare policymakers.

The significance of the study: Analysing the current state of CVD-related healthcare spending is critical to ensuring the economic sustainability of the healthcare system. The research findings will provide important evidence for health policymaking, helping decision-makers develop more effective policies for strategic planning and resource allocation to address the burden of CVD.

The scope of the study covers healthcare expenditures across Türkiye between 2010 and 2021 and includes health data provided by TURKSTAT and IHME. The IHME data covers the prevalence and incidence of cardiovascular diseases.

Type of Research

This is a descriptive, retrospective, cross-sectional study. It aims to assess the burden of cardiovascular disease (CVDs) in Türkiye, its impact on healthcare expenditures, and sustainability. It aims to reveal the current situation by analysing existing second-hand data.

Data Collection Tools

All data used in the study were obtained from second-hand (secondary) sources. The research used health data published by the Turkish Statistical Institute (TURKSTAT) Health Statistics Yearbook and the Institute for Health Metrics and Evaluation (IHME). Data were obtained online from the official websites of the relevant institutions, and no primary data collection tools (such as surveys, interviews, etc.) were used.

Assumptions and Limitations of The Research

• It is assumed that the data published by TURKSTAT and IHME are reliable, accurate and up to date.

• It is assumed that the economic burden of cardiovascular diseases has a direct impact on healthcare expenditure.

• It is assumed that the increase in healthcare expenditure related to CVD negatively affects the sustainability of the healthcare system.

• The research is limited to secondary data published by TURKSTAT and IHME.

• The findings of the study are limited by the accuracy and timeliness of the data sources.

• It is assumed that the increase in health expenditures linked to chronic diseases negatively impacts the sustainability of the healthcare system.

• The research is limited to secondary data published by the Turkish Statistical Institute (TURKSTAT) and the Institute for Health Metrics and Evaluation (IHME).

• The findings of this study are limited by the accuracy and timeliness of the data sources.

• It should be borne in mind that the data used may not respond quickly to changes in health policies and may therefore have lost some of its timeliness.

RESULTS

This section evaluates the data collected through the research's data collection tools.
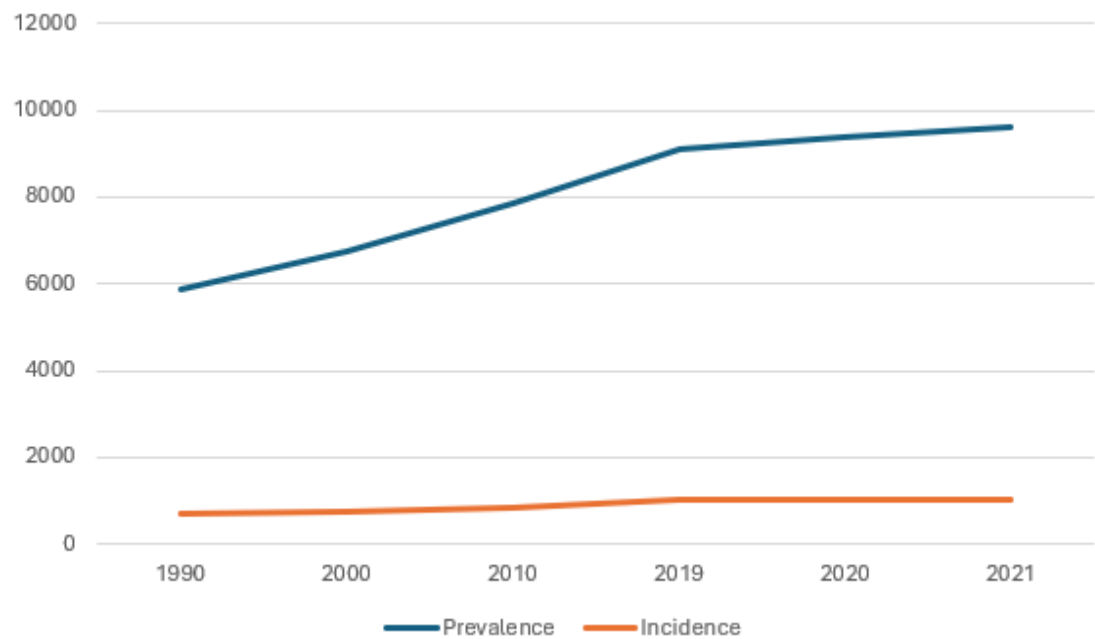
Figure 1. Prevalence and incidence of cardiovascular diseases in Türkiye

Note. Data from, Global Burden of Disease Study (2021). Institute for Health Metrics and Evaluation (IHME). https://healthdata.org

Cardiovascular diseases (CVDs) represent a major category of chronic diseases that impose a significant burden on healthcare systems both in Türkiye and globally. As illustrated in Figure 1 an examination of the prevalence and incidence of chronic diseases in Türkiye reveals that the prevalence of CVD is particularly high, underscoring its critical significance for public health. These findings are consistent with data from organisations such as the Turkish Heart and Health Foundation. The increasing proportion of older adults, lifestyle changes, insufficient physical activity, unhealthy dietary habits and the widespread use of tobacco are among the primary risk factors that account for these elevated prevalence and incidence rates in Türkiye (Türk Kardiyoloji Derneği, 2015).

In the literature, it is emphasized that as the incidence of acute and chronic conditions increases, individuals' out-of-pocket health expenditures also rise (Başara and Şahin, 2008). In this context, the upward trend in prevalence and incidence rates in Türkiye indicates a potential

strain on the capacity of health systems and suggests that, from the perspective of sustainability, such trends may place health systems under considerable pressure.
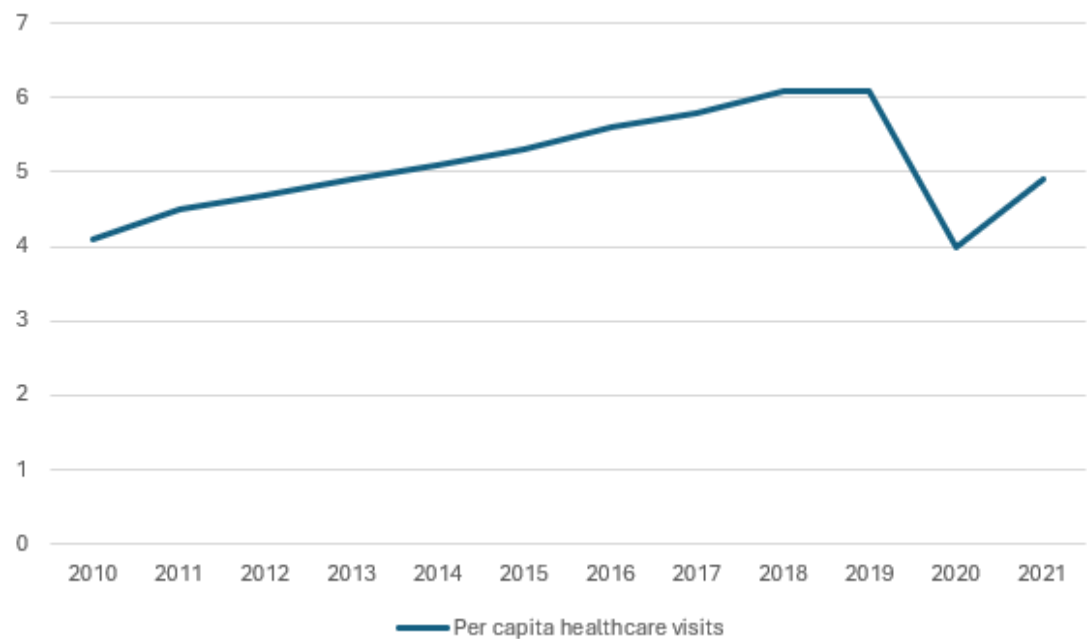
Figure 2. Per capita healthcare visits

Note. Data from, Health Statistics Yearbook (2010-2021). Turkish Statistical Institute (TURKSTAT). https://www.tuik.gov.tr

The rise in the number of visits to healthcare institutions per capita shown in Figure 2 indicates an increase in demand for healthcare services in Türkiye. For individuals with chronic diseases such as cardiovascular diseases, regular visits to healthcare institutions may be important in ensuring continuity of follow-up and treatment. However, the increasing demand for healthcare services may also lead to significant increases in healthcare expenditure. Access to treatment for individuals with chronic diseases such as CVD is of critical importance in terms of healthcare quality (Wenger et al., 2022).

According to the literature, the high rate of healthcare utilisation is due to low health literacy (Çelikyürek et al., 2020; Deniz et al., 2018). The increase in visits to healthcare institutions may pose a risk to sustainability by making the effective use of healthcare resources difficult. To prevent this situation, it's important to expand preventive healthcare services and raise health awareness.

Total health expenditure (million ₺)

Figure 3. Total health expenditure in Türkiye

Note. Data from, Health Statistics Yearbook (2010-2021). Turkish Statistical Institute (TURKSTAT). https://www.tuik.gov.tr
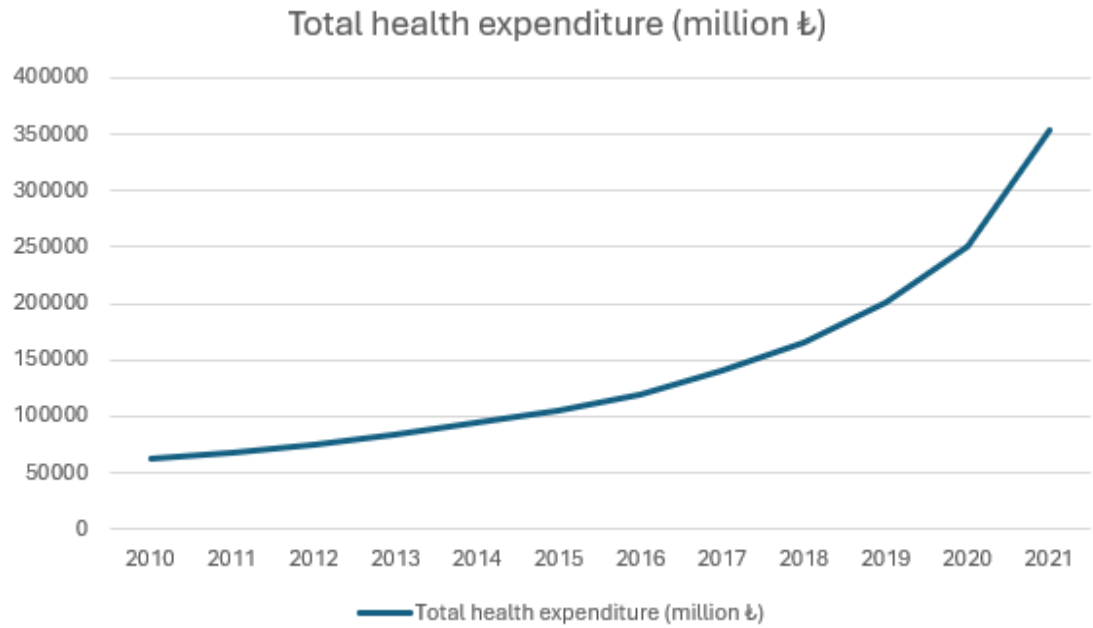

Figure 4. Per capita expenditure

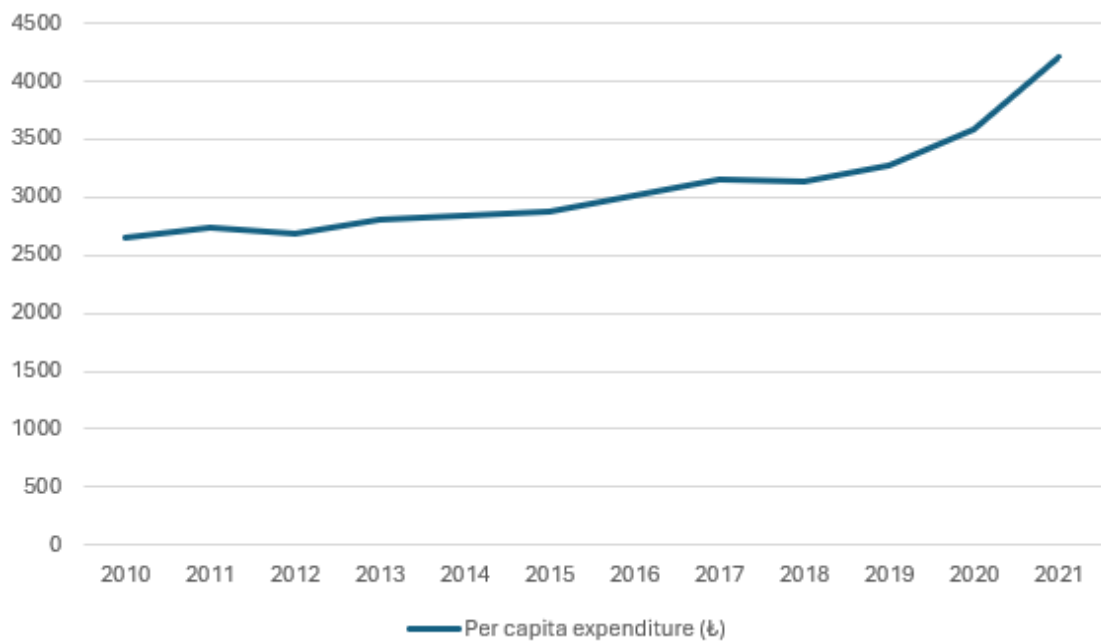**Note. Data from, Health Statistics Yearbook (2010-2021). Turkish Statistical Institute (TURKSTAT). https://www.tuik.gov.tr**

The data on total health expenditure in Figure 3 and per capita health expenditure in Figure 4 provide significant insights into Türkiye's health expenditure. Advanced technologies, used in the treatment of cardiovascular diseases, expensive drugs and log-term treatment processes can lead to a significant increase in healthcare expenditure. The literature frequently emphasises that the direct and indirect costs arising from chronic diseases and advances in medical technology place a significant burden on national health budgets and threaten economic sustainability (Kılavuz, 2010; Paksoy, 2017; GBD Collaboration, 2019).

The continuous increase in the share of health expenditures within the general budget in Türkiye may constitute a risk factor for the financial sustainability of the health system. Factors such as increasing demand for healthcare services and demographic factors such as an ageing population indicate that the economic burden caused by chronic diseases such as cardiovascular disease may grow even further in the coming period. In this context, from a health economics perspective, the effective management of healthcare expenditure, the implementation of cost control mechanisms and the proper planning of resources have become critical priorities.

DISCUSSION AND CONCLUSION

As is the case worldwide, cardiovascular diseases in our county also pose a threat to the financial sustainability of the healthcare system due to the burden they place on health and costs. Factors such as population growth, increased life expectancy leading to a larger elderly population, and the burden of chronic diseases make it increasingly difficult to maintain balance in health financing. Controlling the costs associated with cardiovascular diseases, one of the leading causes of mortality, would ease the strain on health systems and facilitate the effective functioning of their mechanisms.

Health managers and policymakers should develop strategies to allocate the limited resources within health systems in a balanced way to meet unlimited demands, and to fulfil their critical responsibilities of delivering the highest quality health services at the lowest possible cost while preserving resources for the future. By emphasizing that balancing the financial and health burden of cardiovascular diseases can contribute to the sustainability of health systems, this study may provide guidance for future research and serve as a supportive reference for policymakers and health managers in decision-making and policy implementation processes.

The burden of cardiovascular diseases on health systems continues to increase steadily. From a sustainability perspective, it is considered essential to prioritize preventive health services and to reassess the issue from a financial standpoint.

Health system reforms that promote equity, accessibility, and multiple advantages must be accompanied by effective measures to ensure the efficient use of mechanisms such as referral chains, risk scoring, and data-driven governance, thereby enabling meaningful steps toward preserving resources for the future.

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CHANGES AND DEVELOPMENTS IN POPULAR MUSIC IN THE LAST TWENTY YEARS

Varol Çiçek[7]

ABSTRACT

The concept of popular culture generally refers to an understanding that reflects the values, traditions and customs, lifestyle, beliefs, rituals and trends of society. Especially today, mass media such as social media, digital platforms, television and radio play an important role in reaching large audiences. The launch of private radio and television broadcasting in Turkey in the 1990s affected the development of pop music and the music market in the country. Rap music, which made a rapid entry into the music market in the 2000s, began to spread rapidly and left its mark on the period by being one of the most common types of music listened to among young people today. This research aims to examine the developments in pop music and rap music in the last 24 years, the relations of rap music with other music genres, its audience and the messages it wants to convey to them. In this context, the current situation of the music market is examined by making a comparative analysis of "Bizimkisi bir aşk hikayesi", one of the most popular songs of pop music in the early 2000s, and the rap song "Olur mu", which has gained an important place in the music market in the 2020s.

Keywoords: Music market, pop music, current music, rap music, music

INTRODUCTION

Culture: The norms that enable society to live together within the framework of common values. The concept that expresses a society's lifestyle, traditions and customs, values, beliefs, art, literature, language, material and spiritual accumulations is called culture.

Popular culture: Popular culture reveals the values, beliefs, lifestyles and social norms of society. Popular culture is a concept that adopts behaviors that are accepted in daily life. It is mostly influenced by fashion, entertainment, art, mass media and technology that develop every day. The concept of popular culture generally refers to an understanding that reflects the values, traditions and customs, lifestyle, beliefs, rituals and trends of society. In reaching large masses, mass media such as social media, digital platforms, television and radio play an important role, especially today. Media bosses know that they can reach society, especially young people, very quickly and easily thanks to these technological devices. For this reason, they establish a very close bond with the new generation and can give them the message they want. Individuals need and become dependent on popular culture and its products produced and disseminated by mass media, thought and behavior models imposed by these products, and factors that include the process of identity search and identification during adolescence ((Baytaş & Demir, 1999: 78, Akt. Özden, Ö., & Barışeri, N. (2010).

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Popular Music: The 1990s are considered the golden age of pop music in Turkey. Popular music culture, which experienced major developments in terms of both content and production, began to spread rapidly to large masses thanks to private televisions and radios. During this period, pop music surpassed other music genres and became a new trend. In today's world where many things can be bought and sold as commodities, popular music, like other popular products, has the appearance of a structure that is constantly being rebuilt (Erol, 2009, p. 102). In parallel with these developments in pop music in the 90s, many new names emerged. Tarkan, Sertap Erener, Mustafa Sandal, Levent Yüksel were among the leading artists who left their mark on that period and achieved a good start. In addition to arrangements with a new understanding and lyrics that targeted young people in particular, dynamic melodies and rhythm patterns reached large masses.

Turkey's first music channel, Kral TV, made significant contributions to the rise of pop music and to the reach of pop music to a wider audience with the music videos it broadcasted. Thanks to these developments, there was an explosion in album sales. In particular, Tarkan's album "Aacayipsin", released in 1994, was one of the best-selling albums of that period. Sezen Aksu and Levent Yüksel can also be seen as other artists who sold the most albums in pop music. Since both the lyrics and the motifs in the melodies of the songs carried the theme of love, individual feelings came to the fore. The developments in pop music during this period contributed to the music culture in Turkey and also supported the developments in the following periods.

Mass media and the music industry: We can say that mass media are tools used to inform and shape society, to convey information, news, and works of art. These are; printed publications such as newspapers, magazines, and books, and digital media such as television and social media. Towards the 2000s, with the use of the internet, the digitalization process became widespread and both content production and rapid access to information were provided. With the developing technology, the function of mass media increased and various platforms such as education, news, entertainment, and propaganda were created.

The music industry is a large sector that includes the recording of a composed music in a studio, album printing, distribution and consumption of this album. Therefore, it is a large industry that enables the music produced by artists to reach the listener. This sector includes the artist, performer, arranger, producer, record company, publisher, and finally listeners. Today, thanks to digital developments, listeners can access music unlimitedly through platforms such as Youtube, Spotify, and Apple Music, which increase music consumption.

Music Types in Turkey

Turkey has a rich culture due to its geographical location and deep-rooted history. Thanks to this, it is possible to see many types of music. These types of music offer a wide range of both traditional and international influences. Traditional Turkish Music; ethnic music sung in different dialects and forms in different regions of Anatolia. It is divided into two as verbal and non-verbal. Traditional music means "music belonging to tradition, based on tradition-based, related to tradition, related to tradition or related to tradition" (Uçan 1982-83, 1997-98).

Each region has its own characteristics. Instruments come first among the characteristics that show regional diversity. These are; local instruments such as bağlama, kaval, zurna, oud, kanun, kemençe, tulum, sipsi. Musical types in Turkey; Turkish Folk Music, Turkish Classical Music, Religious Music, Pop Music, Rock Music, Rap and Hip-Hop, Fantasy Music, Arabesque Music, Electronic Music, Jazz-Blues and Latin Music. As can be seen, the music culture in Turkey is quite diverse and rich.

Pop music, which has been rapidly changing and spreading recently, is appearing in a different genre by both capturing the original in cultural understanding and synthesizing the existing form. In a way, Arabesque music is reinterpreted and taking its place in today's sector with a new style and a new cultural understanding. If we look at the basic criteria determined by this new approach, it is clear that the new Pop music style is no longer shaped by the factors determined by the traditional-modern dichotomy, but emerges under the forms determined by global-local factors. Arabesque music is also being redefined within this new framework (Konyar, H. 2007).

Rap Music: Rap music, thanks to today's technology, can be easily produced by mixing motifs from several existing songs. A rap song can be created by reading lyrics over the new motif and rhythm obtained. Therefore, rap songs can be produced without any instruments, completely with digital equipment and computer-aided music programs. In this way, it is quite economical compared to other music genres. Rap music spread to many European countries in the late 80s, especially affecting young people, and this type of music was listened to more by young people (Genç, 2015, p.845).

It can be said that the period when rap music emerged in Turkey was between 1995-1996. The Cartel group, which entered the music market in those years, can be said to have been founded to convey the difficulties faced by expatriates living in Germany through rap music (Arıcan, 2005, p. 70). In the following years, rap music in Turkey began to be produced and spread by writing lyrics about current issues. The most distinctive feature of rap music is that it allows music to be produced using everyday language and is accessible to the audience (Richards a.o., 2019, p. 480).

Arabesque music, which was listened to and associated with the poor people of big cities or the working class, especially the ones living in the slums, until the 2000s, has been seen to have expanded its audience after the 2000s by interacting with other music genres, even though it was excluded by those outside this segment. According to Erol (2009), the music genre that emerged as a result of the combination of pop and arabesque music has shown a visible success with its structure that includes the common lives of people from different cultures.

Digitalization in Popular Music: Today, technology has rapidly changed the development process of music production, promotion, distribution and advertising. Digitalization shows itself in recording and production works in music production. These works, which were previously done in analog studios, have now been replaced by digital sound processing software. Pro Tools and Logic Pro are at the forefront of these software. Thanks to this, artists can produce professional quality music in their home studios. In addition to these software, it can be said that creating lyrics or composing a new song has become easier thanks to artificial intelligence.

The purpose of this research is to reveal what kind of changes have occurred in Turkish Pop music songs released between 2000-2024 in terms of lyrics, melody and harmony over the years. Thus, it is thought that the changes experienced in pop music and the music form that was released under the name of rap afterwards have resonated in the socio-cultural field and its permanence are important in terms of examining.

METHOD

Research Model: This research was conducted to examine the structural aspects of pop music songs released between 2000-2024 and to reveal the change in pop music in 20 years. The case study method was used in the research to determine the situation. It is a qualitative research method in which the researcher conducts an in-depth examination of a situation limited to a certain period of time, using data collection tools that include multiple sources such as observation, interview, audio-visuals, documents and reports (Creswell, 2007). According to Hancock and Algozzine (2006), a case study describes situations in which events that develop in their natural environment within a certain time and space constraint are attempted to be described using various data collection tools. It is a qualitative research method in which the researcher conducts an in-depth examination of a situation limited to a certain period of time with data collection tools including multiple sources such as observation, interview, audiovisuals, documents and reports.

Sample Works: The study group of this research consists of a total of two songs, 1 pop music song and 1 rap music song, which are the most liked and listened to pop music songs released between 2000-2024. The data used in this research was obtained as a result of the examination of written and audio documents.

Data Analysis: In the research, 2 songs were evaluated between the years 2000-2024, the notes of these songs were written in the Finale Music Program and formal, lyrical and harmonic analysis was performed. Musical analysis, form, rhythmic structure, lyrics, content and song analysis in pop music

When looking at new trends in popular music, it is possible to see trends such as Rap-Trap, Electronic and Synthwawe. Tanerman & Yung Ouzo – Mademoiselle can be shown as an example of Trap, which is one of the most listened to genres by the new generation. Similarly, another most listened to song in Rap music is the song "Olur mu" performed by Gazapizm & Melike Şahin together. Kayahan is one of the most listened to artists in pop music in the 2000s. The song "Bizimkisi bir aşk öykü" is at the top of Kayahan's most listened to songs in the 2000s.

Analysis of the song "Olur mu" by Gazapizm & Melike Şahin

The song "Olur mu" performed by Gazapizm and Melike Şahin together was released in 2022.

1. Olur mu

Lyrics of the Song

We know we are mortal in this universe

Is what we see a lie?

Maybe no one recognizes us, we have never been, but

We have been seen somewhere

The face of time was sullen, we were always willing to laugh

We met next to a fire, talked and met with you

We who live longing with decency

Maybe we carry it with regret

Maybe we take time back, our bird remains in the cage

A resentful, defeated love that knows my father and mother first

I couldn't fit it in if you stayed, if you left, the world would be half

Is it possible? If I put it on the full, would it stop? What did my shoulder carry? It didn't say one day I got tired

FINDINGS: Formal analysis of the song "Olur mu"

The lyrics reflect the complexity of being human, emotional depths and the effort to confront the inevitable realities of life. It is seen that Arabesque music, which describes both love, rebellion and the difficulty of life as well as resistance, interacts with Rap music and expresses similar emotions. Although it is seen that Arabesque music contains ornamental notes with many instruments and more than one motif and sentence, sometimes they are integrated with Rap music, which exhibits a rhythm and lyrics-heavy structure with a single-sentence melody, thanks to the common audience. It is possible to talk about common points between Arabesque and Rap music in terms of aspects such as poverty, inability to adapt, and exclusion.

It can be said that Rap music is closely related to Arabesque music, and Arabesque music, which is excluded by some segments, softens and reaches much wider audiences with Rap (Göktürk, 2016). The most important feature of this is thought to be that it is easy to record thanks to technology and reaches very wide audiences quickly through social media.

2. Bizimkisi Bir Aşk Hikayesi

Lyrics of the song

Ours is a love story

A bit like a black and white movie

Tears, hope and passion

Ours is a bit like a flame

Like a flame

These roses are for you

This heart is ours

Never be sad, don't cry

You always smile

Formal analysis of the song "Bizimkisi bir aşk Hikayesi"

Kayahan's song "Bizimkisi bir aşk hikayesi" was released in 2002.

The lyrics of the song mention that love has a complicated and difficult side but despite all the difficulties, seeing the positive side and smiling is a beautiful emotional state that will overcome these difficulties.

The song is in a medium pace with a 4/4 rhythm. It is seen that motifs are produced by using 16th beats at the beginning of the sentences. It is seen that the song consists of 4 motifs and 2 sentences as a result of their combination in the introduction. It can be said that the work, written in a 2-part song form, reaches high notes in the 2nd part and is a song that is quite accepted and listened to in pop music with its rich melodic and harmonic structure. The lyrics and music of the song belong to Kayahan. The arrangement of the song was made by İskender Paydaş. There are many performers in the song.

CONCLUSIONS AND RECOMMENDATIONS

Pop music in Turkey has been experiencing its golden age since the 1990s. With the development of technology and computer-aided music programs in the 2000s, changes in music genres have been observed, as well as advances in terms of songs reaching listeners quickly and easily. In this context, it is possible to say that digital developments and transformations are inevitable in the music sector, as in all other sectors. Therefore, listeners have the opportunity to consume music quickly and economically. In this research, Kayahan's song "Bizimkisi bir aşk öykü", one of the most listened to works in pop music in Turkey in 2002, and Gazapizm's song "Olur mu", which was released in the pop-rap genre in 2024, were comparatively examined. As a result of the research, the changes and developments in pop music in the 20-year period were conveyed.

The developments experienced in the digitalization era are evident in recording and production works in music production. These works, which were carried out in analog studios until the late 2000s, have now been replaced by digital audio processing software. Pro Tools and Logic Pro are at the forefront of these software. Therefore, it has become very easy to make songs without using any live performances or multi-purpose studios and to quickly deliver these songs to the masses through social media. In this way, artists can produce professional quality music in their home studios. In addition to this software, it can be said that creating lyrics or composing a new song has become easier thanks to artificial intelligence. However, until the late 2000s, it was almost impossible to release an album this easily and quickly and to release it to the market. Kayahan's album Ne oldu Can, released in 2002, took many years to be completed and released. In addition, many instruments such as keyboard, string instruments, percussion, and guitar were recorded live in the studio by leading performers of Turkey in the album.

As a result, digitalization in music, which has progressed in parallel with ever-developing technology along with the popular and widely used social media in the late 2000s, has made it

easier to produce songs and has provided the opportunity to reach a wide audience very quickly and to do this without using any budget. Considering that social media and other digital platforms are both powerful and widespread, pop music lyrics can be used to convey positive messages to society, especially to young people, through the state. In addition, in pop music, it can be explained to young people by listening to sample works that the songs and music produced from the 90s to the 2010s have a wider range and permanence.

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SUSTAINABLE DEVELOPMENT AND STRATEGIC PLANNING: FUTURE GOALS OF A DISTRICT MUNICIPALITY

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ABSTRACT

Purpose: Sustainable development is recognized as a crucial objective in contemporary local governance, ensuring balanced economic and environmental growth. This study examines the sustainable development goals set within the 2025-2029 Strategic Plan of a district municipality located within a metropolitan area and the strategies devised to achieve these goals. The municipality's strategic plan encompasses key areas such as environmental sustainability, expansion of social services, infrastructure development, and strengthening the local economy.

Method: This study analyzes the strategic planning process, performance indicators, and project impacts to assess the municipality's progress toward sustainable development goals.

Findings: Initiatives like eco-friendly projects, green energy applications, and the integration of recycling systems aim to enhance the municipality's environmental responsibility. Moreover, expanding access to social services and fostering local entrepreneurship demonstrate a holistic approach to economic and social development.

Results: The projects implemented by the municipality and the corresponding investments support long-term economic growth and environmental conservation. Additionally, monitoring and evaluation mechanisms ensure that the achievement of strategic objectives is continuously assessed based on collected data. Ultimately, the strategic planning process adopted by the district municipality serves as a concrete example of how local governments can balance environmental and economic sustainability.

Conclusion: This study offers insights and best practices for other municipalities and local administrations aiming to incorporate sustainable development into their strategic planning frameworks.

Keywords: sustainable development, eco-friendly projects, local economy, strategic planning, environmental sustainability.

MEDIA DISCOURSES AND PUBLIC PARTICIPATION IN MINING PROJECTS

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ABSTRACT

The rise of populist movements and resource based conflicts worldwide is not only stressing democracies but also call for scholars to recognize how best to prepare and defend democratic standards. Creating shared value can support community planning efforts becasue they may clearly indicate economic, environmental and socio-cultural relationships and outcomes as associated with local or regional developmental projects. The attainment of these three goals is often reffered to as sustainable developmnent. However, deciding what to include in a shared development strategy presents a significant challenge, as including all aspects of a community and local development is not easy task. Also, including only some aspects leads to a non-acceptable developmental planns. In mining-impacted areas is even more difficult to achieve a general strategy of land use, following the principle of shared value. Yet, they might be accepted through increased participation of citizens, especially those interested in the extraction of particular mineral resource. The interests of communities, particularly underrepresented groups, ought to be takan into account. o demonstrate challenges and opportunities to acceptance of huge mining projects, we describe recent disputes in a mining-impacted region in Western Serbia. We then compare dominant narratives that mainly shape general public perceptions about the project dealing with the lithium excavation in the Jadar region. It has been known, for a long time, that media, especially daily newspapers, have a decisive role in the process of dissemination of reliable messages due to their larger number of published analitycal texts. Among objectives of this research was to find out the number of articles dealing with lithium excavation, their frequency of appearance, and the journalist form used on the example of daily Serbian national newspapers *Politika* and *Danas*. The lack of transparency at the early stage of this project led to a surprsinglly high citizens' mobilization, and, latter on, politization of this particular case (along with other similar land use practices) during the last two years. It was noticed that simultaneously overlap two competing narratives: the first one highlighting the economic benefits of the project, and, the second, that focuses only on environmental values (with elements of ecological radicalism), ignoring a wider picture. This mining dispute, dealng with potential excavation of lithium in Serbia, is considerd through the lenses of democratic backsliding concept, in order to explain the growing deep divisions resulting in and from political polarization.

Key words: Mining project in Jadar, participation of various stakeholders, media narratives, content analysis, Politika**,** Danas, democracy backsliding.

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IMPROVING PARTICIPATION IN SPATIAL PLANNING OF MINING AREAS - FORMAL PARTICIPATORY METHODS IN URBAN AND SPATIAL PLANNING IN EUROPE

Tamara Maričić[10], Milena Toković[11], Dušanka Milosavljević[12]

ABSTRACT

Development in areas with extensive mineral extraction brings significant changes that especially affect the local population, both positively and negatively. The most important impacts include job creation, higher income, dependence on a single industry, environmental harm, health issues, and the need for (involuntary) resettlement. Mining companies that fail to prioritize corporate social responsibility and foster strong relationships with local communities often face a lack of public support. Transparent decision making through high public engagement and participatory planning process is therefore of great importance.

The aim of this research is to identify formal participatory methods applied in the process of urban and regional planning, with focus on community participation. Through extensive analysis of legislation of European countries, we have identified the most commonly used methods and techniques. They have several advantages, but could be supplemented with informal methods for a better inclusion of attitudes and opinion of local community and other stakeholders.

Keywords: formal methods; participation; mining areas; Bor; Majdanpek; Serbia

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PHYSICIANS' EXPERIENCES IN DELIVERING DEATH NOTIFICATION IN ITALY: A QUALITATIVE STUDY

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ABSTRACT

Death notification is one of the most difficult duties in health communication for health professionals. Death notification process can affect negatively both physicians and patient relatives. This research aims to explore the experiences of intensive care unit (ICU) and emergency room (ER) physicians in Italy when delivering death notifications. This research adopts a qualitative methodological framework. Semi-structured interviews are ongoing with 24 physicians (12 ICU, 12 ER) in Italy and the data are being analysed using Reflexive Thematic Analysis.

This research shares preliminary findings from 5 ICU physicians. Initial coding revealed five emergent themes: (1) communication strategies and techniques, (2) factors affecting death notification process, (3) coping mechanisms of physicians, (4) emotional impact of death notification and (5) professional roles and team dynamics. Findings underscore the complexity of death notification, highlighting its psychological toll on physicians and systemic challenges in healthcare settings.

Death notification is a multifaceted process influenced by various factors, requiring proper physician training, clear protocols, and appropriate environments. To enhance DN practices, emotional support, effective team communication, public awareness campaigns, and feedback from bereaved families are essential. This study provides actionable insights for improving DN through interdisciplinary collaboration, targeted training programs, and organizational support. The final results will be contextualized within international literature and analysed from healthcare management, public health, psychological, and educational perspectives.

Keywords: death notification, health communication, physician experiences, qualitative research, intensive care unit, emergency room

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THE IMPACT OF DIGITAL TRANSFORMATION ON TRADE UNIONS

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ABSTRACT

After the industrial revolutions, discussions about the future of professions and union development have become a natural part of working life. Today, with digitalization, this process continues, and its impact on the workforce structure, working order and employment is growing rapidly, affecting the union structure and union policies.

In this study, which is prepared with the systematic examination method, which is one of the qualitative research methods, it is aimed to examine the opportunities that unions can use in Turkey in the digital transformation process, the negativities they will encounter, the effects of the possible consequences of digitalization in the adaptation process in the context of the union future and the strategies that unions can turn to.

In this study, the solution of new problems such as digital transformation, the future of the current professions of employees, the improvement of conditions in employment and labor markets, the protection of employee data, as well as the effects of unions on education, organization and collective bargaining policies are discussed.

It is foreseen that unions that act with realistic policies and the right strategies against the problem of low unionization rates of employees with high qualifications required by digitalization will be able to emerge stronger from the digital transformation process. With this study, it is aimed to provide an acquisition to the literature that is lacking.

Keywords: Digital Transformation, Change in Working Life, Trade Union Future

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EXAMINING THE PRODUCTIVITY OF HEALTH WORKERS WORKING WITH DEMOCRATIC LEADERS

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ABSTRACT

Today, leadership stile has become important in the field of health as in every field. Organizations want to find the right leader for them; it is becoming more important for employees to work with the right leader for them. Research shows that leadership is important for employee productivity. While the fact that there are many types of leadership increases the number and dimension of research, it has been revealed that the most important effect of leadership is the productivity of employees. In this study, the effect of democratic leadership on productivity is investigated. A literature review and then a survey study were conducted to examine the effect of democratic leadership on productivity among healthcare workers in Ordu province between October and November 2024. 516 healthcare workers were reached via Google form and partially through face-to-face interviews, and the data obtained were evaluated using the SPSS.16 (Statistical Package for the Social Sciences) program. There are a total of 34 questions in the survey. 4 of these are demographic questions, 22 are questions about productivity, and 11 are questions about democratic leadership. A 5-point Likert-type scale was used.

According to the data obtained, 51.4% of the 516 people were female, 75.2% were single, 61.6% were between the ages of 18-30 and 41.7% had 11-20 years of work experience. The democratic leadership scale was 0.847, and the efficiency scale was 0.821. Since the value of both scales was >0.70, which is the acceptable value, it was found reliable.

Since the result of the KMO (Kaiser-Meyer-Olkin) value testing the adequacy of the democratic leadership data was 0.577, our sample is sufficient for the research. Since the result of the KMO (Kaiser-Meyer-Olkin) value testing the adequacy of the sample of the efficiency scale was 0.854, our sample is sufficient for the research.

According to the results of the study, there is a strong positive relationship between the productivity of healthcare workers working with democratic leaders. The leader's inclusion of his employees in the decision-making process increases their self-confidence, and ensures that employees embrace the workplace as their home and their colleagues as their family. Therefore, their productivity at work increases. For this reason, managers adopting and using more democratic leadership types will increase the productivity of their own institutions.

Since this study was prepared only with democratic leadership and productivity scales, it can be repeated by adding motivation elements in a more comprehensive manner and making comparisons with other leadership types. The differences between leadership types and their effects on employees can be examined more comprehensively.

Keywords: Leadership, Democratic Leadership, Productivity

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ATTITUDES AND CONCERNS OF HEALTH WORKERS TOWARDS ARTIFICIAL INTELLIGENCE

Ertan Enginyurt[19]

ABSTRACT

To comprehensively examine the perceptions and attitudes of healthcare professionals towards artificial intelligence and their views on the integration of this technology into healthcare services and to test whether attitudes and concerns towards artificial intelligence differ according to gender and occupational groups. The research covers 673 healthcare professionals working in various health institutions in Ordu province in Turkey.The data were collected through an online questionnaire via Google Forms.The questionnaire includes questions about demographic information, attitudes towards artificial intelligence and concerns.Statistical evaluations were made using SPSS for analysis.

Participants included doctors, nurses and technicians, with varying levels of education and years of employment. Healthcare workers are generally positive about AI, but have concerns about job security, data security and other ethical issues.
No significant difference was found between attitudes and concerns according to gender and occupational groups, and a weak negative correlation was found between attitudes and concerns. In the reliability analysis, Cronbach's Alpha value for the attitude scale was 0.976, indicating that the measurement tool has high internal consistency. For the anxiety scale, Cronbach's Alpha value was 0.891, indicating that the measurement tool has high internal consistency. In factor analyses, the KMO value for the attitude scale is 0.968, indicating that the sampling adequacy is quite high. The KMO value for the anxiety scale is 0.919, indicating that the sampling adequacy is also high. For the hypothesis tests, it was observed that there was no significant difference between attitudes and concerns according to the Independent t-test results for gender differences.

According to the ANOVA test results for occupational differences, it was observed that there were significant differences between attitudes and concerns. For the correlation analysis, the Pearson correlation coefficient was -0.198, indicating a weak negative relationship between attitudes and concerns.

According to the study, training programs that clearly demonstrate the benefits of AI should be developed, clear ethical guidelines should be established for the ethical and safe application of AI, and support should be provided to employees during the integration of AI-enabled applications to reduce job security concerns.

Key Words: Artificial intelligence, health applications, perception of artificial intelligence,

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SUSTAINABLE EDUCATION MODEL FOR INDIVIDUALS WITH SPECIAL POLICY NEEDS

Belgin Dede[20], Cem Gündoğdu, Elif Türkmenoğlu Usta

ABSTRACT

Due to various reasons, short-term and long-term policies are being implemented to address the learning losses of children experiencing disruptions in the educational process, both globally and in our country. This study explains the sustainable education model that addresses the learning losses of children with special policy needs within the framework of children's rights, government policies, and international agreements. The scope of the study is limited to children with restricted access to education due to economic constraints, as well as approximately five thousand children who experienced learning loss in the February 6, 2023 earthquake.

Within the scope of Pikolo Association's Child Rights Program, specific intervention methods are implemented for all actors contributing to child labor. In this context, efforts are carried out to identify children who are working or at risk of working, to direct them to safe spaces, and to monitor and provide guidance for them. A tailored intervention mechanism is applied based on the age groups of children working or at risk of working in the service, industrial, and seasonal agricultural sectors. Within the implemented intervention mechanism, actions and referrals are carried out in accordance with the roles and responsibilities of Public Institutions, NonGovernmental Organizations, and Local Authorities.

The Sustainable Education Model encompasses direct intervention methods. This study outlines the methodology of how the Pikolo Association, accredited by the Ministry of Family and Social Policies, in collaboration with the International Labour Organization (ILO), conducted identification and follow-up work for children with restricted access to education between 2014 and 2024. It also describes the psychosocial support programs implemented by the Save the Children organization for the most vulnerable group of children in the earthquake-affect region (2023-25).

Key Words: Children with Special Policy Needs, Sustainable Education, Students with

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THE EFFECT OF EMPLOYER BRAND ON ORGANIZATIONAL COMMITMENT

Gamze Topkaya[21]

ABSTRACT

Employer branding refers to the creation of the identity and corporate image of an organization or business as an employer. It is a strategic approach that expresses how a company is perceived by its current and potential employees. Organizational commitment refers to the psychological commitment that employees feel towards an organization and the effect of this commitment on outcomes such as job performance, absenteeism and turnover tendency. This concept is a critical element for understanding employees' relationship with the organization. Organizational commitment is examined in 3 sub-dimensions as affective commitment, normative commitment and continuance commitment. This research investigates the effect of employer brand on organizational commitment and its sub-dimensions.

The research was conducted on 53 employees working in a private hospital operating in Ordu province. Two different scales were used in the research. Survey method was used for data collection. The hypotheses put forward in the research are as follows. H1: Employer brand has a positive and significant effect on organizational commitment. H2: Employer brand has a positive and significant effect on the emotional sub-dimension of organizational commitment. H3: Employer brand has a positive and significant effect on the continuance sub-dimension of organizational commitment. H4: Employer brand has a positive and significant effect on the normative sub-dimension of organizational commitment. The data were analyzed in SPSS 27 program. A 68% significant, positive and very strong relationship was found between employer brand and organizational commitment.

There is a significant positive and very strong relationship of 80% between employer brand and emotional commitment sub-dimension of organizational commitment. There is a significant positive and weak relationship between employer brand and continuance commitment sub-dimension of organizational commitment with a rate of 4%. There is a 64% significant positive and very strong relationship between employer brand and normative commitment sub-dimension of organizational commitment. This shows that employer brand is important and strong employer brand is effective on organizational commitment.

Keywords: Employer Brand, Organizational Commitment, Health Management

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OCCUPATIONAL HEALTH AND SAFETY IN SUSTAINABILITY REPORTS: AN ANALYSIS IN TURKEY

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ABSTRACT

Today, sustainability represents a holistic understanding of development that encompasses not only environmental but also economic and social dimensions. Occupational health and safety (OHS), which is one of the most critical components of this social dimension, is a key sustainability indicator in terms of corporate reputation, productivity and long-term risk management beyond protecting employee welfare. This study analyses how large-scale companies operating in Turkey address OHS issues in their sustainability reports for the years 2022 and 2023 using content analysis method. The data were obtained from the reports published on the website of the Public Oversight Authority and prepared voluntarily before the introduction of the TSRS.

As a result of the analysis, it was found that the contents on occupational accident data, OHS trainings, use of personal protective equipment, emergency planning and OHS policies have become more visible over the years. In 2023, a significant increase was observed especially in training and emergency management, while digitalisation and technological solutions were more emphasised. While detailed reporting on OHS is prominent in the manufacturing and energy sectors, limited information is provided in the service and technology sectors.

The study points out that OHS should be considered not only as a sub-heading in sustainability reports, but also as one of the building blocks of corporate sustainability. In this direction, it is recommended that TSRS should be implemented effectively, sectoral guidelines should be developed, digital system investments should be encouraged and companies' reporting culture should be strengthened.

Keywords: Occupational health and safety, sustainability, content analysis, TSRS, corporate reporting

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THE IMPORTANCE OF EVENT MANAGEMENT MARKETING STRATEGIES IN HOTELS

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ABSTRACT

Many events are organized to establish networks or connections, expand social circles, evaluate special days and increase hotel business income. Especially events that emphasize the commercial purpose offered to customers on social media such as Halloween, New Year's parties, lively birthday parties, baby showers, free Fridays, happy hours or gastronomy events attract people. Furthermore, events such as weddings, henna nights, engagement ceremonies or circumcision ceremonies reflecting Turkish customs and traditions are increasingly being organized. Therefore, it provides significant profit to both businesses and hotels. It is observed that these events are increasing rapidly in Ankara, which has experienced rapid population growth due to immigration in recent years.

The main purpose of this study is to investigate the event management marketing strategies of hotel businesses operating in Ankara. Nine semi-structured questions to search Event Management Marketing Strategies were created by using the marketing mix elements 4 P (product, pricing, distribution and promotion). The questions are asked to event management managers/directors in different hotels, including marketing strategies for the events they have prepared and communication with their customers. The answers of these questions are interpreted with content analysis and an inference will be made by comparing theory and practice.

Keywords: Event management, tourism, hotels, service marketing, tourism management

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SUSTAINABILITY IN UNIVERSITIES: THE CASE OF KIRŞEHİR AHİ EVRAN UNIVERSITY

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ABSTRACT

Sustainability has become a fundamental approach in universities' education, research, and societal contribution processes. The literature highlights the environmental, economic, and social dimensions of sustainability. Environmental sustainability focuses on conserving natural resources and combating climate change, while economic sustainability aims at the efficient use of resources and cost savings. Social sustainability encompasses social equality, social responsibility projects, and the preservation of cultural values.

Universities are key actors in achieving sustainable development goals by integrating these three dimensions. International ranking systems such as GreenMetric assess universities' sustainability performance and encourage their development in this field. Universities in Turkey have been implementing strategic plans to enhance environmental awareness, utilize renewable energy sources, and carry out social responsibility projects.

Kırşehir Ahi Evran University has adopted principles such as the efficient use of energy, the widespread implementation of waste recovery activities, and raising awareness about energy efficiency and environmental issues. The university conducts interdisciplinary scientific and technological research and applications in environmental fields, develops and implements solutions for environmental problems, shares its findings with relevant international organizations, and carries out projects, publications, and educational activities to foster and enhance environmental awareness.

Kırşehir Ahi Evran University's sustainability practices aim to enhance environmental sensitivity while contributing to society. Through afforestation efforts, energy efficiency projects, and social responsibility initiatives, the university makes significant contributions to sustainable development goals. Such exemplary practices serve as a guiding model for other universities.

Keywords: Sustainability In Universities, Sustainability İn Education, Good Practice

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THE EFFECTS OF THE PANDEMIC ON PRE-HOSPITAL EMERGENCY HEALTH SERVICES

Turgut Şahinöz[27], Saime Şahinöz[28], Ayşegül Akçay[29]

ABSTRACT

This study was conducted to investigate the effects of the pandemic process on pre-hospital emergency health services. The study is a retrospective descriptive study. The data includes case information of prehospital emergency health services provided in Ordu province of Turkey between 2016-2022.

With the onset of the pandemic, the number of pre-hospital emergency health services cases increased by 23.2% compared to the previous year and peaked. The average monthly number of cases increased by 33.3% during the pandemic. It was determined that the number of cases per ambulance also increased by 25.10% during the pandemic. It was determined that the ratio of Covid-19 cases transported by ambulances to total cases was 21.8% in 2020, 23.9% in 2021, and 8.3% in 2022. The year in which the highest number of Covid-19 cases were transported was 2021. It was determined that there was an increase in cases in rural areas with the pandemic and that transportation times to cases in these regions were extended.

The results of this study are promising in terms of the development of pre-hospital emergency health services in the province. The Covid-19 pandemic has once again shown how important these services are in times of crisis. The personnel working actively in this field have fulfilled their duties with great dedication during this period of serious fear and anxiety. Especially, pre-hospital emergency health services have had to work beyond their capacity. This study provides decision-makers with insight into the planning of pre-hospital emergency health services and the effective and efficient use of organization and workforce.

Key Words: Emergency Aid, Health Management, Covid-19, Pandemic,

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MEDICAL WASTE MANAGEMENT AND RECYCLING IN HOSPITALS: REDUCING ENVIRONMENTAL IMPACT

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ABSTRACT

This study aims to examine the management of medical waste in hospitals, emphasizing its environmental and public health impacts. It highlights the importance of proper waste segregation, recycling, and disposal methods to ensure sustainability and minimize risks. A literature review was conducted using a compilation methodology to analyze existing studies on medical waste management. National and international examples were examined to identify best practices and innovative solutions.

Hospitals generate large amounts of waste, including infectious, hazardous, and general waste. Improper disposal can lead to serious environmental and health risks. Effective waste management strategies, such as waste reduction policies, staff training, and innovative disposal technologies, are essential. Recycling programs can significantly decrease waste volume and environmental pollution. Additionally, regulatory compliance and strict monitoring enhance waste management efficiency.

The study concludes that a well-structured medical waste management system is crucial for environmental sustainability and public health. Implementing waste reduction strategies, educating healthcare personnel, and adopting advanced disposal technologies can enhance hospital waste management. By integrating these approaches, hospitals can minimize their environmental footprint while maintaining high standards of healthcare services.

Key Words: Medical waste management, recycling, environmental sustainability.

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THE ACADEMIC JOURNEY OF HEALTH-SEEKING BEHAVIOR: GLOBAL RESEARCH TRENDS AND SCIENTIFIC DEVELOPMENT

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ABSTRACT

This study aims to examine the academic landscape of health-seeking behavior by analyzing global research trends, influential studies, and key thematic areas. It seeks to map the evolution of the field, identify leading contributors, and uncover emerging research topics to guide future academic inquiries. The bibliometric mapping method was applied in three stages: study design, data collection, and data analysis. The Web of Science database was used for data retrieval, following a predefined search strategy. No time or language restrictions were applied, except for the selection of English-language studies and the exclusion of the most recent year. Additionally, studies on disease-based health-seeking behavior were excluded from the study. The analysis was conducted using the Bibliometrix package in R, which facilitated data processing and visualization. A total of 642 records were retrieved for analysis.

The bibliometric analysis revealed a consistent increase in global scientific production on health-seeking behavior since 2011, with an annual growth rate of 10.03%. The average age of the articles was found to be 7.78 years, indicating a well-established body of research. Each document received an average of 37.28 citations, highlighting the academic impact of this field. The rate of international collaboration was 21.86%. Bradford's Law analysis identified the leading journals, with the *Journal of Medical Internet Research* contributing the most publications (N=111), followed by *Health Communication* (N=43) and *Patient Education and Counseling* (N=25). The primary international collaboration occurred between the USA and China, with 24 joint publications. Citation analysis by country revealed that the USA received the most citations (N=11,511), followed by the UK (N=2.361) and China (N=2.197). The most frequently used keywords in the field were "internet" (N=111), "health information seeking" (N=86), and "health literacy" (N=50). These findings indicate that research has primarily focused on digital health platforms, health information access, and the role of health literacy in health-seeking behaviors.

This study reveals a growing academic interest in health-seeking behavior, reflecting its increasing importance in health services research. The analysis highlights significant trends in international collaboration, with prominent contributions from the USA and China. The findings underscore the importance of digital health, health information seeking, and health literacy as key research themes. Future studies should explore emerging trends, adopt interdisciplinary approaches, and broaden geographic representation to further advance the field.

Keywords: Health-Seeking Behavior, Bibliometrics, Health Information Seeking Behavior

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ANALYSIS OF KEY TRENDS IN SUSTAINABILITY REPORTING PRACTICES IN USA, UK AND JAPAN

Sanjay Pareek[35]

ABSTRACT

This study analysis the sustainability reporting practices of top 50 companies of USA, UK and Japan. The countries chosen are based on the fact that New York Stock Exchange, London Stock Exchange and Tokyo Stock Exchange are the three biggest stock exchanges in North America, Europe and Asia. The sample companies selected are the biggest companies in the respective countries. So, US companies comprise the Dow 30 and the top 20 companies in S&P 500. Similarly, the UK companies represent the biggest companies within the FTSE 100 and so is the case with Japanese companies.

The sustainability reporting practices of these companies are analyzed for four years to arrive at key trends and also the major differences across these countries. The sustainability reporting practices are studied along various aspects such as whether they are aligned with UN Sustainable Development goals, TCFD, SASB, UN Global Compact Principles, Net Zero targets, Circular economy, waste management, Climate Finance and Scope 1, 2 or 3. The results highlight the importance of net zero and Scope 1,2 and 3 in the last 4 years. The results also highlight the major differences in adoption of other key aspects of sustainability reporting practices cited above. The results are useful to understand the major global trends in this regard and to understand the key differences across countries.

Keywords: Analysis Of Key Trends In Sustainability Reporting Practices

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BIBLIOMETRIC ANALYSIS OF POSTGRADUATE THESES ON VIOLENCE IN HEALTHCARE IN TÜRKİYE: A REVIEW OF THE YÖK THESIS DATABASE

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ABSTRACT

This study aims to examine postgraduate theses addressing the issue of violence in healthcare, as retrieved from the Turkish Council of Higher Education (YÖK) Thesis Database. A total of 134 theses were analyzed, comprising 75 master's theses, 49 medical specialization theses, and 10 doctoral dissertations. The vast majority of these theses were written in Turkish and conducted at public universities. The most commonly employed data collection method was the survey technique, and the theses were predominantly concentrated in the fields of Family Medicine and Health Management. A notable increase in the number of theses has been observed since 2019, indicating that violence in healthcare has emerged as a growing concern within academic circles. Keyword analysis revealed the prominence of concepts such as "violence," "violence in healthcare," "White Code," and "burnout," suggesting that the issue is being addressed not only in its physical dimensions but also in its psychosocial aspects. The findings underscore the multifaceted nature of violence in healthcare and highlight the need for interdisciplinary research. Furthermore, the increasing academic output in this area may serve as a valuable source of information for policymakers. Violence in healthcare is not merely an individual issue but a serious and escalating problem that demands institutional and societal-level interventions as well as comprehensive solutions.

Keywords: Violence in healthcare, bibliometric analysis, YÖKTEZ database, graduate theses, healthcare management, quantitative research, violence against healthcare workers, violence in Turkey's healthcare sector.

INTRODUCTION

Violence in healthcare has increasingly been recognized as a critical public health concern that threatens societal well-being. This phenomenon not only adversely affects physicians, nurses, and other healthcare professionals but also patients and their relatives, thereby significantly undermining the quality of care provided in hospitals and clinical settings (Eker et al., 2011). Despite numerous preventive measures and policy recommendations, incidents of violence against healthcare workers continue to rise, placing personnel at considerable risk (Ayrancı et al., 2002). The intense and stressful interactions between healthcare personnel, patients, and

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their families constitute a distinctive feature that differentiates violence in this sector from that encountered in other professional settings (Pınar G., 2013; Pınar T., 2013).

In Turkey, various mechanisms have been established to prevent such incidents, including the "White Code" system incorporated into the Ministry of Health's hospital service quality standards. This system facilitates rapid intervention by security personnel in cases of potential conflict, threats, or harassment directed at healthcare staff, ensures proper documentation of incidents, and initiates resolution procedures (Ministry of Health, 2012). In addition, pursuant to the Prime Ministry Circular published in the Official Gazette on March 19, 2011, the "ALO 170" Communication Hotline was established under the Ministry of Labour and Social Security with the aim of preventing psychological harassment (mobbing) in the workplace. Calls made through this hotline are received by psychologists who have received specialized training on the subject, and callers are provided with information and guidance services. Applications are evaluated by different institutions depending on whether the applicant is employed in the public or private sector. Complaints from private sector employees are reviewed by the Labour Inspection Board, whereas those from public sector employees are handled by the relevant public institution. All applications submitted to ALO 170 are expected to be responded to within 72 hours (Ministry of Labour and Social Security, 2017).

Vıolence In Healthcare

The World Health Organization (WHO, 2022) defines workplace violence in healthcare as any incident wherein healthcare professionals are abused, threatened, or assaulted during the course of their duties. In Turkey, this issue is predominantly observed in hospitals and outpatient clinics, with physicians and nurses being the most frequently affected groups (Güven & Kurt, 2023). International literature categorizes violence into various forms, including physical assault, verbal abuse, threats, mobbing, and sexual harassment. Research indicates that nurses, due to their frequent and close contact with patients, constitute the highest-risk group, and verbal abuse remains the most prevalent form of violence (Eshah et al., 2024; Lim & Lim, 2022).

The root causes of violence in healthcare emerge from a complex interplay of individual, institutional, and societal factors. Unrealistic patient expectations, communication breakdowns, and prolonged waiting times contribute to increased aggression, while overcrowding in emergency departments exacerbates the risk (Aydemir, Üçlü, & Aydoğan, 2020). At the institutional level, staff shortages, excessive workloads, and inadequate security measures create an environment conducive to conflict (Ma et al., 2022; Çamcı & Kutlu, 2011). On the individual level, psychiatric disorders, substance abuse, and linguistic or cultural barriers are additional risk factors (Lim & Lim, 2022). In the Turkish context, a rising societal propensity toward violence and diminishing respect for healthcare professionals further intensify the problem (Ceylan, 2023).

The consequences of workplace violence in healthcare are not only physical but also psychological and systemic. Victims frequently suffer from stress, anxiety, depression, and burnout, which in turn diminish work productivity and compromise the quality of patient care (Atan & Dönmez, 2011; Yılmaz, 2020). A climate of violence also erodes the sense of safety within healthcare institutions and negatively influences the experiences of both patients and their families (Uğurlu & Şantaş, 2024).

Addressing this multifaceted issue necessitates legal, educational, security-based, psychological, and societal interventions. Training healthcare professionals in effective communication, conflict resolution, and violence de-escalation techniques is essential (Raveel & Schoenmakers, 2019). Technological and infrastructural measures such as surveillance systems, alarm mechanisms, and staff augmentation are equally critical for prevention and response (Bulut & Şengül, 2020). Psychological support services aid the recovery process for victims, while public awareness campaigns and responsible media coverage are vital for countering the normalization of violence. International literature emphasizes the importance of multi-sectoral collaboration (WHO, 2022; Lim & Lim, 2022).

Violence in healthcare remains at a critical level in Turkey. In 2022 alone, 316 healthcare professionals were subjected to 190 incidents of violence, most of which occurred in hospital settings (Sağlık-Sen, 2022). In Kırklareli, between 2017 and 2022, the majority of reported "White Code" incidents involved verbal abuse (Güven & Kurt, 2023). The persistence of such events despite existing legal measures underscores the inadequacy of current strategies. Although media coverage can enhance public awareness, it may also contribute to the reinforcement of negative perceptions (Ceylan, 2023). Globally, nurses remain the most at-risk group, with verbal abuse continuing to be the most frequent form of violence (Eshah et al., 2024). According to WHO (2022) data, 62% of healthcare workers report having experienced workplace violence, highlighting it as a substantial global issue that impedes the effective delivery of healthcare services. Thus, the implementation of comprehensive, evidence-based, and multi-stakeholder strategies is imperative (Lim & Lim, 2022).

In recent years, there has been a noticeable increase in academic research on workplace violence in Turkish healthcare settings. However, a significant portion of these studies remain descriptive in nature, with a limited number employing bibliometric analysis to examine the issue comprehensively. This highlights the need for more systematic and analytical approaches in academic inquiry on the subject. The present study aims to provide an overarching review of the literature on healthcare violence and to serve as a foundation for future scholarly investigations in this critical field.

METHOD

In this study, postgraduate theses focusing on health literacy were systematically examined through the Turkish Higher Education Council (YÖK) Thesis Database. The scope of the research includes all theses published between January 2001 and March 2025. The keyword "violence in healthcare" was used as the primary search criterion. Based on this criterion, a total of 134 theses were included in the study. Among these, 75 were master's theses, 10 were doctoral dissertations, and 49 were medical specialization theses.

The following research questions were posed to guide the analysis of the selected theses:

- What is the distribution of postgraduate theses (master's, doctoral, medical specialization) written on health literacy?
- How are the postgraduate theses on health literacy distributed by year of publication?
- What is the distribution of these theses according to the language of publication?
- How are the theses distributed by type of institute?
- What is the distribution of the theses according to the academic titles of the supervisors?
- What is the distribution of the theses according to academic departments?

- What is the distribution of the theses according to university type?
- What is the distribution of the theses by data collection method?
- What are the most frequently used keywords in the theses?
- What is the distribution of the theses according to page range?

As this study does not involve any data collection from human participants, ethical approval was not required. The findings aim to present an overall framework regarding violence in healthcare and to provide a synthesized overview of the existing literature in this field.

FINDINGS

Table 1. Number of Postgraduate Theses by Degree Type

Type of Thesis	N
Master's	75
Doctoral	10
Medical Specialization	49

Table 2. Annual Distribution of Postgraduate Theses

Year	N
2014	1
2015	1
2016	4
2017	5
2018	2
2019	12
2020	17
2021	21
2022	22
2023	25
2024	23
2025	1

Table 3. Distribution of Theses by Language of Publication

Language	N
Turkish	132
English	2

Table 4. Distribution of Theses by Institute Type

Institute	N
Faculty of Medicine	50
Institute of Social Sciences	30
Institute of Health Sciences	25

Institute of Business Administration	1
Institute of Educational Sciences	27
Institute of Addiction and Forensic Sciences	1

Table 5. Distribution of Theses by Academic Title of Supervisor

Academic Title	N
Professor	56
Associate Professor	37
Assistant Professor	41

Table 6. Distribution by Academic Department

Department	N
Family Medicine	28
Health Management	28
Nursing	14
Forensic Medicine	11
Public Health	10
Business Administration	8
Emergency Medicine	5
Social Work	3
History of Medicine	3
Public Relations	3
Psychology	2
Others	19

Table 7. Distribution by Type of University

University Type	N
Public University	112
Foundation University	22

Table 8. Distribution by Data Collection Method

Data Collection Method	N
Questionnaire	99
Interview	11
Other	24

Table 9. Most Frequently Used Keywords in the Theses

Keywords	N
Violence in Healthcare	48
Violence	92

Healthcare Worker	16
White Code	14
Burnout	13
Emergency Department	12
Physical Violence	7
Verbal Violence	5

Table 10. Distribution by Page Range

Page Range	N
50-100 pages	65
101-150 pages	64
151-200 pages	2
201-300 pages	3

The results obtained through the screening of the Turkish Higher Education Council (YÖK) Thesis Database reveal an increasing academic interest in the topic of violence in healthcare at the postgraduate level. A total of 134 theses were identified, comprising 75 master's theses, 49 medical specialization theses, and 10 doctoral dissertations. A notable rise in thesis production has been observed since 2019, with 21 theses in 2021, 25 in 2023, and 23 in 2024. This trend indicates that violence in healthcare has become more prominent in both academic and societal discourse in recent years.

The vast majority of theses were written in Turkish (n=132), with only two composed in English. Regarding institutional affiliation, the highest number of theses originated from Faculties of Medicine (n=50), followed by Social Sciences (n=30), Educational Sciences (n=27), and Health Sciences (n=25). In terms of academic supervision, 56 theses were advised by full professors, 41 by assistant professors, and 37 by associate professors, indicating a diverse academic leadership in this research domain. The distribution of theses across academic departments shows equal representation from Family Medicine (n=28) and Health Management (n=28). These were followed by Nursing (n=14), Forensic Medicine (n=11), Public Health (n=10), Business Administration (n=8), Emergency Medicine (n=5), Social Work (n=3), History of Medicine (n=3), Public Relations (n=3), and Psychology (n=2). An additional 19 theses were conducted in various other disciplines, grouped under "Other."

In terms of institutional classification, 112 theses were conducted at public universities, whereas 22 were completed at foundation (private) universities. As for data collection methods, quantitative approaches dominated the methodology, with questionnaires being the most frequently employed technique (n=99), while interviews (n=11) and other methods (n=24) were less commonly used. Keyword analysis revealed that the most frequently utilized terms were "violence" (n=92) and "violence in healthcare" (n=48), followed by "healthcare worker" (n=16), "White Code" (n=14), "burnout" (n=13), "emergency service" (n=12), "physical violence" (n=7), and "verbal violence" (n=5). In terms of thesis length, most documents fell within the 50–150 page range, with 65 theses between 50–100 pages and 64 between 101–150 pages.

CONCLUSION AND RECOMMENDATIONS

This study examined postgraduate theses related to violence in healthcare by systematically analyzing the Turkish Higher Education Council Thesis Database and identified academic trends within the field. The findings demonstrate that since 2019, there has been a marked increase in scholarly engagement with the subject, particularly at the master's level. This suggests that the topic is often approached through practice-oriented and field-based research. The predominance of studies conducted in public universities and the widespread use of questionnaires as a data collection method point to the accessibility of healthcare institutions and the practicality of survey-based methodologies.

The concentration of theses in Family Medicine and Health Management departments indicates that violence in healthcare is explored not only from a clinical but also from an administrative and systemic perspective. Furthermore, the diversity in supervisor academic ranks and institutional affiliations suggests an interdisciplinary approach to the subject. The prevalence of keywords such as "violence," "violence in healthcare," "White Code," and "burnout" reflects an increasing awareness of the consequences and management aspects of violence in the literature.

Based on these findings, the following recommendations can be proposed:

Since violence in healthcare is not solely a medical issue but also a sociological, psychological, and managerial one, future theses should be encouraged to adopt interdisciplinary collaboration.

Although surveys were the most commonly used data collection method, increasing the number of qualitative studies is essential for a deeper understanding of the causes, impacts, and potential solutions related to healthcare violence.

The empirical findings of academic theses should inform health policy development. In particular, the effectiveness of practical measures such as the "White Code" system, in-service training, and legal regulations should be evaluated based on scientific evidence.

The frequent appearance of the keyword "burnout" emphasizes the emotional toll of workplace violence. Consequently, both support programs for healthcare workers and public awareness campaigns should be expanded.

In conclusion, violence in healthcare is increasingly recognized in the academic literature, offering a promising foundation for developing evidence-based solutions. However, a closer alignment between scholarly work, policymakers, and implementing institutions is necessary for effective and sustainable outcomes.

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ADVANTAGES AND DISADVANTAGES OF CITY HOSPITALS

Sema Urnek[40], Koray Mersin[41], Betül Akalın[42], Arzu İrban[43]

ABSTRACT

This study evaluates the current state of city hospitals in Türkiye implemented through the Public-Private Partnership (PPP) model from an academic perspective. Conducted using a literature review method, the study analyzes the advantages and disadvantages of city hospitals, focusing on key components such as patient satisfaction, resource utilization, and sustainability. Based on the literature findings, recommendations for health policies are proposed.

City hospitals have gained significance in line with objectives such as enhancing access to healthcare services, which is a constitutional right, improving treatment quality, integrating advanced technologies into the healthcare system, and promoting health tourism. These hospitals also contribute to improving regional healthcare services, reducing patient referrals from various cities in Anatolia to major metropolitan areas for treatment. In the context of health tourism, the proliferation of city hospitals has been noteworthy. However, their high bed capacity and extensive infrastructure requirements may lead to inefficiencies and economic burdens. While the PPP model facilitates the financing of healthcare projects, it poses risks such as long-term financial burdens and managerial challenges. Additionally, the location of most city hospitals in areas far from city centers creates accessibility issues.

In conclusion, while city hospitals introduce innovations in healthcare delivery, they remain controversial due to financial burdens, risks of privatization, and accessibility challenges. Future health policies should prioritize strengthening primary healthcare services and integrating digital solutions.

INTRODUCTION

The production of goods and services required by society is carried out within a framework of division of labor between public and private sector entities. In line with innovations in public administration, the reduction of the state's role, the allocation of broader scope to the private sector, and the adoption of private sector approaches in the delivery of public services have increased interaction and collaboration between the public and private sectors (Parlak et al., 2021). Public-Private Partnerships (PPPs) were first implemented in the United States and the United Kingdom to facilitate the development and regeneration of problematic urban areas, marking the initial applications of the PPP

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model. Subsequently, PPPs have been widely utilized in areas such as joint technology or ecological projects, education, healthcare, transportation, and prison construction (Uysal, 2020). The PPP model, being a preferred method for large-scale public services, attracts the attention of foreign investors. The involvement of foreign capital, either directly or through local partners, in PPP projects encourages foreign capital inflow into the country. Given these characteristics of its financing structure, the PPP model is considered a "market-friendly" approach (Karasu, 2011: 217).

Public-Private Partnership is a model that enables the state to collaborate with the private sector to implement infrastructure projects. This model provides an effective solution, particularly for large-scale projects and sectors with high financing requirements. The healthcare sector holds a significant place within this framework. In Türkiye, healthcare investments such as city hospitals are financed and operated through the PPP model. The PPP approach aims to utilize public resources efficiently while leveraging the efficiency of the private sector. However, the implementation of this model brings both advantages and various challenges and risks.

Public-Private Partnerships are collaborations established on a contractual basis, defining mutual rights and obligations between the public and private sectors to design, plan, finance, construct, and/or operate projects traditionally considered part of the public sector (Webb & Pulle, 2002). Various methods are employed in the implementation of PPPs, with the most common being Concession Agreements, Build-Transfer (BT), Build-Operate (BO), Build-Operate-Transfer (BOT), Build-Improve-Operate-Transfer (BIOT), Build-Lease-Operate-Transfer (BLOT), Build-Lease-Transfer (BLT), Build-Own-Operate (BOO), and Build-Own-Transfer (BOT) (Tunç & Özsaraç, 2015). Unlike privatization, in this model, the state does not fully transfer the production of public goods and services to the private sector. Instead, it remains the primary actor, defining the scope, content, and nature of public services while assuming responsibility for oversight and regulation.

In the healthcare sector, the PPP model, which has been widely applied in recent times, has a history of approximately 25 years. Two primary reasons are cited for its global adoption. The first is the utilization of the private sector's financial efficiency and productivity advantages in the organization and investment of public services. The second is the use of the private sector's operational capacity and expertise in the delivery of public services (OECD, 2010).

The primary objectives of PPPs in healthcare include providing high-quality and efficient healthcare services at low costs, addressing the cost challenges of large-scale projects, mobilizing idle private sector capital to contribute to the national economy, accelerating the completion of long-term projects, and integrating private sector operational expertise into public infrastructure and service delivery. These objectives aim to enhance service quality and ensure the efficient use of economic resources through the effective application of the PPP model in the healthcare sector (Acartürk & Keskin, 2012).

In recent years, both globally and in Türkiye, the demand for modern healthcare services and qualified bed capacity has been steadily increasing. With many existing hospital buildings reaching the end of their economic lifespan, maintenance and repair costs have risen, and inefficiencies have emerged due to inadequate facilities such as polyclinics, laboratories, and operating rooms. Furthermore, shortcomings in hospital architectural designs, deteriorating physical conditions, and insufficient

infrastructure have hindered physicians and other healthcare professionals from adopting new technologies, leading to efficiency losses in service delivery (Atasever et al., 2018).

According to the Ministry of Health, the physical capacity constraints of healthcare facilities in Türkiye, the financial burden of healthcare services on the budget, and the desire to leverage private sector expertise have made the construction of healthcare facilities through the PPP model an attractive option. Additionally, it has been emphasized that the number of hospital visits and the demand for healthcare services have increased over the years, resulting in a growing need for qualified healthcare personnel to meet these demands (Ministry of Health, 2021).

In Türkiye, hospitals constructed and operated under the PPP model are referred to as "City Hospitals." The PPP model involves long-term contractual agreements between the state and a private sector entity to finance, construct, renovate, maintain, manage, and deliver services for infrastructure investments. Within the healthcare sector, hospitals are built by private companies and leased to the state for a period of 25 years. During this period, the state pays rent to the companies and outsources activities outside of "core services" to these entities (Pala, 2021).

The first regulation concerning the construction of healthcare facilities through the "leasing" method by the public sector in Türkiye was introduced in 2005 with the addition of Provisional Article 7 to the Basic Law on Health Services No. 3359. Subsequent regulations in 2006 and a detailed framework established in 2013 further defined the scope and content of this model. Initially termed "Integrated Health Campus," the terminology evolved to include "Health Campus," "Public-Private Partnerships," and "Public-Private Cooperation." Ultimately, hospitals built through public-private partnerships were introduced to the public as "City Hospitals" (Pala et al., 2018).

In city hospitals, the private sector assumes responsibility for project financing, planning, construction, and operational risks, while the Ministry of Health bears the demand risk. Thus, private sector entrepreneurs are not required to make additional efforts to attract customers for their services and are tasked with managing support services such as cleaning, catering, security, and parking. Additionally, private companies recover their investments in planning, construction, and operation through usage fees paid by the Ministry of Health (Uysal, 2020).

City hospitals were established to create modern and functional healthcare facilities, consolidate smaller public hospitals into large campuses, enhance service quality and efficiency, and share costs and risks with the private sector (Ministry of Health, 2022). As part of the restructuring of Türkiye's healthcare sector, the Ministry of Health adopted the PPP model to enable patients to address their health issues within their own regions. To this end, Türkiye was divided into 30 health regions, with integrated campuses constructed in each region (Ministry of Health, 2019). The first PPP hospital, Yozgat City Hospital, opened in 2017 (Ministry of Health, 2021). The Ministry planned to meet all healthcare needs and renew hospital beds with 32 city hospitals across more than 20 provinces. Upon completion, these projects are expected to provide a total bed capacity of 42,199 (Ministry of Development, 2018). As of 2024, 23 hospitals are operational in 18 provinces, with 9 others under construction (anlatilaninotesi.com.tr). Ankara Etlik City Hospital, with 3,711 beds, stands out as one of Türkiye's largest PPP projects.

Initially, the Ministry of Health used the term "City Hospital" exclusively for hospitals built through the PPP model. Over time, however, hospitals constructed with general budget resources, such as

Kartal Dr. Lütfi Kırdar, Okmeydanı Prof. Dr. Cemil Taşçıoğlu, Göztepe Prof. Dr. Süleyman Yalçın in Istanbul, as well as hospitals in Balıkesir, Erzurum, and Antalya, have also been referred to as "City Hospitals" (Öztürk, 2024).
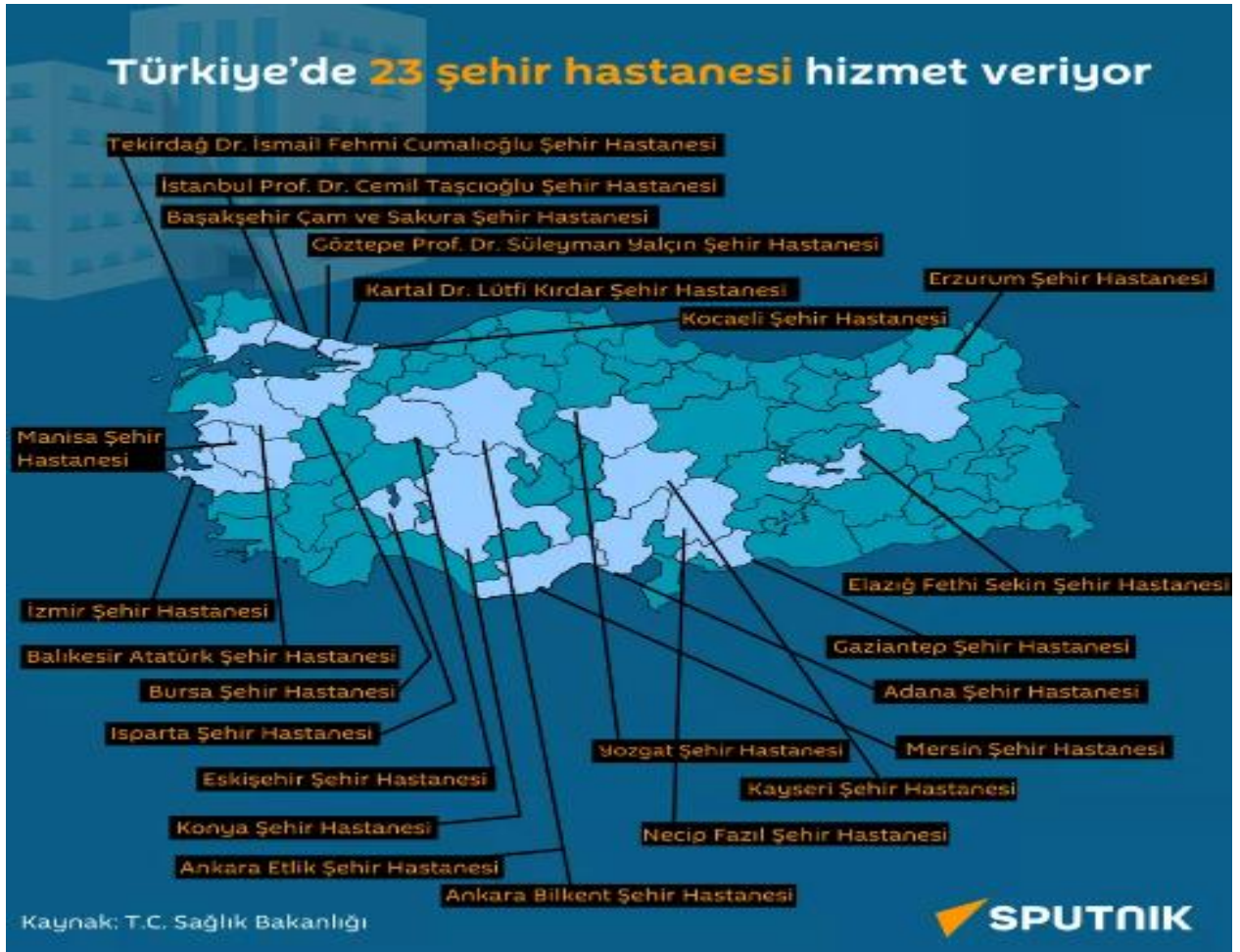
List of All City Hospitals Operating in Türkiye:

- İstanbul Prof. Dr. Cemil Taşçıoğlu City Hospital

- Başakşehir Çam ve Sakura City Hospital

- Göztepe Prof. Dr. Süleyman Yalçın City Hospital

- Kartal Dr. Lütfi Kırdar City Hospital

- Tekirdağ Dr. İsmail Fehmi Cumalıoğlu City Hospital

- Kocaeli City Hospital

- Erzurum City Hospital

- Manisa City Hospital

- İzmir City Hospital

- Balıkesir Atatürk City Hospital

- Bursa City Hospital

- Isparta City Hospital

- Eskişehir City Hospital

- Konya City Hospital

- Ankara Etlik City Hospital

- Ankara Bilkent City Hospital

- Yozgat City Hospital

- Kayseri City Hospital

- Mersin City Hospital

- Adana City Hospital

- Gaziantep City Hospital

- Elâzığ Fethi Sekin City Hospital

- Necip Fazıl City Hospital

City Hospitals Under Construction:

- Aydın City Hospital

- Samsun City Hospital

- Trabzon City Hospital

- Antalya City Hospital

- Ordu City Hospital

- Denizli City Hospital

- Sakarya City Hospital

- Şanlıurfa City Hospital

- Diyarbakır City Hospital

ADVANTAGES OF CITY HOSPITALS IN TÜRKİYE

The Public-Private Partnership (PPP) model stands out as an effective method that local governments can utilize to alleviate the financial burden of providing public services. By incorporating the private sector into public investments, this model enables both local and central governments to overcome budget constraints (Zaharioaie, 2012). In PPP projects employing modern technology, leveraging the private sector's expertise and knowledge serves as a catalyst for the public sector, enhancing the quality and accessibility of service delivery (Hamilton et al., 2012). Financial institutions and banks,

in addition to traditional banking practices, provide resources for PPP projects, creating income diversification and developing more competitive funding sources. The fact that these projects are often backed by central or local government guarantees reduces financial risks, making investments more attractive (Chen et al., 2006).

Particularly in large-scale and complex projects like those in the healthcare sector, a key advantage of the PPP model is its contribution to overcoming capital shortages. While the public sector may struggle to finance healthcare investments, the private sector bridges this funding gap, allowing public healthcare providers to focus on clinical services by relieving them of infrastructure and operational burdens. Non-clinical services (e.g., cleaning, maintenance, security) are undertaken by private contractors. This structure facilitates faster and more efficient healthcare delivery while encouraging private sector efficiency to ensure projects are completed on time and within budget. It also enables the adoption of new technologies and innovative management models (Albayrak & Güçlü, 2020).

Moreover, greater integration of the private sector into public services fosters not only profit-driven motives but also socially responsible actions. The trend of promoting through social responsibility projects rather than traditional advertising has gained prominence in this context (Mecek et al., 2015). PPP projects contribute to capital accumulation, job creation, and the direct or indirect development of various product and service sectors in their regions. In this regard, PPPs offer a framework that supports long-term regional development and economic vitality (Uysal, 2020). The PPP model opens new markets for the private sector, increasing investment volume, employment, tax revenues, and technology transfer. The participation of private enterprises in public service delivery fosters competition, which encourages cost reduction while significantly contributing to efficient resource use and high-quality service provision (Mecek et al., 2015). Additionally, the model offers advantages such as collaboration with specialized professionals and keeping pace with technological innovations, presenting significant potential for the development of the healthcare sector post-pandemic (PwC, 2021).

City hospitals, established through the PPP model, are critical in achieving multidimensional objectives, such as fully securing citizens' constitutional right to healthcare, improving treatment quality, utilizing advanced medical technologies, and promoting health tourism. These hospitals aim to reduce treatment-related travel from various Anatolian cities to major metropolitan areas, thereby enhancing the accessibility and efficiency of healthcare services at the local level (Baş, 2018). Furthermore, the proliferation of city hospitals is a notable development in health tourism, an area where the healthcare sector significantly contributes to the economy. In this context, establishing appropriate infrastructure and management processes in city hospitals is crucial for delivering effective health tourism services (Ministry of Health, 2022).

City hospitals are designed to encompass a wide range of healthcare units to provide comprehensive health services. These include primary care facilities such as maternal and child health centers, family health centers, and community health centers; secondary care facilities like public hospitals and rehabilitation centers; and tertiary care facilities such as training and research hospitals and specialized hospitals. Additionally, city hospital complexes house pharmacies, drug storage facilities, recycling and waste management centers, parking areas, children's playgrounds, and spaces for potential future expansions (Evren, 2016). Compared to older hospitals, these newly constructed facilities are significantly advanced in terms of physical infrastructure, comfort levels, and the use of

cutting-edge medical devices. The prevalence of single-patient rooms and improved hospitality services, offering comfortable accommodation, are among the notable features of city hospitals (Kayral, 2019). During the pandemic, hospitals became crisis management centers, with the healthcare sector taking the lead in solutions. Türkiye's city hospitals, with their bed capacity and equipment, provided significant support during this period (General Directorate of Health Investments, Ministry of Health, 2020).

DISADVANTAGES OF CITY HOSPITALS IN TÜRKİYE

While the Public-Private Partnership (PPP) model in the healthcare sector can accelerate infrastructure investments in the short term, it may present challenges in the long term. For instance, experiences in the United Kingdom indicate that this model can increase costs, lead to reductions in staffing, and cause fluctuations in service quality. A profit-driven approach may impose limitations on access to and quality of healthcare services. Additionally, the inflexibility of long-term contracts can place strain on the public sector and spark debates regarding the efficient use of resources (Hodge & Greve, 2007; Albayrak & Güçlü, 2020). The PPP model introduces complexities in managing long-term collaborations. In projects spanning 25-30 years, coordinating numerous stakeholders, such as banks, suppliers, and consultants, increases administrative complexity. The growth of commercial risks over time may result in the ultimate burden falling on the public sector, potentially straining public finances during economic fluctuations (Albayrak & Güçlü, 2020).

Although city hospitals are promoted as modern healthcare facilities, the impact of a profit-oriented structure on the sustainability of healthcare services remains a subject of debate. This model raises concerns about the transfer of public resources to the private sector. From a technical perspective, the bed capacities of these hospitals are also noteworthy. While the average bed capacity is 1,311, it reaches 3,704 in Ankara Bilkent City Hospital. Research suggests that hospitals with fewer than 200 or more than 600 beds may face efficiency challenges. Furthermore, the indoor space per bed in Türkiye ranges between 287-350 m², compared to 150-200 m² in developed countries, which may increase energy, cleaning, and maintenance costs (Pala et al., 2018).

Court of Accounts audits have revealed that some hospitals were delivered with incomplete construction or equipment. Arranging payment plans to mitigate foreign exchange and inflation risks can create challenges in public oversight. The auditing of hospital information systems relies solely on company-provided data, highlighting an area in need of greater transparency (Court of Accounts, 2017).

Location and accessibility issues are also significant concerns. City hospitals are often constructed in areas far from city centers, which can create transportation challenges. For example, Bursa City Hospital is located along a highway, and İstanbul Çam ve Sakura City Hospital is situated in areas with limited public transportation access. This situation may particularly hinder access to healthcare services for disadvantaged groups (Pala et al., 2018). Staff shortages in city hospitals are another prominent issue. Nurses report increased workloads due to long shifts and overtime (https://www.saglikpersoneli.com, accessed: 25.03.2025). Additionally, in city hospitals serving as training and research facilities, staff shortages and systemic issues exacerbate the workload of medical residents, leading to disruptions in their training processes (TTB, 2019).

Former Health Minister Recep Akdağ stated at the opening of Yozgat City Hospital that these projects would support the Healthcare Transformation Program. Although 34 hospitals were initially planned, in 2019, Health Minister Fahrettin Koca announced that 10 hospitals with a total of 12,400 beds would be constructed using the general budget instead of the PPP model. This can be interpreted as a cautious approach to new projects, though the model has not been entirely abandoned. While healthcare services are provided by Ministry personnel, the private sector is granted income opportunities in specific areas. This raises discussions about whether the delivery of public services to large populations could create advantages for the private sector (Karahanoğulları, 2011).

The 70% occupancy guarantee provided to the private sector is another point of contention. The Ministry clarifies that this guarantee applies to support services such as imaging and laboratory services rather than patient admissions. Guarantees are calculated based on 70% of the transaction volume at the time of the tender, with the expectation that this threshold will not be undercut due to population growth. While this arrangement ensures stable revenue for the private sector, it necessitates careful evaluation regarding the use of public resources (TTB, 2018). The delivery of traditional public services through the PPP model with a private sector approach may introduce challenges in labor and cost management. For instance, optimizing costs to cover payments from facility revenues may require careful consideration, particularly in areas such as personnel management (Uysal, 2017).

CONCLUSION

City hospitals implemented in Türkiye under the Public-Private Partnership (PPP) model have significant potential to contribute to the modernization of healthcare services, the development of health tourism, and the enhancement of service quality. However, the application of this model has brought substantial challenges, including high rental costs, long-term contractual obligations, financial pressures on public resources, and deficiencies in management transparency. Court of Accounts reports and academic studies highlight that these issues pose risks to the sustainability of the projects. Lessons from the PPP experience in the United Kingdom underscore the need for a balanced approach to the economic, social, and administrative dimensions of the model.

In contrast, boutique and day-treatment centers, which are gaining popularity in Europe, offer an alternative model to large-scale hospitals with their less complex structures, focused service delivery, and cost-effectiveness. These models provide notable advantages in terms of efficient resource utilization, reducing the workload of healthcare professionals, and increasing patient satisfaction. Ensuring that the PPP model in Türkiye's healthcare system becomes more transparent, auditable, and accountable, while comparatively evaluating the potential of boutique and day-treatment centers, is critical for the development of sustainable and innovative health policies.

Systematic monitoring of the long-term impacts of city hospitals, evidence-based policy reforms to ensure efficient use of public resources, and minimization of risks associated with the privatization of healthcare services are essential. In this context, clearly defining the roles of the public and private sectors, ensuring financial sustainability, and adopting a management approach that prioritizes the health needs of society are indispensable for the success of the PPP model. The integration of these models into the healthcare system should be supported by monitoring systems based on performance indicators such as patient satisfaction, cost-effectiveness, and service quality.

RECOMMENDATIONS

Strengthening primary healthcare services based on family medicine is critical to reducing unnecessary pressure on city hospitals. An effective referral system will ensure patients are directed to appropriate healthcare facilities, preventing unnecessary hospital admissions and enabling more focused service delivery. The Ministry of Health should develop long-term strategies incorporating independent audit and transparency mechanisms, drawing on international examples and local needs.

To enhance the accessibility of city hospitals to urban centers, investments in transportation infrastructure, such as integrating public transportation networks with hospitals, improving road arrangements, and expanding parking facilities, should be prioritized.

To improve the efficiency of healthcare workers, hospital interiors should be designed ergonomically and functionally, with workflows optimized to be patient-centered and efficiency-driven. These improvements will enhance employee satisfaction, thereby positively contributing to service quality.

To reduce the workload of healthcare workers, task distribution should be improved, the number of support staff increased, and roles clearly defined. This will mitigate the risk of burnout among staff and support the continuity of service delivery.

To streamline patient flow, shorten processing times, and balance the workload of healthcare workers in large-scale hospitals, digital health solutions such as AI-supported patient triage and appointment systems should be widely implemented. These technologies will enhance service efficiency by ensuring patients are directed to the appropriate units.

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IMPLEMENTATION OF STRATEGIC PLANNING IN LOCAL GOVERNMENTS: THE EXPERIENCE OF A DISTRICT MUNICIPALITY

Mesut Aydinli [44], Mustafa Egemen Taner[45], Öncü Yanmaz Arpaci[46]

ABSTRACT

Strategic planning in local governments is crucial for the efficient use of resources, ensuring sustainable development, and citizen-oriented services. This study examines the preparation and implementation process of the 2025-2029 Strategic Plan for a district with a population of 60,000 residents.

The strategic planning process was carried out with a broad participatory approach, involving various stakeholders ranging from the municipal mayor to local community representatives. A comprehensive situational analysis was conducted by considering the internal dynamics of the municipality and external factors. SWOT and stakeholder analyses were used to identify key challenges and opportunities, leading to the formulation of strategic goals and objectives.

The strategic plan incorporates concrete projects and performance indicators across various domains, including environmental sustainability, infrastructure development, expansion of social services, and strengthening the local economy. The study details monitoring and evaluation mechanisms established during the implementation. Performance indicators provide critical feedback for enhancing service quality and resource efficiency within the municipality.

The analysis highlights the challenges encountered during the strategic plan's implementation and the solutions developed to overcome them. The performance measurement mechanisms help the municipality track progress toward its goals and ensure that the strategic plan remains aligned with the needs of the community.

The strategic planning process undertaken by the district municipality serves as a significant example of effective strategic management in local governance. This study aims to guide other municipalities and local administrations in adopting strategic planning practices that enhance governance efficiency and sustainability.

Keywords: Strategic planning, local government, performance indicators, participatory management.

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SUSTAINABLE WAREHOUSE OPTIMIZATION: A SIMULATION-BASED APPROACH FOR FORKLIFT EFFICIENCY

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ABSTRACT

Warehousing operations significantly impact environmental sustainability through energy consumption and carbon emissions, particularly in large-scale logistics facilities where forklifts are extensively used. This study aims to explore the sustainability benefits of optimized warehouse layouts by comparing ABC/XYZ-based inventory positioning with random storage allocation. The objective is to evaluate how warehouse design can reduce energy consumption, enhance order-picking efficiency, and minimize carbon footprints, ultimately contributing to lean and sustainable logistics.

This research adopts a simulation-based approach using Arena software to model warehouse operations under different layout scenarios. The key steps include:

Data Collection: Warehouse layout mapping, order-picking demand, and forklift movement data.

Simulation Model Design: Implementing two warehouse configurations: (1) Optimized layout using ABC/XYZ inventory analysis, (2) Random product placement.

Performance Metrics: Evaluating sustainability-focused KPIs, including forklift energy consumption, travel distance, order-picking time, and CO_2 emissions.

Scenario Analysis: Comparing efficiency of trade-offs between optimized and non-optimized warehouse configurations.

While the study is currently in the proposal and design phase, it is anticipated that ABC/XYZ-based warehouse layouts will result in:

Reduced forklift travel distances, leading to lower energy consumption.

Improved order-picking times, enhancing overall warehouse productivity.

Lower carbon emissions, contributing to greener logistics.

Better resource utilization, aligning with lean and sustainable management principles.

The expected outcome is to establish a quantitative framework for evaluating sustainable warehouse management strategies. The findings will provide actionable insights for business leaders, warehouse managers, and policymakers to implement greener logistics practices and optimize warehouse sustainability performance.

Keywords: sustainable warehouse management, simulation modeling, lean logistics, energy efficiency, forklift optimization, abc/xyz inventory, carbon footprint reduction.

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INDUSTRIAL SCRAP FORECASTING WITH ARTIFICIAL INTELLIGENCE

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ABSTRACT

This study aims to develop an artificial intelligence model capable of accurately forecasting industrial scrap, a factor of critical importance in efficient production planning. By estimating industrial scrap with high precision, it is possible to prevent both overproduction and underproduction, thereby reducing stock-related costs and enhancing overall production efficiency. Within the scope of this research, a dataset comprising three years of production and scrap data from a flexible printing and packaging company was utilized to train a machine learning model. The dataset was divided into two parts: 80% (6,056 records) for training and 20% (1,515 records) for testing. A simple regression tree algorithm was applied for both machine learning and scrap forecasting, and the modeling process was conducted using the KNIME platform.

The product group definition and product structure data, which are considered important for machine learning, have been included to training process. As a result of this process, the average deviation of 4% has been reduced to 1.8%. Thus, artificial intelligence has been enabled to make more accurate forecasting. Thereby, this study has provided an example of the usability of artificial intelligence in industrial scrap forecasting, which is important for production planning in the industry. The model developed in the study will contribute to the digital sustainability of production processes.

Key words: Artificial intelligence (AI), production planning, production management, scrap management, forecasting

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CONTENT ANALYSİS OF SUSTAINABILITY STUDIES İN HEALTH MANAGEMENT: A SYSTEMATIC REVIEW OF ACADEMIC THESES

Hamza Sığırcı[50]

ABSTRACT

As the importance of sustainability continues to grow, a similar trend is observed in the healthcare sector. Despite the rise in the number of studies on healthcare management in this context, a clear framework for these studies has yet to be established. This study aims to address this research gap by evaluating academic theses focusing on sustainability in the field of healthcare management in Türkiye in terms of content and scope.

A comprehensive search was conducted on the YÖK National Thesis Center database, encompassing all studies published up to 2025. These studies were meticulously scanned using predefined keywords. This search resulted in a total of 10,089 theses. These theses were then filtered based on the inclusion criteria. Following this process, 27 graduate theses were found to be suitable for inclusion.

The majority of the reviewed studies were conducted in 2023 and 2024, with a predominant focus on master's theses. In addition, keywords such as sustainability, green hospital, sustainable development and health were frequently used. The analysis of sample sizes showed that most studies were conducted with less than 100 participants, and mixed (multi-stakeholder) samples were the most common sampling method used.

This study is considered significant in revealing general trends in sustainability research within healthcare management and contributing to the identification of gaps in the field.

Keywords: Sustainability, Healthcare Management, Graduate Theses, Content Analysis

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IMPROVING ENVIRONMENTAL IMPACT: THE ROLE OF TECHNOLOGY IN OIL & GAS

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ABSTRACT

The energy sector is currently navigating one of its most intricate challenges in history. The dependence on fossil fuels and the profound environmental consequences of their use have positioned the energy transition as a central issue of the 21st century. As dominant actors in the global energy supply chain, Oil and Gas (O&G) companies play a pivotal role but also face intense scrutiny for their significant contribution to greenhouse gas (GHG) emissions and other environmental concerns. Advancing environmental performance in the O&G sector hinges on the adoption of innovative technologies. These advancements present an opportunity for the industry to mitigate emissions and address the broader ecological impacts of its operations. This chapter explores a range of technological solutions employed by the O&G sector, highlighting their potential to minimize environmental damage. By examining technologies such as artificial intelligence (AI), carbon capture, utilization, and storage (CCUS), and electrification, the chapter provides a practical, global perspective on industry efforts.

The anticipated growth in energy demand driven by factors such as the expansion of AI, cryptocurrency activities, and population increases in certain regions indicates that fossil fuels will continue to play a significant role in the near future. This reality underscores the urgency of leveraging technological innovation to achieve meaningful environmental impact reduction while ensuring its widespread adoption.

Keywoords: Improving Environmental Impact

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INTEGRATION OF NANOPARTICLES INTO DIGITAL HEALTH TECHNOLOGIES: INNOVATIVE APPROACHES AND FUTURE PERSPECTIVES

Sabina Hajizada[54], Aynura Karimova[55], Sevinj Aliyeva[56], Vugar Yagublu[57]

ABSTRACT

The integration of nanotechnology and digital health technologies has triggered a significant transformation in modern healthcare systems. Nanoparticles with their unique physicochemical properties transforming drug delivery systems, biosensors, and medical imaging, and facilitating personalized medicine applications. When combined with cuttingedge digital health technologies namely AI-assisted diagnostics, remote patient monitoring, and big data analytics, these nanomaterial advancements accelerate progress toward smarter, more personalized healthcare solutions.

This study explores the integration of nanomaterials with digital health transformation, examining current applications and future possibilities. The convergence of nanoparticles and digital health transformation presents revolutionary advancements in disease diagnosis, treatment management, and patient monitoring. Nanoparticle-based systems, supported by AI and big data analytics, can enhance the efficiency and personalization of healthcare services. However, careful consideration of biocompatibility, regulatory policies, and ethical concerns is essential for the successful implementation of these technologies on a broader scale.

Keywords: Nanoparticles, Digital Health, Nanomedicine, Targeted Drug Delivery, Biosensors, Artificial Intelligence

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EVALUATING SUBSTANCE P LEVELS IN SALIVA AS A POTENTIAL BIOMARKER FOR PAINFUL DIABETİC PERIPHERAL NEUROPATHY

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ABSTRACT

Diabetic neuropathy (DN) is the most prevalent complication of diabetes mellitus, affecting various parts of the nervous system. Painful diabetic peripheral neuropathy (P-DPN) impacts approximately 20% of the diabetic population. Current diagnostic methods for DPN lack reliable biochemical markers. Substance P (SP), a neuropeptide involved in pain perception, has shown promise as a potential indicator in previous animal studies. This study aims to evaluate the levels of SP in saliva among different groups of diabetic patients and assess its association with P-DPN, potentially serving as a diagnostic and prognostic indicator.

The study included 64 individuals with type II diabetes, divided into 3 groups based on their neuropathy status, and a control group of 10 healthy individuals. Saliva samples were collected and analyzed using ELISA to calculate P levels. Statistical analysis was performed using SPSS with a significance level of 0.05.

No statistically significant differences in SP levels were found among the different groups or between diabetic and control subjects. Age was noted as an important factor, with patients under 65 years exhibiting higher levels of SP compared to older patients ($p = 0.007$). Variables such as sex, diabetes duration, glycemic control, and antidiabetic treatment did not significantly impact SP levels. Contrary to other studies suggesting increased SP in painful conditions, there was no significant alteration in its levels in the saliva of patients with P-DPN. Our results regarding age and SP levels have notable clinical implications. This demographic group may experience different pain mechanisms or a heightened sensitivity to pain in the context of P-DPN. Clinicians should be more vigilant in assessing and managing pain in younger diabetic patients, as they may be at greater risk for severe symptoms.

The study concludes that SP levels in saliva are not significantly associated with P-DPN, undermining its potential utility as a diagnostic or prognostic marker. The age-related findings in this study highlight the need for a nuanced approach in managing DN. Further research is necessary to identify reliable biomarkers for DN complications.

Key words: Diabetes, peripheral neuropathy, substance P

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POST-COVID CHRONIC COUGH AND OBESITY

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ABSTRACT

Cough is a predominant symptom associated with COVID-19, persisting not only during the acute phase of the illness but also after recovery, often referred to as post-COVID cough, which can last up to 60 days. Recent studies have identified obesity as a potential risk factor for developing long COVID symptoms. This study aims to examine the association between elevated Body Mass Index (BMI) and the prevalence of chronic post-COVID cough.

We conducted a prospective cohort study with two groups: Group 1 (N=80) with a normal BMI and Group 2 (N=85) with a BMI greater than 30. A total of 165 patients hospitalized in our COVID ward were screened over a period of 60 days post-discharge during regular outpatient visits. All patients were evaluated for comorbidities related to chronic cough and tested negative. Descriptive statistics and one-way ANOVA were performed using RStudio.

The mean BMI for Group 1 was 23.4 kg/m^2, while for Group 2, it was 34.2 kg/m^2. The prevalence of cough in Group 1 was 90% within the first 10 days post-discharge, gradually decreasing to 7% by day 60 (26% by day 30). In Group 2, the prevalence of cough was 86% at day 10, decreasing to 50% by day 30, and 25% by day 60. One-way ANOVA revealed no statistically significant difference in cough prevalence at day 10 between the groups. However, significant differences were noted at days 30 and 60, with p-values of 0.05 and $p<0.01$, respectively (95% CI).

Our results suggest a potential correlation between chronic post-COVID cough and obesity, although limitations such as the relatively small sample size and brief follow-up duration must be acknowledged.

Improved understanding of the interaction between BMI and chronic cough following COVID-19 could guide future clinical management and intervention strategies.

Key words: COVID, chronic cough, obesity, BMI

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COMPARISON OF THE EFFICACY OF TOCILıZUMAB IN PREVENTING INTUBATION IN DIABETİC PATIENTS WITH AND WITHOUT TIGHT GLYCEMIC CONTROL

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ABSTRACT

The SARS-CoV-2 virus is responsible for COVID-19, which primarily manifests as mild upper respiratory symptoms in most individuals but can also lead to severe respiratory failure and mortality, particularly among diabetic patients. Tocilizumab has emerged as a possible therapeutic agent in mitigating such severe outcomes, including intubation. This study aims to compare the effectiveness of Tocilizumab in preventing intubation in diabetic patients with tight glycemic control versus those with uncontrolled diabetes.

In the initial phase of the study, 56 hospitalized patients were assessed. Data were analyzed using RStudio to quantify qualitative characteristics. The second phase targeted 30 patients with type 2 diabetes who received Tocilizumab, dividing them into two groups based on HbA1c values: Group 1 (HbA1c < 6 mg/dL, n=10) and Group 2 (HbA1c > 6 mg/dL, n=20). A comparison of intubation rates between the groups was conducted, followed by a chi-squared test to evaluate the association between uncontrolled diabetes and intubation.

The mean age of participants was 76 years. The most prevalent comorbidities included arterial hypertension (85%, n=48), elevated BMI (71%, n=40), and type 2 diabetes (67%, n=38). Among the diabetic cohort, 11 patients (28.9%) required intubation. Notably, none of the eight patients in the diabetes-negative group (non-diabetics) were intubated. In Group 1 (HbA1c < 6), one patient (10%) was intubated, while in Group 2 (HbA1c > 6), eight patients (40%) underwent intubation. The chi-squared test revealed a significant relationship between the presence of uncontrolled type 2 diabetes and the need for intubation ($p < 0.01$; $\alpha = 0.05$). These findings suggest that uncontrolled diabetes notably diminishes the efficacy of Tocilizumab in preventing intubation, with effectiveness rates of 100% in non-diabetics, 90% in Group 1, and 60% in Group 2.

This study highlights the potential impact of glycemic control on the therapeutic effectiveness of Tocilizumab in diabetic patients experiencing COVID-19-related respiratory complications, indicating a critical need for careful glycemic management in this high-risk population.

Key words: COVID-19, Tocilizumab, Diabetes, Glycemic Control, Intubation

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A LOOK AT LONG-TERM CARE SERVICES AND FINANCING IN THE NORDIC COUNTRIES

Yasemin Yıldırım[70]

ABSTRACT

Today, the aging of the population in developed and developing countries of the world is a socioeconomic problem. Since this situation also threatens the economic structure of the countries, it requires some structural arrangements. The increasing need for care with the aging of the population is sometimes provided officially and sometimes unofficially. In some countries, these services are provided more systematically by the state and the private sector. It is seen that the state has an important role in the provision and financing of long-term care services, especially in the Scandinavian countries.

This article examines the main framework and financing of long-term care services provided for the elderly population in the Scandinavian countries of Sweden, Denmark, Norway and Finland. The common feature of these countries is that the state assumes responsibility for long-term care services, especially through municipalities, and that their organization is carried out under the supervision of the state.

Key words: Health Expenditures, Long-Term Care, Financing Long-Term Care, Nordic Countries

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EXPERIENCING TOURISM ON PERŞEMBE PLATEAU: A NETNOGRAPHIC RESEARCH WITH THE EXPERIENCE ECONOMY MODEL

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ABSTRACT

Recently, tourists have been looking for different experiences depending on their hobbies and tendencies. One of the areas where they can realize these unique experiences is the plateaus. The Eastern Black Sea Region in Turkey has a very rich potential for plateaus that have unique natural and cultural characteristics. Perşembe Plateau in the Aybastı district of Ordu province has also been one of the plateaus that have recently attracted both local and foreign tourists. The aim of this research is to determine the experiences of tourists visiting Perşembe Plateau with the experience economy dimensions of Pine and Gilmore. The netnographic approach was preferred within the scope of the qualitative research method. In this context, online comments made about Perşembe Plateau on the TripAdvisor platform were used. 86 comments shared online between September 2016 and November 2024 were included in the research. All comments were transcribed, examined in general, corrected for spelling and grammar errors, and comments in different languages were translated into English. I comment determined to be unrelated to the subject was filtered and a total of 85 comments were included in the content analysis.

The data were examined and classified within the Pine and Gilmore's framework of educational, entertainment, esthetic and escapist dimensions. When the 85 online comments written about Perşembe Plateau were evaluated according to whether they were positive or negative, %65.9 of comments were excellent, %22.3 were very good, and % 2.4 were average. However, %7 of the online comments were rated as bad and %2.4 as terrible. According to the findings, It was determined that tourists visiting Perşembe Plateau experienced all dimensions of the experience economy. In particular, it was observed that experiences in the esthetic and entertainment dimensions were more prevalent in visitor comments. It has been determined that tourists have negative experiences as well as positive experiences with the destination. Recommendations have been presented to relevant stakeholders to eliminate the factors that cause these negative experiences.

Keywords: Experience, Experience Economy, Perşembe Plateau, Netnography.

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GENDER DISCRIMINATION IN THE WORKPLACE, SUSTAINABLE PERFORMANCE AND ETHICAL LEADERSHIP

Cemile Şeker[75], Aslı Kaya[76]

ABSTRACT

Gender equality, sustainable performance, and ethical leadership are emerging as significant and complementary elements in today's business world. The purpose of this study is to examine how gender discrimination affects sustainable performance processes and leadership practices in the workplace. Additionally, the study will discuss how factors that hinder women from accessing leadership positions undermine an organizational structure aligned with sustainable performance. The significance of the study lies in offering a comprehensive perspective on the relationship between gender discrimination in the workplace and sustainable performance, and the impact of ethical leadership on this relationship. While there are various studies on workplace gender inequality and ethical leadership, there is a lack of comprehensive research addressing the interaction of these two concepts with sustainable performance.

This study aims to fill this gap, which forms the rationale for the research. Furthermore, the study seeks to provide a deeper understanding of how ethical leadership and gender equality can be more effectively implemented to achieve sustainable performance goals in modern business environments. Eliminating gender discrimination is not only an ethical responsibility but also a critical factor for sustainable performance. This study was conducted using a literature review methodology. Current and reliable sources published on gender discrimination, sustainable performance, and ethical leadership were reviewed. For this review, important databases such as Google Scholar, Scopus, and Web of Science were examined. Articles and books published in leading journals in the field were analyzed in depth to explore the literature on gender discrimination, sustainable performance, and ethical leadership in the workplace.

Keywords: Gender discrimination in the workplace, sustainable performance, ethical leadership, gender equality, leadership, organizational sustainability, ethical business practices, gender-based discrimination, leadership and diversity, women leadership.

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EVALUATION OF THE EFFECT OF HEALTH LITERACY ON INDIVIDUALS' CHOICE OF DENTIST

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ABSTRACT

This study aims to analyze health literacy and dental literacy of individuals receiving oral and dental health treatment. To determine whether there is a significant relationship between physician preferences was conducted. Within the scope of the study, the literature on health literacy and dentist preference conceptual framework was prepared by conducting a literature review. After this stage, 346 people were interviewed 32 Likert-type questionnaire study consisting of questions was applied. The data obtained were subjected to validity, reliability, correlation and crosstabs analyses using SPSS 16.0 program and subjected to validity, reliability, correlation and crosstabs analyses.

According to the results of the research, the most important factors affecting individuals' choice of physician are The most important factors are the dentist's professional and effective communication to get opinions from other specialty physicians on issues that are of interest to the physician's profession rather than the physician's gender. success is effective, examination fee, duration of examination, gender of the physician, physician's being famous on television and social media and the way he/she dresses are effective in physician preference was not found to be absent. Among the demographic variables, the gender variable of dentist preference, while a significant difference was found in age and education level variables. No scientifically significant difference was found in terms of literacy and dentist preference. In addition, as a result of the related study, there was no significant difference between individuals' health literacy and dentist choice. It was concluded that there was no scientifically significant relationship.

Keywords: Dentist Choice, Dentist Preference, Health Literacy.

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THE EFFECT OF TRANSFORMATIONAL LEADERSHIP BEHAVIORS ON EMPLOYEE PERFORMANCE IN HEALTHCARE INSTITUTIONS: A SYSTEMATIC REVIEW

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ABSTRACT

Employee performance in healthcare institutions affects various critical factors, ranging from the quality of patient care to operational efficiency. Leadership styles, particularly transformational leadership, can have a significant impact on enhancing employee motivation and performance. In this context, the transformational leadership style has become an ideal practical solution for improving the quality of healthcare services and ensuring patient safety. This study aims to systematically review empirical studies conducted between 2015 and 2025 that examine the impact of transformational leadership behaviors on employee performance in healthcare institutions and to comprehensively synthesize the existing literature.

This systematic review was conducted following the PRISMA protocol and was carried out between 01.03.2025 and 20.03.2025 through a search of English-language databases. Accordingly, the Scopus, Taylor & Francis, Wiley, and Emerald databases were searched using the keywords *"health institution", "health sector", "healthcare", "hospital", "health staff", "doctor", "nurse"*, *"transformational leadership"*, *"employee performance", "job performance."* Empirical, peer-reviewed studies that employed quantitative methods to examine the relationship between transformational leadership and employee performance in healthcare institutions were included in the review. The included studies were evaluated using the Joanna Briggs Institute (JBI) quality assessment tool, and the analysis process was completed.

A total of 762 titles and abstracts were screened, and based on the predetermined inclusion and exclusion criteria, 12 studies were deemed suitable for the systematic review. The collected variables were analyzed to determine the impact of the transformational leadership style on employee performance. Among the 12 studies examining the relationship between transformational leadership and employee performance, 9 reported a positive correlation.

The findings of this review provide evidence that transformational leadership has a significant impact on healthcare professionals and the hospital environment. Therefore, designing leadership development programs in the healthcare sector to incorporate the transformational leadership approach could be effective in enhancing employee productivity.

Keywords: Healthcare institutions, Transformational leadership, Employee performance

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EXPLORING THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE ACHIEVEMENT OF SUSTAINABLE DEVELOPMENT GOALS (SDGS)

Zuhal Tuğçe Yazıcı [81]

ABSTRACT

Artificial Intelligence (AI) has rapidly evolved into one of the most influential drivers of digital transformation, with profound implications for the achievement of the United Nations Sustainable Development Goals (SDGs). As societies face pressing challenges such as climate change, resource scarcity, global health crises, and widening social inequalities, AI offers unprecedented opportunities to accelerate progress. AI applications in healthcare enable early disease detection and personalized treatment, while in agriculture, they contribute to precision farming, crop yield optimization, and sustainable land management (Goodfellow et al., 2016; Jurafsky & Martin, 2020). In the energy sector, AI facilitates smart grids and efficiency improvements, supporting the transition to renewable energy and reducing carbon emissions (OECD, 2021; WEF, 2022).

Despite these benefits, AI also introduces risks, including increased energy consumption, algorithmic bias, and digital divides between advanced and developing economies (Floridi et al., 2018; UNESCO, 2023).This study investigates the relationship between AI capacity, the rule of law, and sustainable development outcomes. By integrating the AI Index and the Sustainable Development Index with governance indicators, empirical findings demonstrate a strong positive correlation: AI capacity and institutional quality jointly explain over 80% of the variance in SDG performance. Importantly, results highlight that AI's potential to drive sustainable progress is conditional on robust legal frameworks and governance structures that ensure fairness, accountability, and inclusivity (UN, 2015; McKinsey, 2018). Comparative evidence from the United States, China, the European Union, and Turkey illustrates how AI adoption across healthcare, agriculture, defense, and finance is reshaping developmental pathways and institutional priorities (Stanford HAI, 2023; TÜBİTAK, 2022).

Keywords: Artificial Intelligence, Sustainable Development Goals, Rule of Law, Digital Governance, Ethical AI

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INTRODUCTION

Sustainable development has emerged as one of the most pressing global imperatives of the 21st century. Defined by the Brundtland Commission as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987), sustainable development requires the balanced integration of economic growth, social inclusion, and environmental protection. To operationalize this vision, the United Nations adopted the 2030 Agenda for Sustainable Development, comprising 17 Sustainable Development Goals (SDGs) that serve as a universal blueprint for addressing poverty, inequality, climate change, environmental degradation, peace, and justice (UN, 2015). Despite significant progress, global reports continue to highlight that many countries are lagging in meeting SDG targets, particularly in areas such as climate action, responsible consumption, and reduced inequalities (UNDP, 2021; World Bank, 2022).

Against this backdrop, technological innovation—especially Artificial Intelligence (AI)—is increasingly recognized as a transformative force that can accelerate progress toward the SDGs. AI refers to digital systems capable of learning, reasoning, and making human-like decisions, with applications across healthcare, agriculture, education, energy, and governance (Goodfellow et al., 2016; Wirtz et al., 2018). For example, AI-enabled diagnostic tools have demonstrated significant accuracy in early disease detection, while precision agriculture has improved crop yields and reduced resource consumption (Harvard Health, 2021; OECD, 2021). Furthermore, AI-driven smart energy systems contribute to reducing greenhouse gas emissions, supporting the global transition to renewable energy sources (WEF, 2022; Stanford HAI, 2023).

However, AI is not without risks. Concerns such as algorithmic bias, surveillance, data privacy, digital inequality, and the environmental costs of large-scale computation have sparked debates regarding its ethical and sustainable use (Floridi et al., 2018; UNESCO, 2023). These challenges highlight that the deployment of AI cannot be viewed solely as a technical process but must also be grounded in robust legal frameworks, ethical standards, and strong governance institutions. Indeed, the rule of law and institutional capacity play a critical role in ensuring that AI applications contribute positively to sustainable development outcomes by safeguarding human rights, equity, and accountability (OECD, 2022; European Commission, 2023).

This study builds upon these debates by examining the impact of AI capacity and the rule of law on sustainable development performance. Specifically, it seeks to answer the following

questions: To what extent does AI contribute to achieving the SDGs? How does governance—measured through the rule of law—moderate this relationship? And what are the implications for policymakers seeking to integrate AI into sustainable development strategies? By addressing these questions, the research contributes to both the academic literature on digital governance and the policy discourse on sustainable development, providing insights for governments, international organizations, and civil society.

METHOD

This study adopts a **quantitative research design** to investigate the relationship between Artificial Intelligence (AI) capacity, the rule of law, and countries' performance on the Sustainable Development Goals (SDGs). A cross-sectional approach was employed, drawing on secondary data from international indices and databases. The study seeks to assess whether AI capacity contributes to sustainable development outcomes, and how governance—measured through the rule of law—moderates this relationship.

Data Sources

Three primary datasets were used:

1. **Artificial Intelligence Index (AI Index):** Developed by the Stanford Institute for Human-Centered AI (2023), this index provides a composite measure of countries' AI capacity, including research output, investment, workforce skills, and innovation potential.
2. **Sustainable Development Index (SDG Index):** Published annually by the United Nations Sustainable Development Solutions Network (UN, 2015; Sachs et al., 2022), this index measures countries' progress toward the 17 SDGs using standardized indicators such as poverty reduction, education, health, and environmental sustainability.
3. **Rule of Law Index:** Compiled by the World Justice Project (2022), this index captures governance quality, focusing on accountability, transparency, protection of fundamental rights, and enforcement of laws.

Variables

- **Dependent Variable:** Sustainable Development Index (SDG performance)

- **Independent Variable:** AI Index (AI capacity)
- **Moderator Variable:** Rule of Law Index (governance quality)

Control variables such as GDP per capita, education levels, and digital infrastructure were also considered to account for structural differences across countries (World Bank, 2022).

Diagnostic tests were performed to ensure model reliability:

- **Multicollinearity:** Variance Inflation Factor (VIF) values were below the threshold of 5.
- **Autocorrelation:** Durbin–Watson statistic indicated no autocorrelation in residuals.
- **Homoscedasticity:** Breusch–Pagan tests confirmed variance consistency across residuals.
- **Normality of Errors:** Shapiro–Wilk tests confirmed normal distribution of residuals.

Ethical Considerations

As this study relies solely on publicly available secondary datasets, no human subjects were directly involved, and no ethical risks were identified. However, the study aligns with academic integrity standards by ensuring transparency of data sources, reproducibility of methods, and accurate citation of prior work (Floridi et al., 2018; OECD, 2022).

DISCUSSION

The findings of this study demonstrate that both Artificial Intelligence (AI) capacity and the rule of law exert significant and positive effects on sustainable development performance. This confirms earlier scholarship suggesting that technological progress alone is insufficient for achieving global sustainability targets without robust institutional and governance frameworks (Floridi et al., 2018; OECD, 2022). The regression results—indicating that AI and governance jointly explain more than 80% of the variance in SDG performance—highlight the importance of adopting a holistic approach that integrates innovation, ethics, and institutional quality.

AI as a Driver of Sustainable Development

The results are consistent with prior studies emphasizing AI's role in advancing SDGs across sectors. For instance, AI-enabled tools in healthcare have improved early disease detection and reduced treatment costs, directly contributing to SDG 3 (Good Health and Well-Being)

(Harvard Health, 2021). Similarly, AI-based precision farming enhances resource efficiency and crop yields, supporting SDG 2 (Zero Hunger) and SDG 12 (Responsible Consumption and Production) (OECD, 2021). Moreover, AI-driven smart grids and renewable energy optimization promote SDG 7 (Affordable and Clean Energy) and SDG 13 (Climate Action) (WEF, 2022). These findings reinforce the notion that AI serves as a catalyst for accelerating progress toward multiple sustainability dimensions (Stanford HAI, 2023).

The Moderating Role of Governance

The positive effect of the rule of law observed in this study underscores the centrality of governance in ensuring that AI applications produce equitable and sustainable outcomes. As noted in the European Commission's proposal for the AI Act (2023), the ethical and legal regulation of AI is indispensable to mitigate risks such as surveillance, algorithmic bias, and privacy violations. Without legal safeguards and institutional accountability, AI could exacerbate existing inequalities, widen the digital divide, and undermine trust in democratic processes (UNESCO, 2023; Wirtz et al., 2018). The findings therefore align with literature emphasizing that strong governance mechanisms are not merely complementary but essential in transforming AI potential into tangible sustainability gains.

Policy Implications

The empirical evidence presented here suggests several implications for policymakers. First, investments in AI research, skills development, and infrastructure must be coupled with the establishment of robust legal frameworks that protect human rights and promote inclusivity. Second, international cooperation is necessary to reduce disparities between high-income and low-income countries, ensuring that AI contributes to global rather than uneven development (McKinsey, 2018; UNDP, 2021). Third, education and workforce reskilling policies should be prioritized to address the labor market disruptions associated with automation, aligning with SDG 8 (Decent Work and Economic Growth).

Limitations and Future Research

While this study provides significant insights, it also has limitations. The reliance on secondary datasets may not capture the nuanced, country-specific dynamics of AI adoption and governance. Moreover, the cross-sectional design restricts causal inference; future research could adopt longitudinal approaches to examine how AI and governance interact over time.

Further studies may also explore sector-specific analyses—such as healthcare, finance, or agriculture—to provide deeper insights into the contextual impacts of AI on sustainable development.

CONCLUSION OF DISCUSSION

Overall, the discussion highlights that AI is a double-edged sword: it holds enormous promise for advancing the SDGs, but its benefits are contingent on governance frameworks rooted in the rule of law, accountability, and inclusivity. By aligning technological innovation with ethical and legal safeguards, societies can harness AI's transformative potential while minimizing its risks, thereby contributing meaningfully to the achievement of the 2030 Agenda for Sustainable Development. Conclusion and Suggestions

Conclusion

This study set out to examine the impact of Artificial Intelligence (AI) capacity and the rule of law on the achievement of the United Nations Sustainable Development Goals (SDGs). The empirical analysis revealed that both AI and governance quality significantly and positively influence sustainable development performance, jointly explaining more than 80% of the variance. These findings reinforce the argument that technological innovation, while powerful, is insufficient in isolation. Instead, AI must be embedded within robust governance systems to ensure that its benefits are equitably distributed and ethically aligned with global sustainability objectives (Floridi et al., 2018; OECD, 2022).

The results confirm that AI contributes directly to multiple SDGs, including health, agriculture, energy, and climate action, yet its transformative potential is conditional on the rule of law and institutional quality. Without effective legal frameworks, accountability mechanisms, and participatory governance, AI risks exacerbating inequalities, undermining trust, and generating unintended environmental and social consequences (UNESCO, 2023; European Commission, 2023). Therefore, the achievement of the 2030 Agenda requires not only technological capacity but also governance that safeguards human rights and promotes inclusivity.

Suggestions

1. **Strengthening Governance Frameworks:** Policymakers should prioritize the development of comprehensive legal and ethical guidelines for AI to ensure responsible

innovation. The European Union's AI Act can serve as a model for establishing clear regulatory standards (European Commission, 2023).

2. **Bridging the Digital Divide:** International organizations and governments must invest in AI capacity-building for low- and middle-income countries to prevent global disparities in sustainable development outcomes (UNDP, 2021; McKinsey, 2018).

3. **Integrating AI into Sectoral Policies:** AI should be strategically embedded into national strategies for healthcare, agriculture, education, energy, and public administration. This integration will maximize sector-specific contributions to SDGs.

4. **Investing in Human Capital:** Workforce reskilling and education programs should be expanded to prepare societies for AI-driven transformations in labor markets, aligning with SDG 4 (Quality Education) and SDG 8 (Decent Work).

5. **Promoting Ethical AI Research:** Academic institutions, civil society, and industry stakeholders should collaborate to develop research on explainable, transparent, and fair AI systems that prioritize societal well-being (Wirtz et al., 2018; Stanford HAI, 2023).

6. **Fostering Multilateral Cooperation:** Global challenges such as climate change, pandemics, and digital security require cooperative governance. International frameworks should be strengthened to coordinate AI policies and share best practices across borders.

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