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EXAMINATION OF THE ENVIRONMENTAL RESPONSIBILITIES OF COMPANIES WITHIN THE FRAMEWORK OF SUSTAINABILITY

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Abstract

This study aims to investigate the environmental responsibilities of companies within the framework of sustainability and to investigate which environmental principles companies comply with the most. For this purpose, the sustainability compliance reports published by 25 companies included in the BIST Sustainability 25 Index in 2022 were examined. The published reports were accessed via the Public Disclosure Platform. Sustainability compliance reports include four sections: general principles, environmental principles, social principles, and corporate governance principles. Since the subject of the research was determined as environmental responsibility, data on the general principles and environmental principles included in the sustainability compliance reports were collected. In this context, first of all, the compliance status of companies with general principles and environmental principles in sustainability reports was analyzed using statistical methods. In the application section, it was investigated whether the auditing firms that audit the companies, the sectors of the companies, the markets where the companies are located, and the ages of the companies affect the compliance status with general and environmental principles and whether there is a relationship between the principles. According to the basic results obtained from the study, it was determined that energy projects are the subject that companies comply with the most among environmental principles. The principle that companies comply with the most was determined as the B20 coded principle of "energy efficiency projects have been implemented and the amount of energy consumption and emission reduction achieved through energy efficiency projects has been disclosed to the public". In addition, it has been observed that the auditing firms that audit the companies and the ages of the companies can be effective in compliance with general and environmental principles. It has also been concluded that the implementation and monitoring of sustainability are related to environmental principles.

Keywords: *Sustainability, Environmental Responsibility, BIST Sustainability.*

SÜRDÜRÜLEBİLİRLİK ÇERÇEVESİNDE ŞİRKETLERİN ÇEVRESEL SORUMLULUKLARININ İNCELENMESİ

Öz

Bu çalışmanın amacı, sürdürülebilirlik çerçevesinde yer alan şirketlerin çevresel sorumluluklarının araştırılarak, şirketlerin en çok hangi çevresel ilkelere uyum sağladıklarını araştırmaktır. Bu amaç doğrultusunda, BIST Sürdürülebilirlik 25 Endeksinde yer alan 25 şirketin 2022 yılında yayınladıkları sürdürülebilirlik uyum raporları incelenmiştir. Yayınlanan raporlara Kamu Aydınlatma Platformu üzerinden ulaşılmıştır. Sürdürülebilirlik uyum raporlarında genel ilkeler, çevresel ilkeler, sosyal ilkeler ve kurumsal yönetim ilkeleri olmak üzere dört bölüm yer almaktadır. Yapılan araştırmanın konusu çevresel sorumluluk olarak belirlendiği için sürdürülebilirlik uyum raporlarında yer alan genel ilkeler ve çevresel ilkelere ait veriler toplanmıştır. Bu kapsamda öncelikle sürdürülebilirlik raporlarında şirketlerin genel ilkelere ve çevresel ilkelere uyum durumları istatiksel yöntemler kullanılarak analiz edilmiştir. Uygulama kısmında şirketleri denetleten denetim firmalarının, şirketlerin sektörlerinin, şirketlerin bulundukları pazarların, şirketlerin yaşlarının genel ve çevresel ilkelere uyum durumuna etki edip etmediği ve ilkeler

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arasında bir ilişki bulunup bulunmadığı araştırılmıştır. Çalışmadan elde edilen temel sonuçlara göre, çevresel ilkeler içinde enerji projelerinin şirketlerin en çok uyum gösterdiği konu olduğu tespit edilmiştir. Şirketlerin en fazla uyum gösterdiği ilke B20 kodlu "enerji verimliliği projeleri yapılmış ve enerji verimliliği projeleri sayesinde elde edilen enerji tüketim ve emisyon azaltım miktarı kamuya açıklanmıştır" ilkesi olarak tespit edilmiştir. Bununla birlikte şirketleri denetleyen denetim firmalarının ve şirketlerin yaşlarının genel ve çevresel ilkelere uyum konusunda etkili olabildikleri görülmüştür. Ayrıca sürdürülebilirliğin uygulanması ve izlenmesinin çevresel ilkeler ile ilişkili olduğu sonucuna ulaşılmıştır.

Anahtar kelimeler: *Sürdürülebilirlik, Çevresel Sorumluluk, BIST Sürdürülebilirlik Endeksi.*

1. INTRODUCTION

Today, businesses are one of the main actors that contribute to the increase in the welfare level of the society in which they operate. Offering quality goods and services that improve the quality of life and product diversity are among the positive contributions businesses make to society. Despite these positive effects, businesses also cause environmental and social problems such as environmental pollution, waste materials, and employee rights during their activities. The fact that the negative effects of business activities on the environment and society are closely monitored by business stakeholders has caused sustainability and environmental responsibility issues in businesses to become important (Tüm, 2014: 60).

Sustainability for businesses; It refers to the balanced evaluation of economic expectations with environmental and social sensitivity. Directing the international economy by businesses brings with it social and environmental responsibilities as well as economic responsibilities. In addition, businesses have responsibilities not only towards their partners or potential investors but also towards all their stakeholders. Many reasons arising from these responsibilities have created the need for businesses to take the concept of sustainability into consideration in their management policies (Hazır, 2018: 13).

In addition to seeking profit, businesses also have to prove themselves in other areas. The goods produced and services offered are similar to each other except for minor changes; organizations live in harmony with the environment, social expectations change, and organizations are considered not only as economic entities but also as organizations that have responsibilities towards society. The desire of these organizations to distinguish themselves from their competitors is noted as developments that influence the organizations' tendency towards social responsibility practices (Tarhan, 2011: 540). Therefore, businesses need to be sensitive to the expectations of the business world in solving social and environmental problems. Companies should develop policies that will guide their work without waiting for guidance from governments in many areas, such as protecting the environment, improving working conditions, and ethical marketing practices (Özüpek, 2013: 62). This study aims to investigate the environmental responsibilities of companies within the framework of sustainability and to investigate which environmental principles companies comply with the most. For this purpose, the sustainability compliance reports published by 25 companies included in the BIST Sustainability 25 Index in 2022 were examined. The published reports were accessed via the Public Disclosure Platform. Sustainability compliance reports include four sections: general principles, environmental principles, social principles, and corporate governance principles. Since the subject of the research was determined as environmental responsibility, data on the general principles and environmental principles included in the sustainability compliance reports were collected. In this context, first of all, the compliance status of companies with general principles and environmental principles in the sustainability reports was analyzed using statistical methods.

In the application section, it was investigated whether the auditing firms that audit the companies, the sectors of the companies, the markets where the companies are located, and the ages of the companies affect the compliance with the general and environmental principles and whether there is a relationship between the principles. According to the basic results obtained from the study, it was determined that energy projects are the subject that the companies comply with the most among the environmental principles. In addition, it was seen that the auditing firms that audit the companies and the ages of the companies can be effective in compliance with the general and environmental principles. In addition, it was determined which environmental principles the companies in question comply with the most. Then, it was concluded that the implementation and monitoring of sustainability are related to environmental principles.

As a result of the literature research, no study was found that examined the sustainability reports of 25 companies included in the BIST Sustainability Index and addressed which environmental principles these 25 companies comply with more. In addition, while other studies in the literature on the subject examined environmental principles in parts, this study investigated general principles as well as all environmental principles. Therefore, this study aims to fill the gap in the literature on sustainability and environmental responsibility. In addition, it is thought that it will guide researchers who will study this subject and future studies.

2. CONCEPTUAL FRAMEWORK

The concept of sustainability first gained official importance and began to be discussed in 1987 by the World Commission on Environment and Development. The Brundtland Report, which covers the basic principles and rules for the concept of sustainability, is one of the most important publications of the 20th century. According to the Brundtland Report, sustainability is defined as meeting the needs of the present generation without compromising the needs of future generations. This report emphasizes that the adoption of the sustainability goal is in the common interest of all countries (Schaefer and Crane, 2005: 77).

Sustainability is a model that simultaneously addresses ecological balance and economic growth, ensuring the efficient use of natural resources while observing the environmental quality and, at the same time, allowing future generations to meet the needs of the present generation without endangering their own needs (Hayta, 2009: 144).

Since the World Economic Development Commission first introduced the concept of sustainability, there has been a broad discussion and application of the concept, with a general acceptance of three intertwined dimensions of sustainability. These dimensions are briefly explained below (Gedik, 2020: 197).

• The economic dimension implies that an economically sustainable system must be able to continuously produce goods and services and maintain manageable levels of government and external debt. It is also expected that this system will avoid excessive sectoral imbalances that could harm agricultural or industrial production.

• The environmental dimension requires that an environmentally sustainable system maintain a continuous resource base by avoiding the overexploitation of renewable resources and using non-renewable resources only to the extent that they can be replaced by adequate levels of investment. This includes preserving biodiversity, atmospheric stability, and other ecosystem functions not usually classified as economic resources.

• The social dimension states that a socially sustainable system requires the provision of adequate social services, including elements such as distributional equity, education and health services, gender equality, political accountability, and participation.

For holistic sustainability, it is important to ensure sustainability in the three basic dimensions explained above simultaneously. Therefore, observing the harmony between these three dimensions is a common feature in sustainability research (Kılıç, 2006: 93).

While the environmental dimension of sustainability interacts with the social dimension through working and living conditions, it also interacts with the economic dimension through environmental efficiency. On the other hand, the effects of social and economic dimensions on the environment may manifest themselves more as pressures on environmental resources. The most well-known about the relationship between these dimensions is undoubtedly the interaction between the social and economic dimensions. While the economic dimension is affected through consumption by the qualitative and quantitative characteristics of the workforce, it affects the social dimension by providing employment and income distribution opportunities (Şen et al., 2018: 20). In addition to the concept of sustainability, businesses are in constant interaction with the environment in which they operate. Therefore, living in a healthy and clean environment has become a very important need for people today, when the social environment is destroyed. Therefore, in the age we live in, rapidly increasing population growth and urbanization have caused the relationship between humans and nature to deteriorate. Thus, corporate social responsibility and environmental management have begun to be among the issues emphasized by organizations, practitioners, and scientists (Karacan, 2002: 5). Organizations draw people's

attention to environmental problems and inform them to be more responsible towards the environment. Rather than doing business in an environmentally responsible manner in the business environment, organizations also require companies to take responsibility for sharing environmental concerns with the public. Social responsibility practices that can be carried out by public relations units in line with these requirements will contribute to the development of corporate reputation and brand image, as well as provide an advantage in attracting a quality workforce to the organization (Ülger, 2003: 122-123). Within social responsibility practices, the environmental social responsibility activities of organizations are considered corporate environmental responsibility as a result of an environmental view. Corporate environmental responsibility: These are establishment practices that include tasks such as eliminating waste and emissions, maximizing the effectiveness and efficiency of resources, and minimizing the practices that may arbitrarily affect the country's resources by future generations. In addition, developing environmentally friendly product production and packaging opportunities and introducing a number of projects to prevent pollution are also considered studies evaluated in this context (Tarhan, 2011: 543-544).

3. LITERATURE REVIEW

There are many studies in the literature on sustainability and environmental responsibility. Some of these studies, especially those conducted in recent years, are given below.

Lee et al. (2016) investigated the antecedents of organizational commitment to corporate social responsibility and green practices adoption in the case of the logistics industry in South Korea. A survey was conducted on 784 employees and senior managers working in logistics companies. The research findings show that social expectations, organizational support, and stakeholder pressure are important antecedents of corporate environmental responsibility and green practices adoption.

Camilleri (2017) aimed to reveal the relationship between corporate social responsibility (CSR) and financial performance in his study. He also reported how corporate social responsibility is constantly changing in line with contemporary social realities. The study also emphasizes that responsible business practices create both economic and social value by realigning corporate goals with stakeholder management and environmental responsibility.

Önder and Ağca (2018) examined the environmental risk levels and environmental sustainability performances of the companies included in the BIST 100 Index, determined according to their fields of activity. In addition, it was evaluated whether there was an awareness between the companies included in the sustainability index and the companies not included in this index in terms of environmental sustainability performance. As a result of the examinations, it was determined that more than half of the companies included in the BIST 100 Index had high environmental risk.

Ashrafi et al. (2018) examined the relationship between the concepts of corporate social responsibility (CSR) and corporate sustainability in their study. Based on this review, they discussed how corporate social responsibility and corporate sustainability can be integrated into a business and presented a model proposal. The model aims to provide future researchers with a guide for the adoption of corporate social responsibility and corporate sustainability.

Çetin et al. (2019) in their study, aimed to investigate the role and importance of corporate social responsibility principles in ensuring a sustainable environment. In this direction, surveys were conducted in Bursa, Istanbul, and Kocaeli, and the data were analyzed using the structural equation model. The analysis results revealed that there is a positive and strong relationship between corporate social responsibility and environmental sustainability.

Kardos et al. (2019) aimed to present an integrative vision about the roles of green marketing in raising awareness, educating, and changing consumer behaviors on sustainability and eco-entrepreneurship and to emphasize the research results on its impact on the environmental responsibility of young consumers. In the study, using survey methods, it was concluded that the lack of information of consumers leads to environmental responsibilities and that environmental knowledge and awareness have an impact on green responsible behavior.

Gedik (2020) stated in his research that there are few studies that address the concepts of sustainability and sustainable development from a broad perspective, and therefore, he aimed to address these concepts in this study. In addition, it was determined that there is no common study that addresses the concepts of sustainability and sustainable development in the literature. Therefore, sustainable development has been expanded to include social and economic perspectives. It has been stated that sustainable development is defined as an effort to combine social and economic problems with ecological concerns, and a broad conceptual framework has been created in this context.

In their research, Dil and Talaş (2021) aimed to examine the perspectives of the companies that prepare sustainability reports among 100 companies in Turkey on environmental sustainability. 19 companies were included in the research, and their sustainability reports or activity reports prepared in accordance with GRI standard criteria were content analyzed in terms of environmental sustainability activities and environmental sustainability awareness. As a result of the analysis, it was determined that the reason for the differences between the companies in terms of sustainability reports in terms of criteria was entirely related to the fact that environmental reporting is based on a voluntary basis.

In their study, Şeker and Atasel (2021) quantitatively examined the environmental dimensions of the sustainability reports of companies included in the BIST Corporate Governance Index between 2015 and 2019 according to the GRI 300 series and conducted a content analysis. As a result of the examination, it was determined that the companies within the scope of the study gave importance to environmental sustainability while carrying out their activities. The most important issue was greenhouse gas emissions and reduction, while the second issue was the reduction of energy consumption and recycling of waste. Contrary to these important issues, it was determined that although companies tend to reduce energy consumption for greenhouse gas reduction, they kept the use of renewable energy in the background.

Madaleno et al. (2022) aimed to examine the relationships between the concepts of green finance, environmental responsibility, clean energy, and green technology in detail in their study. In line with this purpose, the necessity of designing a comprehensive policy to strengthen environmental responsibility and green finance through the financing of green technologies in order to achieve successful energy transformation and sustainable development goals is revealed.

In his research, Değirmenci (2022) aimed to examine the effects of environmental attitude and legal and economic responsibility, which are considered antecedents of responsible behavior of individuals. The research was conducted on 334 people using the survey method. The research findings revealed that there is a positive and significant relationship between environmental responsibility and environmental attitude.

In their study, Ağraş and Çetinkaya (2023) reached the environmental awareness and sustainability policies of 89 textile companies among the industrial organizations in Turkey and examined them using the content analysis method. The examinations revealed that the companies mostly developed policies in the areas of waste, energy, water, and natural resource management. In addition, suggestions were presented by taking into account the scope and content of the environmental awareness and sustainability policies of textile companies.

When we look at the studies on sustainability and environmental responsibility above, in general, some companies have been surveyed and researched. In addition, it has been examined whether there are positive or negative relationships between companies regarding corporate social responsibility and corporate sustainability or environmental responsibility and sustainability. However, no study has been found that examines the sustainability reports of 25 companies included in the BIST Sustainability Index and addresses which environmental principles these 25 companies comply with more. Therefore, this study aims to fill the gap in the literature on sustainability and environmental responsibility.

4. APPLICATION

In the application section of the study, the compliance status of the companies in the BIST Sustainability 25 Index with environmental principles was investigated using statistical analysis. In the research, firstly, information was given about the purpose, method, data, and variables of the study, and then the findings obtained from the analyses were presented.

4.1. Aim of the Study

The purpose of this research is to investigate companies' compliance with environmental principles. For this purpose, the compliance of companies included in the BIST Sustainability 25 Index with the environmental principles included in their sustainability reports was analyzed. Also, it was investigated whether the audit firms auditing the companies, the sectors of the companies, the markets in which the companies are located, and the age of the companies affect compliance with general and environmental principles and whether there is a relationship between the principles. Thus, it was determined which environmental principles the companies in question were more compliant with.

4.2. Methodology

The data used in the study were taken from the sustainability reports published by the companies in the Borsa Istanbul Sustainability 25 Index in 2022. The compliance status of companies with the environmental principles included in their sustainability reports was scored in the study, and statistical analyses were used. The statistical analysis program applied in social sciences was used in the research. Assuming that the data obtained were not normally distributed, non-parametric tests were used. Hypotheses were also created in the study. The hypotheses created are listed below.

H_1: The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports differ according to the independent audit firms that audit the companies.

H_2: The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports differ according to the sectors in which the companies operate.

H_3: The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports differ according to the markets in which the companies operate.

H_4: The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports differ according to the ages of the companies.

H_5: There is a significant relationship between the basic principles in companies' sustainability compliance reports.

Firstly, descriptive statistical tests were applied to the data obtained. Mann-Whitney U, Kruskal-Wallis, and Correlation Tests were applied to the hypotheses created within the scope of the study.

4.3. Data and Variables of the Study

The general principles and environmental principles included in the sustainability compliance reports were determined as data. The principles under general principles and environmental principles were used as variables in the study. Variables obtained from general and environmental principles are expressed in the study with their codes in the table below.

Table 1. Variables Used In The Research

NAMES OF THE PRINCIPLES IN THE SUSTAINABILITY COMPLIANCE REPORT	**Code**
A. GENERAL PRINCIPLES	
A1. Strategy, Policy, and Goals	
Priority environmental, social, and corporate governance (ESG) issues, risks, and opportunities have been determined by the partnership's board of directors.	A1.1.1.
ESG policies (For example: Environmental Policy, Energy Policy, Human Rights and Employee Policy, etc.) have been created by the partnership board of directors and disclosed to the public.	A1.1.2.
Short and long-term targets determined within the scope of ESG policies have been disclosed to the public.	A1.2.

A2. Application/Monitoring	
The committees and/or units responsible for the execution of ESG policies, as well as the senior responsible persons and their duties in the partnership regarding ESG issues, have been determined and disclosed to the public.	A2.1.1.
The activities carried out by the responsible committee and/or unit within the scope of the policies were reported to the board of directors at least once during the year.	A2.1.2.
Implementation and action plans have been created in line with ESG targets and disclosed to the public.	A2.2.
ESG Key Performance Indicators (KPI) and the level of achievement of these indicators on a yearly basis have been disclosed to the public.	A2.3.
Activities to improve the sustainability performance of business processes or products and services are disclosed to the public.	A2.4.
A3. Reporting	
In the activity reports, information regarding the partnership's sustainability performance, targets, and actions is provided in an understandable, accurate, and sufficient manner.	A3.1.
Information about which of the United Nations (UN) 2030 Sustainable Development Goals its activities are related to has been disclosed to the public by the Partnership.	A3.2.
Lawsuits that were filed and/or concluded adversely on ESG issues, that are important in terms of ESG policies and/or that will significantly affect the activities, have been disclosed to the public.	A3.3.
A4. Verification	
The Partnership's ESG Key Performance metrics have been verified by an independent third party and are publicly disclosed.	A4.1.
B. ENVIRONMENTAL PRINCIPLES	
The partnership has publicly disclosed its policies and practices, action plans, environmental management systems (known by the ISO 14001 standard), and programs in the field of environmental management.	B1.
Regarding the environmental reports prepared to provide information regarding environmental management, the scope of the report, reporting period, reporting date, reporting conditions, and restrictions have been disclosed to the public.	B2.
Environmental targets included in the reward criteria within the scope of performance incentive systems on the basis of stakeholders (such as board members, managers, and employees) have been disclosed to the public.	B4.
It has been publicly disclosed how the environmental issues identified as priorities are integrated into business goals and strategies.	B5.
It has been disclosed to the public how environmental issues are managed and integrated into business goals and strategies throughout the partnership value chain, including the operational process, suppliers, and customers.	B7.
Whether the relevant institutions and non-governmental organizations are involved in the policy-making processes regarding the environment and the collaborations with these institutions and organizations have been disclosed to the public.	B8.
In the light of environmental indicators (Greenhouse gas emissions (Scope-1 (Direct), Scope-2 (Energy indirect), Scope-3 (Other indirect), air quality, energy management, water and wastewater management, waste management, and biodiversity impacts). Information regarding its environmental impacts has been disclosed to the public in a comparable manner on a periodic basis.	B9.
Details of the standard, protocol, methodology, and base year used to collect and calculate the data have been made public.	B10.
The increase or decrease in environmental indicators for the reporting year compared to previous years was disclosed to the public.	B11.
Short and long-term targets have been determined to reduce environmental impacts, and progress against these targets and the targets set in previous years has been disclosed to the public.	B12.
A strategy to combat the climate crisis has been created and planned actions have been announced to the public.	B13.

Programs or procedures have been established and disclosed to the public in order to prevent or minimize the potential negative impact of products and/or services on the environment.	B14.1.
Actions have been taken to reduce the greenhouse gas emissions of third parties (e.g. suppliers, subcontractors, dealers, etc.) and these actions have been disclosed to the public.	B14.2.
The environmental benefits/gains and cost savings provided by initiatives and projects aimed at reducing environmental impacts have been disclosed to the public.	B15.
Energy consumption (natural gas, diesel, petrol, LPG, coal, electricity, heating, cooling, etc.) data are disclosed to the public as Scope-1 and Scope-2.	B16.
Public disclosure was made about the electricity, heat, steam, and cooling produced in the reporting year.	B17.
Studies have been carried out on increasing the use of renewable energy and switching to zero or low-carbon electricity and have been disclosed to the public.	B18.
Renewable energy production and usage data have been made public.	B19.
Energy efficiency projects have been carried out and the amount of energy consumption and emission reduction achieved thanks to energy efficiency projects has been disclosed to the public.	B20.
Water consumption, if any, amounts of water withdrawn from underground or above ground, recycled and discharged, and their sources and procedures have been disclosed to the public.	B21.
It has not been publicly disclosed whether the operations or activities are included in any carbon pricing system (Emission Trading System, Cap & Trade, or Carbon Tax).	B22.
Carbon credit information accumulated or purchased during the reporting period was disclosed to the public.	B23.
If carbon pricing is applied within the partnership, its details are disclosed to the public.	B24.
The platforms where the partnership discloses its environmental information have been made public.	B25.

4.4. Descriptive Statistics

The descriptive statistics section of the research includes frequency and percentage statistics regarding the general structures of the companies.

The table below includes the statistics of the audit firms that audit the companies. In accordance with the confidentiality policy, the names of the auditing companies are listed alphabetically as follows:

Table 2. Audit Firms of the Companies

Audit Companies	Frequency	Percentage
A	16	64,0
B	6	24,0
C	1	4,0
D	2	8,0
Total	**25**	**100,0**

As seen in Table 2, most of the companies are audited by the same independent audit firm (Firm A).

The table below provides statistical information on the sectors in which the companies are located.

Table 3. The Sectors of the Companies

Sectors	Frequency	Percentage
Financial Institutions	9	36,0
Manufacturing	7	28,0
Wholesale and retail	4	16,0
Electricity, Gas and Water	2	8,0

Construction and Public Works	1	4,0
Transport and Storage	1	4,0
Information and Communication	1	4,0
Total	**25**	**100,0**

As seen in Table 3, the majority of the companies are financial institutions.

The table below provides statistical information about the markets in which the companies are located.

Table 4. The Markets of the Companies

Markets	Frequency	Percentage
Star Market	13	52,0
Among Qualified Investors	12	48,0
Total	**25**	**100,0**

As seen in Table 4, the companies are located in the star market and the market among qualified investors.

The table below provides statistical information on the age of the companies according to their years of establishment.

Table 5. Ages of the Companies

Age range	Frequency	Percentage
1-25	6	24,0
25-50	7	28,0
50-75	10	40,0
75 and over	2	8,0
Total	**25**	**100,0**

As seen in Table 5, it is understood that the number of well-established companies with old establishment years is quite high.

The table below provides statistical information on the companies' compliance with strategies, policies, and objectives.

Table 6. The Compliance of Companies with Strategies, Policies and Objectives

Principles	Compliance Status	Frequency	Percentage
A1.1.1	Yes	25	100,0
A1.1.2	Partially	1	4,0
	Yes	24	96,0
A1.2	No	2	8,0
	Partially	1	4,0
	Yes	22	88,0
Total		**25**	**100,0**

As seen in Table 6, it is understood that most of the companies comply with strategies, policies, and objectives.

The table below provides statistical information on the companies' compliance with implementation and monitoring.

Table 7. Statistics on Companies Compliance with Implementation and Monitoring

Principles	Compliance Status	Frequency	Percentage
A2.1.1	Yes	25	100,0
A2.1.2	Yes	25	100,0
A2.2	No	1	4,0
	Partially	2	8,0
	Yes	22	88,0
A2.3	Partially	2	8,0
	Yes	23	92,0
A2.4	Yes	25	100,0

As seen in Table 7, it is understood that most of the companies comply with implementation and monitoring activities.

The table below provides statistical information on companies' compliance with sustainability reporting.

Table 8. Statistics on Companies' Reporting Compliance Status

Principles	Compliance Status	Frequency	Percentage
A3.1	Partially	1	4,0
	Yes	24	96,0
A3.2	Irrelevant	1	4,0
	No	1	4,0
	Yes	23	92,0
A3.3	No	1	4,0
	Partially	2	8,0
	Yes	22	88,0

As seen in Table 8, it is understood that most of the companies comply with sustainability reporting.

The table below provides statistical information on companies' compliance with the verification of sustainability reports.

Table 9. Statistics on Companies' Verification Compliance Status

Compliance Status	Frequency	Percentage
No	1	4,0
Partially	9	36,0
Yes	15	60,0
Total	**25**	**100,0**

As seen in Table 9, it is understood that most of the companies fully or partially comply with the verification of sustainability reports.

The table below provides statistical information on companies' compliance with environmental principles.

Table 10. Statistics on Companies Compliance with Environmental Principles

Principles	Compliance Status	Frequency	Percentage
B1	Partially	2	8,0
	Yes	23	92,0
B2	No	1	4,0
	Yes	24	96,0
B4	No	5	20,0
	Yes	20	80,0
B5	Partially	2	8,0
	Yes	23	92,0
B7	No	2	8,0
	Partially	1	4,0
	Yes	22	88,0
B8	Partially	1	4,0
	Yes	24	96,0
B9	Partially	4	16,0
	Yes	21	84,0
B10	No	1	4,0
	Partially	2	8,0
	Yes	22	88,0
B11	Partially	1	4,0
	Yes	24	96,0
B12	Partially	3	12,0
	Yes	22	88,0
B13	No	1	4,0
	Partially	1	4,0
	Yes	23	92,0
B14.1	Irrelevant	1	4,0
	No	2	8,0
	Partially	3	12,0
	Yes	19	76,0
B14.2	Irrelevant	1	4,0
	No	4	16,0
	Partially	4	16,0
	Yes	16	64,0
B15	No	1	4,0
	Partially	1	4,0
	Yes	23	92,0
B16	Partially	2	8,0
	Yes	23	92,0
B17	Irrelevant	2	8,0
	Partially	1	4,0
	Yes	22	88,0
B18	Partially	1	4,0
	Yes	24	96,0

B19	Irrelevant	1	4,0
	No	1	4,0
	Yes	23	92,0
B20	Yes	25	100,0
B21	Irrelevant	1	4,0
	Partially	1	4,0
	Yes	23	92,0
B22	Irrelevant	7	28,0
	No	3	12,0
	Partially	1	4,0
	Yes	14	56,0
B23	Irrelevant	11	44,0
	No	2	8,0
	Partially	1	4,0
	Yes	11	44,0
B24	Irrelevant	8	32,0
	No	4	16,0
	Partially	3	12,0
	Yes	10	40,0
B25	Irrelevant	1	4,0
	Partially	1	4,0
	Yes	23	92,0

As seen in Table 10, it is understood that the majority of the companies comply with environmental principles. As the principle with the highest level of compliance, it is seen that all companies fully comply with the principle coded B20 'energy efficiency projects have been carried out and the amount of energy consumption and emission reduction achieved through energy efficiency projects has been disclosed to the public'.

In the table below, the average values of the companies regarding their compliance with the general and environmental principles in the sustainability reports are calculated.

Table 11. Descriptive Statistics on Companies' Compliance with All Principles

Principles	N	Minimum Value	Maximum Value	Average	Standard Deviation
A1.1.1	25	4	4	4,00	0,000
A1.1.2	25	3	4	3,96	,200
A1.2	25	2	4	3,80	,577
A2.1.1	25	4	4	4,00	0,000
A2.1.2	25	4	4	4,00	0,000
A2.2	25	2	4	3,84	,473
A2.3	25	3	4	3,92	,277
A2.4	25	4	4	4,00	0,000
A3.1	25	3	4	3,96	,200
A3.2	25	1	4	3,80	,707
A3.3	25	2	4	3,84	,473
A4.1	25	2	4	3,56	,583
B1	25	3	4	3,92	,277

B2	25	2	4	3,92	,400
B4	25	2	4	3,60	,816
B5	25	3	4	3,92	,277
B7	25	2	4	3,80	,577
B8	25	3	4	3,96	,200
B9	25	3	4	3,84	,374
B10	25	2	4	3,84	,473
B11	25	3	4	3,96	,200
B12	25	3	4	3,88	,332
B13	25	2	4	3,88	,440
B14.1	25	1	4	3,60	,816
B14.2	25	1	4	3,40	,913
B15	25	2	4	3,88	,440
B16	25	3	4	3,92	,277
B17	25	1	4	3,72	,843
B18	25	3	4	3,96	,200
B19	25	1	4	3,80	,707
B20	25	4	4	4,00	0,000
B21	25	1	4	3,84	,624
B22	25	1	4	2,88	1,364
B23	25	1	4	2,48	1,447
B24	25	1	4	2,60	1,323
B25	25	1	4	3,88	,666

As seen in Table 11, the principles that the companies fully comply with are principles coded A1.1.1, A2.1.1, A2.1.2, A2.4 and B20.

4.5. Hypothesis Tests Results

The following hypotheses were formulated to determine whether the basic compliance statuses of companies in sustainability compliance reports differ according to various demographic criteria and whether there exists a relationship among the principles, and these hypotheses were tested using statistical tests.

Since each hypothesis is tested separately for 36 principles and there is a lot of data, only the principles for which the hypotheses are accepted are included in the tables below. For the principles not included in the tables below, the hypotheses were rejected.

H_1 Hypothesis:

Null Hypothesis (H_0): The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports do not differ according to the independent audit firms that audit the companies.

Alternative Hypothesis (H_1): The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports differ according to the independent audit firms that audit the companies.

The Kruskal-Wallis test was utilized to test hypothesis H_1. Table 12 shows the accepted test results for hypothesis H_1.

Table 12. Kruskal-Wallis Test Result for H_1 Hypothesis

Principles	Audit Company				Significance Value	Hypothesis Result
	A	B	C	D		
	Mean Rank Values					
A3.3	14,50	12,50	14,50	1,75	,001	**Accept**
A4.1	15,75	9,17	6,00	6,00	,031	**Accept**
B2	13,50	13,50	13,50	7,25	,009	**Accept**
B9	14,22	12,92	15,00	2,50	,010	**Accept**
B10	13,75	14,50	14,50	1,75	,001	**Accept**
B11	13,50	13,50	13,50	7,25	,009	**Accept**
B12	13,72	14,50	14,50	2,00	,001	**Accept**
B16	14,00	14,00	14,00	1,50	,000	**Accept**

The H_1 hypothesis is accepted for the principles in Table 12 and rejected for all other principles.

The compliance of the companies with the principles below differs according to the audit firms of the companies;

• Lawsuits that were filed and/or concluded adversely on ESG issues, which are important in terms of ESG policies and/or that will significantly affect the activities, have been disclosed to the public;

• The Partnership's ESG Key Performance metrics have been verified by an independent third party and are publicly disclosed;

• Regarding the environmental reports prepared to provide information regarding environmental management, the scope of the report, reporting period, reporting date, reporting conditions, and restrictions have been disclosed to the public;

• In the light of environmental indicators (Greenhouse gas emissions (Scope-1 (Direct), Scope-2 (Energy indirect), Scope-3 (Other indirect), air quality, energy management, water and wastewater management, waste management, biodiversity impacts)). Information regarding its environmental impacts has been disclosed to the public in a comparable manner on a periodic basis;

• Details of the standard, protocol, methodology, and base year used to collect and calculate the data have been made public;

• The increase or decrease in environmental indicators for the reporting year compared to previous years was disclosed to the public;

• Short and long-term targets have been determined to reduce environmental impacts, and progress against these targets and the targets set in previous years has been disclosed to the public;

• Energy consumption (natural gas, diesel, petrol, LPG, coal, electricity, heating, cooling, etc.) data are disclosed to the public as Scope-1 and Scope-2.

Generally, companies with audit firms A, B, or C are more likely to comply with the principles.

H_2 Hypothesis:

Null Hypothesis (H_0): The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports do not differ according to the sectors in which the companies operate.

Alternative Hypothesis (H_2): The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports differ according to the sectors in which the companies operate.

The Kruskal-Wallis test was utilized to test hypothesis H_2. According to the hypothesis test results, the hypothesis is rejected for all principles. Because it was determined that the significance value was above 0.05 for all principles. The compliance of companies with general and environmental principles does not differ according to the sectors of the companies.

H_3 Hypothesis:

Null Hypothesis (H_0): The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports do not differ according to the markets in which the companies operate.

Alternative Hypothesis (H_3): The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports differ according to the markets in which the companies operate.

Mann-Whitney U test was utilized to test hypothesis H_3. According to the hypothesis test results, the hypothesis is rejected for all principles. Because it was determined that the significance value was above 0.05 for all principles. The compliance of companies with general and environmental principles does not differ according to the markets of the companies.

H_4 Hypothesis:

Null Hypothesis (H_0): The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports do not differ according to the ages of the companies.

Alternative Hypothesis (H_4): The compliance statuses of companies with regard to the basic principles set out in sustainability compliance reports differ according to the ages of the companies.

The Kruskal-Wallis test was utilized to test hypothesis H_4. Table 13 shows the accepted test results for hypothesis H_4.

Table 13. Kruskal-Wallis Test Result for H_4 Hypothesis

Principles	Ages of Companies				Significance Value	Hypothesis Result
	1-25	25-50	50-75	75 and above		
	Mean Rank Values					
A4.1	18,00	8,71	12,00	18,00	,037	**Accept**
B4	13,42	8,36	15,50	15,50	,033	**Accept**
B7	14,50	9,14	14,50	14,50	,039	**Accept**

The H_4 hypothesis is accepted for the principles in Table 13 and rejected for all other principles.

The compliance of the companies with the principles below differs according to the ages of the companies;

• The Partnership's ESG Key Performance metrics have been verified by an independent third party and are publicly disclosed;

• Environmental targets included in the reward criteria within the scope of performance incentive systems on the basis of stakeholders (such as board members, managers, and employees) have been disclosed to the public.

• It has been disclosed to the public how environmental issues are managed and integrated into business goals and strategies throughout the partnership value chain, including the operational process, suppliers, and customers.

Generally, companies that are between 1-25 years old or over 75 years old comply with the principles more.

H_5 Hypothesis:

Null Hypothesis (H_0): There is no significant relationship between the basic principles in companies' sustainability compliance reports.

Alternative Hypothesis (H_5): There is a significant relationship between the basic principles in companies' sustainability compliance reports.

A correlation test was utilized to test hypothesis H_5. Table 14 shows the results for hypothesis H_5.

Table 14. Correlation Test Result for H_5 Hypothesis

PRINCIPLES		Environmental Principles	Strategy, Policy, and Goals	Application / Monitoring	Reporting	Verification
Environmental Principles	Pearson Correlation Value	1	,419*	,549**	,284	,308
	Significance Value		,037	,004	,169	,135
Strategy, Policy, and Goals	Pearson Correlation Value	,419*	1	,633**	,308	,282
	Significance Value	,037		,001	,135	,171
Application / Monitoring	Pearson Correlation Value	,549**	,633**	1	,254	,134
	Significance Value	,004	,001		,221	,522
Reporting	Pearson Correlation Value	,284	,308	,254	1	,140
	Significance Value	,169	,135	,221		,504
Verification	Pearson Correlation Value	,308	,282	,134	,140	1
	Significance Value	,135	,171	,522	,504	

According to Table 14, there is a relatively high correlation between the significant relationship between the "strategy, policy and goals" and "application/monitoring" for general principles. Also, there is a relatively high correlation between the significant relationship between the "environmental principles" and "application/ monitoring" for basic principles.

5. CONCLUSION

In this study, the compliance of companies included in the BIST Sustainability 25 Index with the environmental principles outlined in their sustainability reports was evaluated. Additionally, the impact of various factors, including the audit firms auditing the companies, the sectors in which they operate, the markets in which they are based, and the age of the companies, on their compliance with general and environmental principles was investigated. Furthermore, the relationship between these principles was examined. The data employed in the study were derived from the sustainability reports published by the companies included in the Borsa Istanbul Sustainability 25 Index. The compliance status of the companies with the environmental principles included in

their sustainability reports was evaluated in the study, and statistical analyses were employed. The statistical analysis program employed in the social sciences was utilized in the research. Initially, descriptive statistical tests were applied to the data obtained. Subsequently, Mann-Whitney U, Kruskal-Wallis, and correlation tests were applied to the hypotheses generated within the scope of the study. The general principles and environmental principles included in the sustainability compliance reports were identified as data. The principles under general principles and environmental principles were employed as variables in the study. The principle that companies comply with the most was determined as the B20 coded principle of "energy efficiency projects have been carried out, and the amount of energy consumption and emission reduction achieved through energy efficiency projects has been announced to the public".

According to the results obtained from demographic data, most of the companies are audited by the same independent audit firm. The majority of the companies are financial institutions. The companies are located in the star market and the market among qualified investors. The number of well-established companies with old establishment years is quite high. Most of the companies comply with strategies, policies, and objectives. Also, most of the companies comply with implementation and monitoring activities. And they comply with sustainability reporting. Most of the companies fully or partially comply with the verification of sustainability reports. And the majority of the companies comply with the environmental principles.

According to the descriptive statistics of the study, it has been observed that companies fully comply with the following requirements: identification of material sustainability issues by the board of directors; designation of committees responsible for ESG-related issues; reporting of committees to the board of directors; ensuring the sustainability of business processes; and emphasizing energy efficiency projects.

The primary findings derived from the hypothesis tests indicate that energy initiatives exhibit the highest level of compliance among environmental principles. However, it has been noted that the audit firms overseeing the companies and the age of the companies may impact compliance with both general and environmental principles. Furthermore, it has been deduced that the execution and oversight of sustainability practices are correlated with environmental principles.

While other studies in the literature on the subject examined environmental principles in parts, this study investigated general principles as well as all environmental principles. In future studies, a variety of research methodologies can be employed to investigate the various environmental principles, utilizing a range of statistical techniques.

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