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Evaluation of Financial Performance of BIST Sustainability 25 Index Companies within the Framework of SDGs Reporting with TOPSIS Approach

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BIST Sürdürülebilirlik 25 Endeksi Şirketlerinin Finansal Performansının TOPSIS Yaklaşımı ile Raporlanan SKH'ler Çerçevesinde Değerlendirilmesi

Öz

Çalışmanın amacı, BIST Sürdürülebilirlik 25 Endeksi'nde yer alan şirketlerin 2010-2022 yılları arasında SKH açıklamaları doğrultusunda finansal performanslarındaki değişimi TOPSIS sıralama yaklaşımı ile ortaya koymaktır. Araştırma, oran analizi ve frekans yöntemi esas alınarak gerçekleştirilmiştir. TOPSIS yaklaşımı ile şirketlerin finansal performansları belirlenmiştir. SKH'lerin şirketler tarafından açıklanma düzeylerinin belirlenmesi amacıyla şirketlerin entegre (yıllık, faaliyet) ve sürdürülebilirlik raporları içerik analizine tabi tutulmuş ve BM SKH'lerini belirlemeye yönelik göstergelerin varlığı elde edilmiştir. Bulgulardan elde edilen en yüksek finansal performans finans sektöründe faaliyet gösteren bankalardır (AKBNK, TSKB, ISCTR). Benzer şekilde TSKB ve ISCTR en çok SKH beyanı açıklayan dokuz şirket (ARCLK, EREGL, FROTO, KCHOL, KORDS, MGROS, TCELL, ISCTR, TSKB) arasındadır.

Anahtar Kelimeler: Sürdürülebilir Kalkınma Hedefleri (SKH), Finansal Performans, Sürdürülebilirlik Raporlaması Açıklama, BIST Sürdürülebilirlik 25 Endeksi

JEL Kodları: M41, Q01, Q56

Evaluation of Financial Performance of BIST Sustainability 25 Index Companies within the Framework of SDGs Reporting with TOPSIS Approach

Abstract

The purpose of this study is to reveal the alteration in the financial performances of the companies in the BIST Sustainability 25 Index between the years 2010-2022, within or without SDG disclosures applying the TOPSIS ranking approach. The research was carried out with a basis of ratio analysis and frequency method. The financial performance of companies was determined with the TOPSIS approach. Concerning the determination of the level of SDGs by companies, the integrated (annual, operational) and sustainability reports of the companies were subjected to content analysis, and the presence of the indicators was obtained to identify the UN's SDGs. The highest financial performance obtained from the findings is the banks (AKBNK, TSKB, ISCTR) operating in the financial sector. Similarly, TSKB and ISCTR are among nine companies (ARCLK, EREGL, FROTO, KCHOL, KORDS, MGROS, TCELL, ISCTR, TSKB) that disclosed most SDG statements.

Keywords: Sustainable Development Goals (SDGs), Financial Performance, Sustainability Reporting Disclosure, BIST Sustainability 25 Index

JEL Codes: M41, Q01, Q56

Araştırma ve Yayın Etiği Beyanı	Bu çalışma bilimsel araştırma ve yayın etiği kurallarına uygun olarak hazırlanmıştır.
Yazarların Makaleye Olan Katkıları	Yazar 1'in makaleye katkısı %100'dür.
Çıkar Beyanı	Yazar açısından ya da üçüncü taraflar açısından çalışmadan kaynaklı çıkar çatışması bulunmamaktadır.

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1. Introduction

Humanity has been consuming the resources offered by nature to ensure its processes of lifeform throughout life spanning millions of years. Although consumption patterns have been different, the need for natural resources always continues. As humanity's knowledge level expanded, production and consumption patterns altered. In addition, this process of alteration has led to faster consumption of scarce resources in nature. In this framework, an action strategy has been generated that includes some objectives for the construction of a sustainable life under the umbrella of the United Nations (UN) in order to utilize the existing resources economically and sustainably, protect the natural balance and transfer the owned values to future generations. The strategy includes practices such as sustainable consumption of natural resources, poverty reduction, education equality, climate action, gender equality, and healthy living. In this context, the UN adopted 17 Sustainable Development Goals (SDGs), which were determined with 169 different indicators to be achieved by 2030, at the summit held in New York on September 25, 2015 (Cai & Wolff, 2023; Martens et al., 2023; Whittingham et al., 2023).

On the other hand, recent research illustrates that the global destruction caused by fossil fuels has increased by 1.1 degrees Celsius in Earth's temperature compared to the pre-industrial era (Robinson, 2022). Undoubtedly, businesses organized in various ways to meet the needs of society also have an impact on the realization of global warming at this level. Due to this impact, businesses are stimulated to include non-financial information already in order to elicit their awareness of the environment and human capital in addition to financial reporting (Nichita et al., 2020). As a result, it is stated that knowledge plays an important role in reducing the impacts on humans and the environment for ecological change (Bruyninckx, 2018). However, businesses in many countries are attempting to integrate SDG practices into their business processes. In this context, businesses perform many practices. Ultimately, the main goal is to keep the operational cycle with SDG practices. It is crucial to measure the effect of this change process on the financial performance of the companies. Therefore, business owners, stakeholders and shareholders in relation to the company desire to observe the financial impacts of this process in which the business interacts. As of this point, it becomes substantial to reveal the impact of integrating with SDGs on the financial results of businesses. The key point in this progress is to increase the efficiency and effectiveness of assets, and therefore to maintain profitability, with the internalization of SDGs. As a result of this context, many studies in the literature have been conducted on the impact of non-financial information disclosure on the financial performance of the business.

The main purpose of this study is to reveal the alteration in the financial performances of the companies in the BIST Sustainability 25 Index between the years 2010-2022 within or without SDG disclosures applying the TOPSIS ranking approach. Initially, the scope, analysis methods and findings of the studies conveyed to the literature on the matter are provided in the study. Subsequently, within the framework of the research questions generated within the scope of the study, the purpose, scope, method, and findings of the research were evaluated together with the results provided literature.

2. Literature Review

In this section theoretical framework is provided, which deals with the financial performance and sustainability of businesses of various scopes in the literature. In recent years, there have been many studies include with sustainability reporting and performance. Some of these studies compare the financial performances of companies that disclose (or do not) sustainability reports (Düzer & Önce, 2017). Some make ranking by taking into account the share of social and environmental performance in service sustainability as well as financial performance (Ömürbek et al., 2017; Gerekan & Bulut, 2018; Kestane et al., 2019). In addition, there is research checking thoroughly into the connection between social sustainability and company accomplishment (Güngör Tanç & Teksoy, 2022). In the literature, there are also studies in which companies are (or not) included in the Sustainability Index in the stock exchanges and comparative financial performance rankings based on the period that companies are (or not) included in the Index (Santis et al., 2016; Çıtak ve Ersoy 2016; Yıldırım et al., 2018; Özmen et al., 2020).

Investigation of other studies in the literature illustrates that there has been much research on the relationship between company performance and corporate social responsibility or sustainability reporting. Even though, it is obtained limited research carried out on the investigation of the relationship between SDG disclosures and financial performance and comparisons of them. Examining the impact of corporate social responsibility (or in other words sustainability reporting disclosure) on company performance demonstrates company size has no significant effect on the quality of sustainability report disclosure (Adeneye & Ahmed, 2015; Nelling & Webb, 2009). However, there are findings in some studies that a considerable afilliation between CSR and company performance (Mustafa et al., 2012; McGuire et al., 2017). Research on the investigation of connection between the status of environmental reporting (Environment, Social and Governance (ESG) reporting) and company accomplishment shows the findings that a negative connection between ESG and financial performance, market performance, and operational performance has been (Buallay et al., 2023).

On the one hand, some research signs that the disclosure of the SDGs is a positive effect on financial performance. The research concerning the SDGs and the financial performance of firms by Khan et al. (2021) was carried out with sixty-seven companies from five different continents. Data obtained through content analysis was tested with the generalized least squares approach. Findings are such that "the green process innovation" has negative relationships with returns on assets (ROA), though there is a positive impact on returns on investments (ROI) and firm SDGs. In the study conducted by Muhmad & Muhamad (2021), the results of 56 papers indexed Web of Science and Scopus, which investigate the financial performance relationship of companies that adopt SDGs in the literature, were analyzed by content analysis method. Findings produce that approximately 96% of the articles addressed a relationship positively between sustainability applications and the economic accomplishment of enterprises. Echeverri-Pimienta et al. (2022), examined the data from corporate reports of 76 companies operating in Latin American countries (Colombia, Chile, Mexico and Peru) between 2016 and 2019 by panel data analysis method to determine the relationship between “people-related SDGs on the financial performance”. The study findings expose that the presence of “people-related SDGs” in different companies produces a positive effect on financial performance. In the study carried out by Al Lawati & Hussainey (2022); the relationship between SDGs reporting on the corporate financial performance of companies in

the financial sector in the Oman stock exchange (2016-2020) was analyzed by the regression method. The results of the study support that financial organizations in Oman disclosed limited SDGs reporting and SDGs reporting has an impact on corporate economic performance positively. Jan et al. (2023) researched the connection between corporate sustainability applications and financial performance by testing the data of 16 Islamic banks in Malaysia and 12 Islamic banks in Indonesia between 2009 and 2018 with panel analysis. The results of the research provide that Islamic corporate sustainability operations have a meaningful impact positively on the economic performance of the banks in the sample in both countries.

On the other hand, some studies justify that making a statement about the UN SDGs has a negative impact on financial performance. Lassala et al. (2021) the connection between SDG disclosures and fiscal performance was examined by the "Fuzzy-set Qualitative Comparative Analysis" (fsQCA) approach in the research conducted on IBEX 35 companies traded on the Madrid Stock Exchange. The findings of the research reveal that companies not applying SDGs in their plan of action have historically attained better financial performance. Furthermore, the existence of SDGs in their strategies, combined with other conditions, conduces to lower financial performance.

In addition, some studies claim that reporting in line with the UN's Sustainable Development Goals does not have a positive or negative impact on financial performance. Ballester & Pilar (2021) conducted research on the returns of "111 Chinese SDG-themed equity mutual funds" (health, renewable energy, technology, ethics and natural resources) between 2009-2019 by using the models of Jensen's, Fama and French's, Carhart's and tested its financial performances in different categories with parametric and non-parametric methods. Findings proved that most of these funds produce risk-adjusted returns that are not significantly different from the market gauge.

3. Methodology

3.1. Purpose and Scope of the Research

The literature review demonstrates that there has been much research on a wide range of companies' financial performances for various different purposes. According to the consideration of a wide range of research, this study is focused on especially businesses in the BIST Sustainability 25 Index. The 25 companies demonstrated in Appendix 1 in the BIST Sustainability 25 Index were included in the scope of the research.

In order to evaluate the financial condition of these companies between the years 2010-2022 and discuss the financial sustainability within the scope of disclosures that the companies have made on the UN's SDGs since 2016, the study sought to respond to these questions.

Research question 1. What are the financial performances of BIST Sustainability 25 Index companies in accordance with its financial ratios and TOPSIS approach?

Research question 2. What is the level of UN's SDGs disclosures of the companies in BIST the 25 Sustainable Index?

As a result, the UN adopted 17 SDGs specified by 169 different indicators to be achieved in 2030 at the summit in New York on September 25, 2015 (Cai & Wolff, 2023; Martens et al., 2023; Whittingham et al., 2023), SDG disclosures of the companies were investigated in the integrated (annual, operational) and sustainability reports disclosed after the year 2015.

3.2. Measurement Items and Method

The research was carried out with a basis of ratio analysis and frequency method. The financial ratios preferred for analysis in the research were selected by taking into account the opinions of expert managers and academics in the sector and among the ratios that can provide information about the liquidity, operating efficiency, financial, and profitability status of the companies. These literature review data including ratios were summarized in Table 1.

Table 1: Ratios Used in the Literature for Financial Performance Measurement

Ratio Groups	Ratio Used	Researchers
Liquidity Ratios	*Current Ratio* Current Assets /Current Liabilities	Avcı & Çınaroğlu, 2018; Özçelik & Küçükçakal, 2019; Söylemez, 2020; Özbek & Ghouchi, 2021; Atukalp, 2019; Kestane et al., 2019; Yiğit, 2020; Pala, 2021b; Karadeniz & Koşan, 2021; Ayçin & Çakın, 2019
	Quick Ratio (Acid-test Ratio) (Cash & Equivalents + Accounts Receivable) / Current Liabilities	Orçun & Eren, 2017; Özbek & Ghouchi, 2021; Yiğit, 2020; Söylemez, 2020; Karadeniz & Koşan, 2021
	Cash Ratio (Cash & Cash Equivalents) / Current Liabilities	Avcı & Çınaroğlu, 2018; Yiğit, 2020; Orçun & Eren, 2017; Pala, 2021b; Karadeniz & Koşan, 2021; Ayçin & Çakın, 2019
Efficiency/Activity Ratios	*Receivable Turnover Ratio* Net Sales / Average Account Receivables	Söylemez, 2020; Özbek & Ghouchi, 2021; Atukalp, 2019; Yiğit, 2020; Karadeniz & Koşan, 2021
	Stock Turnover Ratio The Cost of Goods Sold / Average Inventory	Söylemez, 2020; ; Yiğit, 2020; Karadeniz & Koşan, 2021; Ege et al.,2013
	Asset Turnover Ratio Net Sales / Average Total Assets	Orçun & Eren, 2017; Avcı & Çınaroğlu, 2018; Özçelik & Küçükçakal, 2019; Söylemez, 2020; Özdağoğlu & Keleş, 2019; Özbek & Ghouchi, 2021; Atukalp, 2019; Pala, 2021a; Ege et al.,2013
	Debtors Turnover Ratio Net Sales / Average Debtors	Söylemez, 2020; Yiğit, 2020; Özdağoğlu & Keleş, 2019
Financial Leverage Ratios	*Debt Ratio* Total Debt / Total Assets	Orçun & Eren, 2017; Özçelik & Küçükçakal, 2019; Söylemez, 2020; Atukalp, 2019; Pala, 2021a; Karadeniz & Koşan, 2021; Ayçin & Çakın, 2019
	Debt to Equity Ratio Total Debt / Total Equity	Şendurur & Temelli, 2018
Profitability Ratios	*Profitability Ratios Over Sales* *Gross Profit Margin =* Gross Profit / Net Sales *Net Profit Margin =* Net Profit / Net Sales	Söylemez, 2020; Orçun & Eren, 2017; Kestane et al., 2019; Özdağoğlu & Keleş, 2019; Özbek & Ghouchi, 2021; Yiğit, 2020; Pala, 2021b; Karadeniz & Koşan, 2021; Ayçin & Çakın, 2019; Ege et al., 2013
	Operating Profit Margin Operating Profit / Net Sales	Özbek & Ghouchi, 2021;
	Profitability Ratios Based on Return on Equity Return on Equity (ROE)= Net Income / Shareholders' Equity	Söylemez, 2020; Orçun & Eren, 2017; Avcı & Çınaroğlu, 2018; Ecer, 2019; Yüksel & Kayalı, 2020; Özkan, 2020; Özçelik & Küçükçakal, 2019; Özdemir & Kılıçarslan, 2021; Atukalp, 2019; Yiğit, 2020; Pala, 2021a; Karadeniz & Koşan, 2021; Ayçin & Çakın, 2019; Ege et al., 2013; Buallay et al., 2023
	Profitability Ratios Based on Return on Assets Return on Assets (ROA) = Net Income / Average Total Assets	Yüksel & Kayalı, 2020; Ecer, 2019; Kestane et al., 2019; Düzer & Önce, 2017; Avcı & Çınaroğlu, 2018; Özkan, 2020; Karadeniz & Koşan, 2021; Ayçin & Çakın, 2019; Ege et al., 2013; Buallay et al., 2023; Orr & Jadhav, 2023; Bakti & Nengzih, 2023
Market Value Ratios	*Price to Earnings Ratio (PE)* Stock Price / Earnings per Share	Yüksel & Kayalı, 2020; Düzer & Önce, 2017; Ege et al., 2017; Demirel et al, 2021; Ege et al., 2013; Arslan, 2022
	Price to Book Value Ratio (PB) Market Price per Share / Book Value per Share	Kızıl, 2019; Ertuğrul Ayrancı & Gürel, 2020; Kılınç & Çalış, 2021; Baydaş & Eren, 2021; Arslan, 2022
Capital Adequacy Ratio	Eligible Capital / Risk-Weighted Assets	Emir et al., 2021; Ecer, 2019; Ömürbek et al., 2017; Özkan, 2020; Özdemir & Kılıçarslan, 2021

In addition, there are many multi-criteria approaches to decision-making. The methods for decision-making frequently used in the literature to define financial performance are summarized in Table 2 below.

Table 2: Decision-Making Methods Used in The Literature For Defining Financial Performance

Multi-Criteria Methods Used in Decision Making	Researchers
AHP	Avcı & Çınaroğlu, 2018
ARAS	Ecer, 2019; Ömürbek et al.,2017
CAMELS	Emir et al., 2021
CCSD	Pala, 2021b
COCOSO	Pala, 2021b
COPRAS	Ayçin & Çakın, 2019; Ömürbek et al., 2017
EDAS	Özbek & Ghouchi, 2021
ENTROPI	Ecer, 2019; Ömürbek et al., 2017; Arslan, 2022; Özbek & Ghouchi, 2021; Özdemir & Kılıçarslan, 2021
GRI ENTROPI	Özdağoğlu & Keleş, 2019
GRI RELATIONAL ANALYSIS	Kestane et al., 2019; Arslan, 2022; Özdemir & Kılıçarslan, 2021; Söylemez, 2020
IDOCRIW	Pala, 2021a
MACBETH	Ayçin & Çakın, 2019
MARCOS	Pala, 2021a
MOOSRA	Ömürbek et al., 2017
Multi-MOORA	Atukalp, 2019
VALUE RANGE (ROV)	Özdağoğlu & Keleş, 2019
SAW	Baydaş & Eren, 2021
TOPSIS	Yüksel & Kayalı, 2020; Özmen et al., 2020; Baydaş & Eren, 2021; Ege et al., 2013; Kızıl, 2019; Orçun & Eren, 2017; Özçelik & Küçükçakal, 2019; Özkan, 2020; Söylemez, 2020; Yiğit, 2020
WASPAS	Özbek & Ghouchi, 2021

Concerning the determination of the level of SDGs by companies, the presence of the UN's 17 SDG indicators was investigated. The integrated (annual, operational), and sustainability reports of the companies were subjected to content analysis and the presence of the indicators was obtained to identify given in Appendix 2.

3.3. Data Collection

The data were acquired from a subordinate source. The information utilized in the calculation of financial ratios was obtained by the Finnet Financial Analysis program. The disclosures of the companies regarding the SDGs were accessed from the integrated (annual, operational) and environmental reports of the companies declared on the official website of the Public Disclosure Platform (KAP) and in the investor relations section of the official websites of the companies. Since the data was secondary and not collected from any participants, there has not been ethical approval.

3.4. Data Analysis

The most frequently used financial ratios in the literature, summarized in Table 1, were preferably chosen in the research, and the selected financial ratios and calculation methods are given in Table 3.

Table 3: Ratios Used in the Study

Financial Ratio	Calculation Method
Current Ratio (CR)	Current Assets /Current Liabilities
Cash Ratio (CER)	(Cash & Cash Equivalents) / Current Liabilities
Asset Turnover Ratio (ATR)	Net Sales / Average Total Assets
Debt Ratio (DR)	Total Debt / TotAssetssts
Return on Assets (ROA)	Net Income / Average Total Assets
Return on Equity (ROE)	Net Income / Shareholders' Equity
Price to Book Value Ratio (PB)	Market Price per Share / Book Value per Share
Price to Earnings Ratio (PE)	Stock Price / Earnings per Share

In the study, the financial performance of companies between the years 2010-2022 was determined with the TOPSIS approach. In order to define the frequency of SDG's presence in the reports, content analysis was established and if there is an indicator of SDGs the frequency was chosen 1; otherwise, 0. In addition, which SDG indicators were placed in the reports was obtained.

In conclusion, in order to answer the first research question the financial ratio analysis was carried out in the research, and the fiscal accomplishment of the companies was ranked in line with the findings obtained by the TOPSIS method. In addition, SDGs disclosures of the companies were determined by frequency analysis to respond to the second research question, and the results of both data analyses were discussed comparatively.

3.5. Detection of Alternative Having The Best Financial Performance with The TOPSIS Method

The technique for order of preference by similarity to the ideal solution (TOPSIS) is one of the multi-criteria decision-making methods (Hoe et al., 2018). It is based on the assumption that any chosen alternative should be the best alternative are those that are closer to an ideal solution (v+) and farther from an anti-ideal solution (v−) (Gayathri et al., 2022; de Lima Silva et al., 2020). The steps for the TOPSIS approach are illustrated below.

3.5.1. Step 1: Constructing Decision Matrix (x)

This section reveals the empirical results for the performance of the BIST Sustainability 25 Index. Table 4 demonstrates the financial ratios for researched companies in the Index in matrix form. In the rows of the decision matrix (x), there are the decision alternatives (m) (companies) whose superiority is desired to be listed, and in the columns, there are the evaluation factors (n) (financial ratios) to be used in decision making.

$$x = \begin{bmatrix} x_{11} & x_{12} & \cdots\cdots\cdots & x_{1n} \\ \vdots & \vdots & \vdots & \vdots \\ x_{1m} & x_{m2} & \cdots\cdots\cdots & x_{mn} \end{bmatrix} \quad (1)$$

There are 25 decision points (businesses) and 8 evaluation factors (financial ratios) in the study. First of all, the Standard Decision Matrix was created for the TOPSIS method.

Accordingly, the 2022 decision matrix of the companies that are the subject of the study is as in Table 4. As an example, only the data for 2022 are demonstrated in the table.

Table 4: Standardized Decision Matrix

	CR	CER	ATR	DR (%)	ROA	ROE	PB	PE
AKBNK	-	-	-	-	5.23	39.08	0.66	1.69
AKSA	1.42	0.36	1.53	98.89	29.97	59.61	5.19	8.7
ARCLK	1.16	0.31	1.01	421.43	3.57	18.93	3.04	17.53
BIMAS	0.98	0.08	2.28	155.85	12.61	32.38	3.3	10.19
DOHOL	2.02	0.47	1.04	91.32	16.4	33.77	1.35	4.6
DOAS	1.59	0.4	2.26	71.27	37.98	62.44	3.43	5.51
ENJSA	0.7	0.27	1.43	174.37	24.49	67.21	1.97	2.94
ENKAI	2.39	0.69	0.39	31.43	1.32	1.75	1.64	101.38
EREGL	2.25	0.42	0.73	48.62	10.67	16.13	1.25	8.02
FROTO	1.19	0.22	1.79	348.8	19.38	86.97	8.6	9.89
SAHOL	0.8	0.07	0.05	1037.07	6.61	81.71	0.91	2.1
KCHOL	0.86	0.13	0.46	894.12	7.47	79.15	1.42	3.04
KORDS	1.31	0.09	0.78	168.91	6.4	18.82	2.35	14.59
MAVI	1.25	0.6	1.23	228.08	16.88	56.3	4.45	8.01
MGROS	0.77	0.3	2.05	799.22	7.08	63.77	6.56	10.32
OTKAR	1.06	0.17	0.68	572.97	8.76	58.92	11.85	20.1
TAVHL	1.03	0.35	0.22	262.32	2.43	8.83	1.47	17.89
TKFEN	1.23	0.23	0.95	207.09	10.71	33.07	1.75	5.25
TCELL	1.6	0.89	0.52	227.8	10.91	35.78	2.7	7.54
THYAO	0.88	0.49	0.54	218.91	8.2	26.14	1.07	4.1
TTRAK	1.26	0.48	1.58	279.2	21.54	81.66	9.68	11.86
ISCTR	-	-	-	-	4.03	32.87	0.52	1.76
TSKB	-	-	-	-	3.49	31.6	0.85	2.76
SISE	2.07	0.71	0.58	89.92	12.28	26.31	1.72	6.8
VESTL	0.62	0.03	0.93	415.06	1.76	9.26	1.16	16.17

3.5.2. Step 2: Normalization of Decision Matrix

In step 2, the decision matrix (x) is normalized by using Equation (2) to convert the dimensional criteria into nondimensional criteria. With this, the elements of the normalized matrix (R) are obtained.

$$r_{ij} = \frac{x_{ij}}{\sqrt{\sum_{i=1}^{m} x_{ij}^2}}, \text{ i=1,2, … m; j= 1,2, … n} \quad (2)$$

$$R = \begin{bmatrix} r_{11} & r_{12} & \cdots\cdots\cdots & r_{1n} \\ \vdots & \vdots & \vdots\ \vdots\ \vdots\ \vdots & \\ r_{m1} & r_{m2} & \cdots\cdots\cdots & r_{mn} \end{bmatrix} \quad (3)$$

Obtained normalized decision matrix (R) is given in Table 5.

Table 5: Normalized Decision Matrix

,	CR	CER	ATR	DR	ROA	ROE	PB	PE
AKBNK	0.0000	0.0000	0.0000	0.0000	0.0711	0.1588	0.0305	0.0150
AKSA	0.2187	0.1837	0.2668	0.0509	0.4076	0.2423	0.2400	0.0773
ARCLK	0.1787	0.1582	0.1761	0.2170	0.0486	0.0769	0.1406	0.1557
BIMAS	0.1509	0.0408	0.3975	0.0802	0.1715	0.1316	0.1526	0.0905
DOHOL	0.3111	0.2399	0.1813	0.0470	0.2231	0.1373	0.0624	0.0409
DOAS	0.2449	0.2042	0.3941	0.0367	0.5166	0.2538	0.1586	0.0489
ENJSA	0.1078	0.1378	0.2493	0.0898	0.3331	0.2732	0.0911	0.0261
ENKAI	0.3681	0.3522	0.0680	0.0162	0.0180	0.0071	0.0759	0.9006
EREGL	0.3466	0.2144	0.1273	0.0250	0.1451	0.0656	0.0578	0.0712
FROTO	0.1833	0.1123	0.3121	0.1796	0.2636	0.3535	0.3978	0.0879
SAHOL	0.1232	0.0357	0.0087	0.5339	0.0899	0.3321	0.0421	0.0187
KCHOL	0.1325	0.0664	0.0802	0.4603	0.1016	0.3217	0.0657	0.0270
KORDS	0.2018	0.0459	0.1360	0.0870	0.0871	0.0765	0.1087	0.1296
MAVI	0.1925	0.3062	0.2145	0.1174	0.2296	0.2288	0.2058	0.0712
MGROS	0.1186	0.1531	0.3574	0.4115	0.0963	0.2592	0.3034	0.0917
OTKAR	0.1633	0.0868	0.1186	0.2950	0.1192	0.2395	0.5481	0.1786
TAVHL	0.1586	0.1786	0.0384	0.1350	0.0331	0.0359	0.0680	0.1589
TKFEN	0.1895	0.1174	0.1656	0.1066	0.1457	0.1344	0.0809	0.0466
TCELL	0.2464	0.4543	0.0907	0.1173	0.1484	0.1454	0.1249	0.0670
THYAO	0.1355	0.2501	0.0942	0.1127	0.1115	0.1062	0.0495	0.0364
TTRAK	0.1941	0.2450	0.2755	0.1437	0.2930	0.3319	0.4477	0.1054
ISCTR	0.0000	0.0000	0.0000	0.0000	0.0548	0.1336	0.0241	0.0156
TSKB	0.0000	0.0000	0.0000	0.0000	0.0475	0.1284	0.0393	0.0245
SISE	0.3188	0.3624	0.1011	0.0463	0.1670	0.1069	0.0796	0.0604
VESTL	0.0955	0.0153	0.1622	0.2137	0.0239	0.0376	0.0537	0.1436

3.5.3. Step 3: Generating Weighted Normalized Decision Matrix (V)

In the third step, the weight degrees (wn) of the evaluation factors are determined, the normalized values calculated in the previous step are multiplied by the (wn) values and a weighted normalized decision matrix (V) is found. First of all, the weights of the evaluation factors were obtained by adding the column values belonging to 25 companies for each criterion (CR, CER, ATR, etc.) in Table 5. Subsequently, these values related to the criteria were added and the total criterion value (8636.14) was calculated. In conclusion, the weights were calculated by dividing the column sum of each criterion by the total criterion value of the criteria. Accordingly, the weights for the 2022 evaluation criteria are w1 = 0.0033 (28.44/8636.14); w2= 0.0009 (7.76/8636.14); w3=0.0027 (23.03/8636.14); w4=0.7923 (6842.65/8636.14); w5=0.0336 (290.17/8636.14); w6=0.1230 (1062.46/8636.14); w7=0.0091 (78.89/8636.14); w8=0.0351 (302.74/8636.14).

$$v_{ij} = w_n r_{mn},\ W = (w_1, w_2, \dots w_n) \tag{4}$$

$$V = \begin{bmatrix} w_1 r_{11} & w_2 r_{12} & \cdots\cdots\cdots & w_n r_{1n} \\ \vdots & \vdots & \vdots\ \vdots\ \vdots\ \vdots & \\ w_1 r_{m1} & w_2 r_{m2} & \cdots\cdots\cdots & w_n r_{mn} \end{bmatrix} \tag{5}$$

The results for the weighted normalized decision matrix (V) are given in Table 6.

Table 6: The weighted normalized matrix

	CR	CER	ATR	DR	ROA	ROE	PB	PE
AKBNK	0.00000	0.00000	0.00000	0.00000	0.00239	0.01954	0.00028	0.00053
AKSA	0.00072	0.00017	0.00071	0.04034	0.01370	0.02981	0.00219	0.00271
ARCLK	0.00059	0.00014	0.00047	0.17191	0.00163	0.00947	0.00128	0.00546
BIMAS	0.00050	0.00004	0.00106	0.06357	0.00576	0.01619	0.00139	0.00317
DOHOL	0.00102	0.00022	0.00048	0.03725	0.00750	0.01689	0.00057	0.00143
DOAS	0.00081	0.00018	0.00105	0.02907	0.01736	0.03122	0.00145	0.00172
ENJSA	0.00036	0.00012	0.00066	0.07113	0.01119	0.03361	0.00083	0.00092
ENKAI	0.00121	0.00032	0.00018	0.01282	0.00060	0.00088	0.00069	0.03157
EREGL	0.00114	0.00019	0.00034	0.01983	0.00488	0.00807	0.00053	0.00250
FROTO	0.00060	0.00010	0.00083	0.14228	0.00886	0.04349	0.00363	0.00308
SAHOL	0.00041	0.00003	0.00002	0.42303	0.00302	0.04086	0.00038	0.00065
KCHOL	0.00044	0.00006	0.00021	0.36472	0.00341	0.03958	0.00060	0.00095
KORDS	0.00066	0.00004	0.00036	0.06890	0.00292	0.00941	0.00099	0.00454
MAVI	0.00063	0.00028	0.00057	0.09304	0.00771	0.02815	0.00188	0.00249
MGROS	0.00039	0.00014	0.00095	0.32601	0.00324	0.03189	0.00277	0.00321
OTKAR	0.00054	0.00008	0.00032	0.23372	0.00400	0.02946	0.00501	0.00626
TAVHL	0.00052	0.00016	0.00010	0.10700	0.00111	0.00442	0.00062	0.00557
TKFEN	0.00062	0.00011	0.00044	0.08447	0.00489	0.01654	0.00074	0.00163
TCELL	0.00081	0.00041	0.00024	0.09292	0.00499	0.01789	0.00114	0.00235
THYAO	0.00045	0.00022	0.00025	0.08930	0.00375	0.01307	0.00045	0.00128
TTRAK	0.00064	0.00022	0.00073	0.11389	0.00984	0.04083	0.00409	0.00369
ISCTR	0.00000	0.00000	0.00000	0.00000	0.00184	0.01644	0.00022	0.00055
TSKB	0.00000	0.00000	0.00000	0.00000	0.00159	0.01580	0.00036	0.00086
SISE	0.00105	0.00033	0.00027	0.03668	0.00561	0.01316	0.00073	0.00212
VESTL	0.00031	0.00001	0.00043	0.16931	0.00080	0.00463	0.00049	0.00504

3.5.4. Step 4: Determination of the Best Ideal Solution (A+) and the Worst Ideal Solution (A-)

The fourth step includes the calculation of the best ideal solution (A+) and the worst ideal solution (A-) and these are determined as follows:

$$A^{+} = \{(max v_{ij} | j \in J), (min v_{ij} | j \in J'), i = 1,2,3,\dots,m\} = \{v_{1}{}^{+}, v_{2}{}^{+}{}_{+}, \dots, v_{n}{}^{+}\} \quad (6)$$

$$A^{-} = \{(min v_{ij} | j \in J), (max v_{ij} | j \in J'), i = 1,2,3,\dots,m\} = \{v_{1}{}^{-}, v_{2}{}^{-}{}_{+}, \dots, v_{n}{}^{-}\} \quad (7)$$

Where

$J = \{j = 1,2,3,\dots,n \; and \; j \; is \; associated \; with \; benefit \; criteria\}$

$J' = \{j = 1,2,3,\dots,n \; and \; j \; is \; associated \; with \; loss \; criteria\}$

Clusters for A+ and A- were constructed as follows.

$A^{+} = \{0.0012;\ 0.0004;\ 0.0011;\ 0.0000;\ 0.0174; 0.0435;\ 0.0050;\ 0.0316\}$

$A^{-} = \{0.0000;\ 0.0000;\ 0.0000; 0.4230; 0.0006;\ 0.0009;\ 0.0002; 0.0005\}$

3.5.5. Step 5: Calculation of Separation Measure

In this step, the distance of each alternative from the positive ideal solution (S+) and the distance from the negative ideal solution (S-) is calculated with the help of the following formulas.

$$S_{i^+} = \sqrt{\sum_{j=1}^{n}\left(v_{ij} - v_{j^+}\right)^2}\ , i = 1,2,3 \dots, m. \quad (8)$$

$$S_{i^-} = \sqrt{\sum_{j=1}^{n}\left(v_{ij} - v_{j^-}\right)^2}\ , i = 1,2,3 \dots, m. \quad (9)$$

Si+ and Si- values are given in Table 7 below.

Table 7: Distances of Each Alternative From The Positive Ideal Solution and The Negative Ideal Solution

Alternatives	S_{i^+}	S_{i^-}
AKBNK	0.0423	0.4234
AKSA	0.0517	0.3840
ARCLK	0.1779	0.2513
BIMAS	0.0758	0.3598
DOHOL	0.0559	0.3862
DOAS	0.0436	0.3955
ENJSA	0.0784	0.3536
ENKAI	0.0478	0.4114
EREGL	0.0517	0.4033
FROTO	0.1454	0.2841
SAHOL	0.4244	0.0401
KCHOL	0.3663	0.0700
KORDS	0.0829	0.3543
MAVI	0.0992	0.3312
MGROS	0.3278	0.1020
OTKAR	0.2359	0.1916
TAVHL	0.1181	0.3161
TKFEN	0.0945	0.3390
TCELL	0.1016	0.3306
THYAO	0.1001	0.3340
TTRAK	0.1175	0.3119
ISCTR	0.0443	0.4233
TSKB	0.0445	0.4233
SISE	0.0574	0.3866
VESTL	0.1766	0.2538

3.5.6. Step 6: Calculation of the Relative Closeness to the Ideal Solution

The relative closeness (Ci*) value of a decision alternative with respect to the ideal solution can be calculated below and the results of the calculation are given in Table 8.

$$C_i^* = \frac{s_{i-}}{s_{i+}+s_{i-}} \quad (10)$$

Where $0 \leq C_{i^*} \leq 1 \; and \; i = 1,2,3,\dots,m.$

Table 8: The Relative Closeness to the Ideal Solution

Companies	C_i^* Values for 2022	Ranking
AKBNK	0.9092	1
ISCTR	0.9053	2
TSKB	0.9048	3
DOAS	0.9007	4
ENKAI	0.8960	5
EREGL	0.8864	6
AKSA	0.8814	7
DOHOL	0.8736	8
SISE	0.8708	9
BIMAS	0.8261	10
ENJSA	0.8184	11
KORDS	0.8105	12
TKFEN	0.7820	13
MAVI	0.7695	14
THYAO	0.7694	15
TCELL	0.7650	16
TAVHL	0.7281	17
TTRAK	0.7263	18
FROTO	0.6615	19
VESTL	0.5897	20
ARCLK	0.5855	21
OTKAR	0.4482	22
MGROS	0.2373	23
KCHOL	0.1605	24
SAHOL	0.0862	25

When the relative closeness values to the ideal solution are examined, it is obtained that the best performance in BIST Sustainability 25 Index in 2022 is the Akbank Türkiye Incorporated Company with the AKBNK code (0.9092). It is followed by Türkiye Iş Bank Incorporated Company with ISCTR code and Türkiye Sınai Kalkınma Bank Incorporated Company with TSKB code, respectively. It is seen from the table that Sabancı Holding takes last place with the code SAHOL.

3.6. Detection of SDG Disclosures of BIST Sustainability 25 Index Companies by Frequency

This section reveals the disclosures of SDGs of BIST Sustainability 25 Index Companies. SDG disclosure status of the companies between the years 2016-2022 is given in Table 9. Companies making SDGs disclosures in the table are marked as 1, otherwise as 0.

Table 9: SDG Disclosure Status of The Companies by Frequencies

Company Code	2016	2017	2018	2019	2020	2021	2022	Total
AKBNK	0	1	1	1	1	1	1	6
AKSA	0	0	1	1	1	1	1	5
ARCLK	1	1	1	1	1	1	1	7
BIMAS	0	0	0	0	1	1	1	3
DOHOL	0	0	0	0	1	1	1	3
DOAS	0	0	0	1	1	1	1	4
ENJSA	0	0	1	1	1	1	1	5
ENKAI	0	1	1	1	1	1	1	6
EREGL	1	1	1	1	1	1	1	7
FROTO	1	1	1	1	1	1	1	7
SAHOL	0	0	1	1	1	1	1	5
KCHOL	1	1	1	1	1	1	1	7
KORDS	1	1	1	1	1	1	1	7
MAVI	0	0	0	0	1	1	1	3
MGROS	1	1	1	1	1	1	1	7
OTKAR	0	0	1	1	1	1	1	5
TAVHL	0	0	0	0	0	1	1	2
TKFEN	0	0	1	1	1	1	1	5
TCELL	1	1	1	1	1	1	1	7
THYAO	0	0	0	1	1	1	1	4
TTRAK	0	0	0	0	1	1	1	3
ISCTR	1	1	1	1	1	1	1	7
TSKB	1	1	1	1	1	1	1	7
SISE	0	1	1	1	1	1	1	6
VESTL	0	0	0	0	1	1	1	3

Table 9 demonstrates that nine companies (ARCLK, EREGL, FROTO, KCHOL, KORDS, MGROS, TCELL, ISCTR, TSKB) have disclosed the most SDGs within the scope of the years. TAV Havalimanları Incorporate Holding with the code TAVHL has been determined as the company that has made the least SDG disclosure over the years.

The information about the numbers of SDG indicators included in the reports of the companies in the BIST Sustainability 25 Index between the years 2016-2022 is demonstrated in Table 10.

Table 10: The Number of Information Disclosed About SDG Indicators by BIST Sustainability 25 Index

SDGs	2016	2017	2018	2019	2020	2021	2022	Total
SDG1	2	2	5	3	5	4	5	26
SDG2	2	1	3	3	5	2	4	20
SDG3	3	5	7	12	9	8	8	52
SDG4	6	8	12	12	16	19	17	90
SDG5	8	11	13	13	20	21	21	107
SDG6	6	8	11	8	12	12	13	70
SDG7	5	10	11	14	19	21	19	99
SDG8	7	12	17	18	22	23	23	122
SDG9	8	12	17	18	24	24	24	127
SDG10	5	7	10	11	17	17	17	84
SDG11	4	6	11	9	11	9	8	58
SDG12	7	11	16	17	20	22	23	116
SDG13	8	11	16	17	23	24	25	124
SDG14	3	4	6	4	6	4	4	31
SDG15	4	6	9	8	11	7	8	53
SDG16	4	5	5	6	9	9	9	47
SDG17	6	10	16	16	20	21	20	109

According to Table 10, between 2016-2022, SDG 9 was the most disclosed and SDG 2 was the least took place in the reports. When the table is analyzed on the basis of SDGs for all years, an increase in 2017 is observed in the statements made in all SDGs except SDG 2. In terms of all SDGs on a yearly basis, an increasing trend of disclosure illustrates in all SDGs except SDG3 in 2020. It can be clearly seen that a peak is made in SDG 5, SDG 6, SDG 8, SDG 9, SDG 10, SDG 12, SDG 13, SDG 14, SDG 15, and SDG 16 in 2022.

4. Findings

The financial ratios calculated for the 25 companies included in the analysis were used to evaluate the financial performances of the companies, separately for the 13 years between 2010 and 2022. Calculated financial ratios are converted into a single score illustrating the overall business performance utilizing the TOPSIS approach. Table 11 demonstrates the C_i^* values and rankings of the BIST Sustainability 25 Index, calculated according to the TOPSIS method. Then, the ranking of the enterprises was made and the performance rating process was completed.

Table 11. C_i^* values and Rankings (R) of BIST Sustainability 25 Index Within the Scope of The Years (2010-2022)

Companies	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020		2021		2022	
	R	C_i^*	R	C_i^*	R	C_i^*	R	C_i^*	R	C_i^*	R	C_i^*	R	C_i^*	R	C_i^*	R	C_i^*	R	C_i^*	R	C_i^*	R	C_i^*	R	C_i^*
AKBNK	1	0.878	1	0.906	1	0.94	1	0.96	1	0.953	2	0.966	1	0.966	2	0.952	2	0.969	1	0.986	5	0.979	1	0.963	1	0.909
AKSA	9	0.84	11	0.858	8	0.909	9	0.92	7	0.909	6	0.92	9	0.92	10	0.867	12	0.88	10	0.959	12	0.979	13	0.925	7	0.881
ARCLK	17	0.809	16	0.804	18	0.809	18	0.823	17	0.815	16	0.818	11	0.818	11	0.823	16	0.846	16	0.94	15	0.979	21	0.893	21	0.586
BIMAS	18	0.767	18	0.788	17	0.819	16	0.835	16	0.821	10	0.862	10	0.862	9	0.877	9	0.904	15	0.941	13	0.979	18	0.906	10	0.826
DOHOL	14	0.83	17	0.788	16	0.828	13	0.879	12	0.841	12	0.839	14	0.839	18	0.777	6	0.959	6	0.982	8	0.979	5	0.962	8	0.874
DOAS	15	0.823	14	0.838	12	0.888	14	0.877	10	0.866	15	0.82	20	0.82	20	0.741	19	0.832	18	0.937	18	0.979	7	0.957	4	0.901
ENJSA	4	0.86	4	0.895	5	0.919	4	0.946	18	0.777	18	0.792	16	0.792	14	0.804	18	0.833	13	0.944	14	0.979	14	0.921	11	0.818
ENKAI	8	0.853	7	0.884	7	0.914	7	0.94	5	0.934	4	0.953	3	0.953	4	0.948	4	0.966	2	0.986	3	0.979	6	0.958	5	0.896
EREGL	16	0.819	10	0.865	11	0.892	8	0.927	6	0.93	5	0.943	5	0.943	5	0.94	5	0.964	5	0.983	2	0.979	4	0.962	6	0.886
FROTO	13	0.836	15	0.829	15	0.845	17	0.835	13	0.836	14	0.837	13	0.837	15	0.801	15	0.852	14	0.942	19	0.978	20	0.902	19	0.662
SAHOL	25	0.041	25	0.057	25	0.046	25	0.062	25	0.04	24	0.069	24	0.069	25	0.048	24	0.34	24	0.768	23	0.969	23	0.574	25	0.086
KCHOL	24	0.402	24	0.4	24	0.434	19	0.821	15	0.827	11	0.841	15	0.841	12	0.817	14	0.853	20	0.935	24	0.968	24	0.568	24	0.161
KORDS	7	0.858	8	0.875	9	0.902	10	0.909	9	0.891	9	0.903	7	0.903	7	0.905	8	0.913	12	0.954	9	0.979	9	0.943	12	0.81
MAVI	5	0.86	5	0.895	6	0.919	5	0.946	24	0.306	21	0.559	22	0.559	21	0.709	20	0.814	21	0.928	1	0.982	15	0.917	14	0.77
MGROS	22	0.613	22	0.592	23	0.611	24	0.413	23	0.497	25	0.055	25	0.055	23	0.476	25	0.003	25	0.005	25	0.016	25	0.032	23	0.237
OTKAR	20	0.654	20	0.659	21	0.63	23	0.608	21	0.599	23	0.489	23	0.489	24	0.467	23	0.698	22	0.927	22	0.978	17	0.908	22	0.448
TAVHL	23	0.565	21	0.639	22	0.618	21	0.731	20	0.74	20	0.714	19	0.714	16	0.789	13	0.855	11	0.955	16	0.979	16	0.915	17	0.728
TKFEN	11	0.838	12	0.854	14	0.876	15	0.847	11	0.845	13	0.837	12	0.837	13	0.809	11	0.891	7	0.967	10	0.979	11	0.931	13	0.782
TCELL	6	0.859	6	0.887	4	0.924	6	0.945	4	0.94	7	0.918	8	0.918	8	0.882	10	0.894	9	0.963	11	0.979	12	0.927	16	0.765
THYAO	19	0.743	19	0.706	19	0.718	20	0.74	19	0.751	19	0.778	18	0.778	17	0.785	17	0.844	17	0.939	21	0.978	19	0.903	15	0.769
TTRAK	12	0.837	13	0.851	13	0.882	12	0.899	14	0.828	17	0.806	17	0.806	19	0.763	21	0.769	19	0.935	17	0.979	10	0.938	18	0.726
ISCTR	2	0.875	3	0.903	3	0.938	3	0.958	3	0.952	3	0.964	4	0.964	3	0.951	3	0.969	4	0.985	6	0.979	2	0.963	2	0.905
TSKB	3	0.875	2	0.904	2	0.939	2	0.959	2	0.953	1	0.966	2	0.966	1	0.953	1	0.97	3	0.985	4	0.979	3	0.963	3	0.905
SISE	10	0.839	9	0.874	10	0.902	11	0.905	8	0.9	8	0.917	6	0.917	6	0.915	7	0.942	8	0.967	7	0.979	8	0.955	9	0.871
VESTL	21	0.63	23	0.542	20	0.673	22	0.665	22	0.555	22	0.529	21	0.529	22	0.538	22	0.72	23	0.903	20	0.978	22	0.889	20	0.59

Table 11 reveals that AKBNK ranked first between 2010 and 2014, including 2014, and took second place in ranking alternately with TSKB from 2015 to 2018.According to the table, SAHOL between years 2010-2014, MGROS between years 2015-2016, SAHOL again in 2017, and MGROS from 2018 to 2021 are the worst-performing companies. Eventually, SAHOL exhibited the worst performance again in 2022.

Table 12: The Average Performance C_i^*Values (2010-2022) and Total SDGs Disclosed (2016-2022)

Ranking	Company	Average C_i^*values	Total SDGs Disclosed by the Companies
1	AKBNK	0.949	6
2	TSKB	0.948	5
3	ISCTR	0.947	7
4	ENKAI	0.937	3
5	EREGL	0.928	3
6	SISE	0.917	4
7	TCELL	0.911	5
8	KORDS	0.908	6
9	AKSA	0.908	7
10	DOHOL	0.881	7
11	ENJSA	0.877	5
12	TKFEN	0.875	7
13	DOAS	0.871	7
14	BIMAS	0.866	3
15	TTRAK	0.855	7
16	FROTO	0.852	5
17	ARCLK	0.836	2
18	THYAO	0.811	5
19	MAVI	0.800	7
20	TAVHL	0.778	4
21	VESTL	0.695	3
22	KCHOL	0.688	7
23	OTKAR	0.678	7
24	SAHOL	0.281	6
25	MGROS	0.274	3

Table 12 was composed according to the Average $\boldsymbol{C_i^*}$ values by years. The table reveals that AKBNK, TSKB, ISCTR, ENKAI, and EREGL take in the top five respectively in the performance ranking. When the 9 (ARCLK, EREGL, FROTO, KCHOL, KORDS, MGROS, TCELL, ISCTR, TSKB) companies that made the most SDG statements and their performances were compared, it was determined that the performances of the companies did not demonstrate a similar trend with the statements made on sustainability except for two companies (TSKB and ISCTR).

5. Conclusion And Discussion

The performance of a company depends on a wide range of indicators, including diverse operational metrics and economic efficiency factors and these indicators frequently have a relationship with each other (Gayathri et al., 2022). This study emphasizes the key measurable financial criteria, that influence the efficiency of the BIST Sustainability 25 Index within the

framework of SDGs statements made in the integrated/operational and sustainability reports of the indexed companies. Data were obtained from the integrated/operational and sustainability reports of the companies which were disclosed annually. The ratios obtained from the Finnet Analysis program were utilized for the measurement of financial performance and the data related to the SDGs disclosure obtained in the content analysis for the reports were used to determine the frequency.

Initially, TOPSIS the approach was opted for financial performance measurement. In the TOPSIS method, vector normalization becomes specific in order generation with assumptions of Euclidean distance to ideal values (Baydaş & Eren, 2021). It is a mathematical model for solving which multi-criteria decision-making problems (Hoe et al., 2018). In addition, in order to rank based on different criteria, TOPSIS has been a proven method (Gayathri et al., 2022). Detection of the alternative having the best financial performance with the TOPSIS method consists of six steps (de Lima Silva et al., 2020; Hoe et al., 2018; Gayathri et al., 2022; Özmen et al., 2020); constructing a decision matrix, normalization of decision matrix, generating weighted normalized decision matrix, determination of the best ıdeal solution (A+) and the worst ıdeal solution (A-), calculation of separation measure, calculation of the relative closeness to the ıdeal solution. Subsequently, with the help of content analysis was realized detection of SDG disclosures of BIST Sustainability 25 Index companies by frequency.

As a result of the findings being evaluated, it has been ascertained that the companies with the highest economic accomplishment based on the companies in the BIST Sustainability 25 Index are the banks (AKBNK, TSKB, ISCTR) operating in the financial sector. Similarly, TSKB and ISCTR are among 9 companies (ARCLK, EREGL, FROTO, KCHOL, KORDS, MGROS, TCELL, ISCTR, TSKB) that disclosed most SDG statements. It was obtained from the frequency analysis that whereas AKBNK did not disclose any SDG statement in 2016 after the first year of the UN's SDGs announced, TSKB and ISCTR disclosed statements regularly from the first years until 2022. Therefore, it is not possible to make a meaningful comparison when financial performances are evaluated within the framework of SDG disclosures. This result, in other words, suggests that sustainability reporting does not have a positive or negative significant relationship with financial performance as stated (Ballester & Pilar, 2021; Adeneye & Ahmed, 2015; Nelling & Webb, 2009). However, it may be possible to make a meaningful explanation when the obtained findings are analyzed in relation to alternative statistical methods. In this way, a positive (Khan et al., 2021; Echeverri-Pimienta et al., 2022; Al Lawati & Hussainey, 2022; Jan et al., 2023; Mustafa et al., 2012; McGuire et al., 2017) or negative (Lassala et al., 2021; Buallay et al., 2023) relationship may be proven.

Among the limitations of the study, the sample size is not large enough (25 companies), and the preparing integrated or sustainability reports besides publishing and disclosures on SDG factors are not obligatory in Turkey (Yüksel & Kayalı, 2020) take place. In future studies, in order to determine the effect on financial performances of the SDGs disclosure, more businesses that make integrated or sustainability reporting need to be included and it may be suggested that will opt for alternative statistical analysis methods utilized in establishing a statistical relationship on a different sample. On the other hand, it should be considered that the change in financial ratios included in the studies may result in different findings. As a result, different financial performance findings may be reached within the framework of SDG disclosures, with the expansion of the sample within the scope of the research, the preference of different periods and the changes to be made in the analysis technique.

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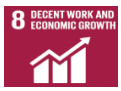
Appendix 1: Businesses Operating in the BIST Sustainability 25 Index Used in the Study

Sequence No	Company Code	Company Title
1	AKBNK	AKBANK T.A.Ş.
2	AKSA	AKSA AKRİLİK KİMYA SANAYİİ A.Ş.
3	ARCLK	ARÇELİK A.Ş.
4	BIMAS	BİM BİRLEŞİK MAĞAZALAR A.Ş.
5	DOHOL	DOĞAN ŞİRKETLER GRUBU HOLDİNG A.Ş.
6	DOAS	DOĞUŞ OTOMOTİV SERVİS VE TİCARET A.Ş.
7	ENJSA	ENERJİSA ENERJİ A.Ş.
8	ENKAI	ENKA İNŞAAT VE SANAYİ A.Ş.
9	EREGL	EREĞLİ DEMİR VE ÇELİK FABRİKALARI T.A.Ş.
10	FROTO	FORD OTOMOTİV SANAYİ A.Ş.
11	SAHOL	HACI ÖMER SABANCI HOLDİNG A.Ş.
12	KCHOL	KOÇ HOLDİNG A.Ş.
13	KORDS	KORDSA TEKNİK TEKSTİL A.Ş.
14	MAVI	MAVİ GİYİM SANAYİ VE TİCARET A.Ş.
15	MGROS	MİGROS TİCARET A.Ş.
16	OTKAR	OTOKAR OTOMOTİV VE SAVUNMA SANAYİ A.Ş.
17	TAVHL	TAV HAVALİMANLARI HOLDİNG A.Ş.
18	TKFEN	TEKFEN HOLDİNG A.Ş.
19	TCELL	TURKCELL İLETİŞİM HİZMETLERİ A.Ş.
20	THYAO	TÜRK HAVA YOLLARI A.O.
21	TTRAK	TÜRK TRAKTÖR VE ZİRAAT MAKİNELERİ A.Ş.
22	ISCTR	TÜRKİYE İŞ BANKASI A.Ş.
23	TSKB	TÜRKİYE SINAİ KALKINMA BANKASI A.Ş.
24	SISE	TÜRKİYE ŞİŞE VE CAM FABRİKALARI A.Ş.
25	VESTL	VESTEL ELEKTRONİK SANAYİ VE TİCARET A.Ş.

Appendix 2: The Sustainable Development Goals

	SDG1: No Poverty
	SDG2: Zero hunger
	SDG3: Good health and well-being
	SDG4: Quality education

	SDG5: Gender equality
	SDG6: Clean water and sanitation
	SDG7: Affordable and clean energy
	SDG8: Decent work and economic growth
	SDG9: Industry, innovation, and Infrastructure
	SDG10: Reduced inequality
	SDG11: Sustainable Cities and Communities
	SDG12: Responsible consumption and production
	SDG13: Climate action
	SDG14: Life below water
	SDG15: Life on land
	SDG16: Peace, Justice, and strong institutions
	SDG17: Partnerships to achieve the goal

Source: The 17 Goals. United Nations Sustainable Development Goals: https://sdgs.un.org/goals.