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The Impacts of Corporate Disclosures Regarding Sustainable Development Goals and Environmental, Social, and Governance Scores of Companies on Financial Performance: The Case of Türkiye[1]

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İşletmelerin Sürdürülebilir Kalkınma Hedeflerine Yönelik Açıklamaları ile Çevresel, Sosyal ve Yönetişim skorlarının Finansal Performans Üzerindeki Etkisi: Türkiye Örneği

Öz

Bu çalışmanın amacı, işletmelerin sürdürülebilir kalkınma hedeflerine yönelik açıklamaları ile çevresel, sosyal ve yönetişim skorlarının finansal performans üzerindeki etkisini incelemektir. Bulgular, çevresel, sosyal ve yönetişim genel skor ve sosyal skor ile Özkaynak Kârlılığı ve Net Kâr Marjı arasında pozitif ilişki bulmuştur. Çevresel skor ile Özkaynak Kârlılığı arasında pozitif ilişki vardır. Çevresel skor ile Faiz ve Vergi Öncesi Kâr, Net Kâr Marjı ve Fiyat/Kazanç arasında nedensel ilişki vardır. Yönetişim skoru ile Aktif Kârlılığı, Özkaynak Kârlılığı, Tobin'in Q ve Faiz ve Vergi Öncesi Kâr arasında pozitif ilişki vardır. Yönetişim skoru ile Aktif Kârlılığı ve Özkaynak Kârlılığı arasında nedensel ilişki vardır. Sürdürülebilir kalkınma hedeflerine yönelik açıklama düzeyi skoru, Net Kâr Marjı ve Fiyat/Kazanç ile negatif ilişkili iken, Aktif Kârlılığı ile arasında nedensel ilişki bulunmaktadır.

Anahtar Kelimeler: ÇSY (Çevresel, Sosyal ve Yönetişim), Sürdürülebilir Kalkınma Hedefleri (SKH), Finansal Performans, Karma Yöntem

JEL Kodları: Q01, L1, M14

The Impacts of Corporate Disclosures Regarding Sustainable Development Goals and Environmental, Social, and Governance Scores of Companies on Financial Performance: The Case of Türkiye

Abstract

The aim of this study is to examine the impact of corporate disclosures regarding Sustainable Development Goals and Environmental, Social, and Governance (ESG) scores on financial performance. The findings reveal a positive relationship between the overall ESG score and social score with Return on Equity and Net Profit Margin. There is a positive relationship between the Environmental score and Return on Equity. Additionally, a causal relationship exists between the Environmental score and Earnings Before Interest and Taxes, Net Profit Margin, and Price/Earnings ratio. The Governance score shows a positive relationship with Return on Assets, Return on Equity, Tobin's Q, and Earnings Before Interest and Taxes. Furthermore, a causal relationship exists between the Governance score and Return on Assets and Return on Equity. Conversely, the level of disclosure score regarding Sustainable Development Goals is negatively related to Net Profit Margin and Price/Earnings ratio, while a causal relationship is present with Return on Assets.

Keywords: ESG (Environmental, Social and Governance), Sustainable Development Goals (SDGs), Financial Performance, Mixed Method

JEL Codes: Q01, L1, M14

Araştırma ve Yayın Etiği Beyanı	Bu çalışma bilimsel araştırma ve yayın etiği kurallarına uygun olarak hazırlanmıştır.
Yazarların Makaleye Olan Katkıları	Bu çalışma, Başar danışmanlığında Doğan'ın doktora çalışmasından türetilmiştir. Makalenin tamamı iki yazarın birlikte çalışmasıyla hazırlanmıştır.
Çıkar Beyanı	Yazarlar açısından ya da üçüncü taraflar açısından çalışmadan kaynaklı çıkar çatışması bulunmamaktadır.

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1. Introduction

Sustainability emerged in the 1800s with the idea of sustainable use of coal mines in England (Basiago, 1999, p. 146). The concept of sustainable development was created in the 1970s by harmonizing sustainability and economic development policy (Friede et al., 2015, p. 210). The first definition of Sustainability was introduced in the Brundtland Report published in 1987 as "meeting the needs of the present generation without compromising the ability of future generations to meet their own needs" (Brundtland Commission, 1987, p. 37). Thus, the dimensions that businesses have reached in the last quarter of the 20th century have made development strategies necessary that include all stakeholders for sustainability. The first of these requirements that lead businesses to become sustainable is financial concerns. The second is the understanding of social responsibility, which is necessary for corporate identity. This understanding has led businesses to develop a sustainable vision. The first strategy developed in this direction is prioritizing social, societal, managerial and environmental expectations without ignoring the financial expectations of the business (Hoverstadt & Bowling, 2005, p.131). In this context, the sensitivity of businesses to society and the environment and the importance the businesses attach to sustainable development and their goals have increased day by day. With the increasing climate change, it is imperative for businesses to focus not only on profitability but also on social and environmental responsibility. In this regard, the Sustainable Development Goals (SDGs) and Environmental, Social, and Governance (ESG) criteria have become two of the most significant concepts in contemporary discourse. The SDGs are directed towards states and require the participation of businesses and social organizations. They are viewed as fundamental standards that promote actions aimed at protecting the environment and the overall living conditions of humanity. Conversely, ESG criteria are considered standards used by businesses to measure sustainability and responsible business practices. In summary, while the SDGs are part of a global movement towards sustainable development, ESG can be expressed as an initiative aimed at reducing the negative impacts of businesses on ecosystems. Although the SDGs and ESG criteria are distinct, they are closely related. For instance, targets such as SDG 6: Clean Water and Sanitation, which focuses on reducing water pollution; SDG 8: Decent Work and Economic Growth; SDG 10: Reduced Inequalities; and SDG 13: Climate Action, which aims at reducing carbon emissions, are achieved through ESG practices. Thus, ESG practices accelerate businesses' progress towards the SDGs. In this context, ESG serves as a framework for measuring, standardizing, and implementing specific activities based on the SDGs. Furthermore, since the SDGs emphasize key impact areas, they provide a framework that supports ESG practices for investors interested in sustainable development. This means that businesses can utilize the SDGs as a guide for setting targets and measuring the effectiveness of sustainability in their ESG practices. In this regard, the SDGs and ESG are not merely theoretical concepts but are recognized as practical tools that guide businesses towards sustainable development. In addition, the fact that businesses have developed their corporate governance understanding according to ESG criteria has also increased the awareness of sustainability. This situation has led to the question of how the sustainability understanding of companies affects financial performance. Although there are many studies on the impact of SDGs on financial performance worldwide (Al Lawati and Hussainey, 2022; Khan, et al., 2021; Khan, et al., 2022; Lassala et al., 2021; Iqbal and Nosheen, 2023; Yang and Liu, 2022), there are few studies in Türkiye (Düzer, 2018; Koç, 2018; Düzer and Önce, 2017; Uşar, 2017). In addition, there is no existing study in the literature that analyses the

combination of ESG scores and companies' efforts toward SDGs and the effects of both on financial performance. In this study, the SDG score was developed specifically for the context of the research. This study aims to contribute to the literature in terms of establishing the SDG score of companies and analysing the effects of this score on financial performance together with ESG scores. In order to fill this gap in the literature, this study analyses the effects of sustainable development goal statements (SDG score developed for the research) and ESG scores on the financial performance of Turkish companies.

The level of information disclosed about SDGs in the non-financial reports of companies and the effect of ESG, ENV, SOC and GOV scores on financial performance represent the research question. Other research questions determined in this direction are as follows:

(1) Can the disclosures on SDGs in non-financial reports of companies be measured by content analysis technique using keywords?

(2) Does the level of information disclosed by businesses about SDGs (SDG scores developed for the study) and ESG, ENV, SOC and GOV scores have an impact on financial performance?

The purpose of this study is to determine the impact of the level of information disclosed by the companies traded in the BIST sustainability index on SDGs and ESG scores on financial performance. In the study, firstly, the level of information on SDGs disclosed by the companies in their non-financial reports published between 2018 and 2022 will be determined. Then, financial performance indicators will be calculated through the financial statements published by the companies in the specified year interval. Return on assets- ROA and return on equity- ROE will be used as accounting-based measures, while Tobin's q- TBNQ, price/earnings- P/E, earnings before interest and taxes- EBIT and net profit margin- NPM will be used as market-based measures. Finally, the relationship between the level of information disclosed by firms on SDGs (SDG score developed for the study), ESG, ENV, SOC and GOV scores and financial performance will be analyzed.

2. Literature Review And Hypotheses

2.1. Literature review

Sustainability and SDGs have increasingly been the focus of researchers in recent years. According to Zhang et al. (2023), sustainability and SDGs shed light on the strategies and supporting mechanisms of businesses. The researchers also emphasized that SDG performance has a supporting role in financial performance. According to Amel-Zadeh and Serafeim (2018), investors are better able to measure the strength of the ESG performance and the strength of the business through the disclosed information.

Many studies have found that ESG disclosures positively affect financial performance and there is no relationship between financial performance with ESG disclosures (Düzer and Önce, 2017; Friede et al., 2015; Giese et al., 2019; Hedqvist and Larsson, 2020; Keçeli, 2020; Kulakova, 2018; Uşar, 2017; Wu, 2021; Zhao et al., 2018). On the other hand, Zang et al. (2023) concluded that ESG disclosures can better characterize SDG performance, alleviate financial constraints, adaptation of sustainable development strategies to financial challenges, and help overcome external shocks. Fatemi et al. (2018), Friede et al. (2015) and Wong et al. (2021) find that ESG is an effective indicator that defines the SDGs well. In addition to this, the researchers identified ESG as a regulatory mechanism for financial performance. Nyit Chiong (2010) found a negative relationship between economic,

environmental and social performance information and debt-to-equity ratio and an increase in the level of information disclosure decreases the debt/equity ratio. No significant relationship was found between economic, environmental and social performance and revenue growth and ROE. Ecless et al. (2014) found that high-sustainability businesses outperform low-sustainability businesses in the stock market and accounting performance in the long run. Velte's (2017) research shows that ESG has a positive effect on CFP, but there is no effect between governance and Tobin's Q. Düzer (2018) found that disclosure of environmental performance has a positive effect on ROA and ROE, while disclosure of social performance has a positive effect on ROA. In addition to this, the author found that the level of information disclosed on economic, environmental and social performance had no significant effect on market capitalization/book value and P/E ratio. Koç (2018) found that corporate sustainability behavior does not have a statistically significant effect on financial performance. Şeker and Güngör (2022) concluded that ESG performance has no effect on financial performance. Naeem et al. (2022) found that there is a significant positive relationship between ESG performance and Tobin's Q and ROE. The implementation of SDGs and ESG practices by businesses necessitates a specific infrastructure. The application of these infrastructures within the system and the feedback obtained from these implementations require a certain period. In other words, SDGs and ESG practices emerge as situations that necessitate long-term infrastructural work and provide feedback over an extended duration. Additionally, these infrastructural efforts incur specific costs for businesses. In this context, considering the literature, these elements may lead to a negative or neutral impact on financial performance. This implies that there may be no short-term financial benefits derived from these practices. Conversely, variations in the country where the research is conducted, the sample, the time frame, or the suitability of financial performance variables for the study may contribute to the observed negative or neutral effects in the results obtained. The positive outcomes reported in the literature may stem from the appropriateness of the infrastructural efforts and practices for the specific country, sample, and analysis period.

SDGs work in conjunction with ESG practices by providing guidelines on how a business can achieve its objectives. Furthermore, SDGs and ESG are also utilized to measure the overall outcomes derived from business activities. In this regard, the implementation of SDGs and ESG practices is significant for businesses aiming to reduce losses in their operations, supply chains, and value chains, both in terms of financial performance and stakeholder benefits. Thus, a business that integrates sustainability practices into its operations, products, and services can achieve financial success through ESG practices that align with the SDGs. Investment decisions based on ESG are aimed at creating long-term value for both the business and society. In this context, ESG is directly linked to the SDGs, which represent market potential for economic growth and sustainability, as well as social needs and policy actions. Well-measured, implemented, and managed SDGs and ESG practices on the business side can assist investors in aligning their decisions with the SDGs and directing their financial resources towards sectors related to the SDGs.

The studies in the literature have generally examined the relationship between sustainability performance and financial performance or between ESG scores and financial performance. In addition to this, the literature is scarce about examining the impact of SDG and ESG disclosures combination on financial performance. This study is based on studies that examine non-financial reports with content analysis (Camodeca and Almici, 2021; Ionaşcu et

al., 2022; Khan et al., 2022; Ren and Li, 2022; Zhao et al., 2022). In this direction firstly, the information disclosed by companies regarding SDGs throughout their non-financial reports was measured by frequency analysis method. Independent variables are ESG, ENV, SOC, GOV scores and the SDG score developed as a result of the measurement.

ROA, ROE, TBNQ, EBIT, NPM and P/E indicators, which are based on the studies examining the effects of sustainability performance and ESG performance of companies on financial performance separately (Nyit Chiong, 2010; Ecless et al., 2014; Velte, 2017; Düzer, 2018; Naeem et al., 2022), are determined as dependent variables. Thus, determining the existence of a significant relationship and causality between SDG, ESG, ENV, SOC, GOV scores and ROA, ROE, TBNQ, EBIT, NPM, P/E indicators is aimed. The research in the literature has showed to focused on generally one or two of the ESG performance dimensions: environmental, social and governance. Very few studies in the literature have examined the relationship between these three dimensions and financial performance as a whole. In this study, unlike the literature, all scores of ESG (environmental, social and governance) dimensions and the score related to the level of information disclosed by companies regarding SDGs are developed within the scope of the research, and the impact of both factors on financial performance is examined. In the literature, there are studies that evaluate the sustainability of businesses and their reports related to the SDGs using content analysis (Amini et al., 2018; Erin and Bamigboye, 2021; Gerged and Tariq, 2021; Yadav et al., 2021). However, the data utilized in these studies could not be accessed. Therefore, keywords, categories, and themes were developed specifically for this research from the United Nations SDGs text, resulting in the creation of an SDG score list covering the period from 2018 to 2022 for 27 businesses. The data generated through qualitative analysis were subsequently added as variables to the dataset to expand and strengthen the quantitative analysis. In this context, the uniqueness of this research and its distinction from other studies lies in the fact that the SDG score has been specifically developed for this research. In this respect, this research aims to fill the gap in the literature by combining the newly developed SDG score and ESG scores to analyse the impact of these scores on financial performance. For the purposes of the study, the data obtained from the financial statements, non-financial reports and Thomson Reuters Eikon-Datastream database of 27 companies traded in the BIST sustainability index between 2018 and 2022 were analyzed. The findings of the study are interpreted where the findings overlap and diverge with the results in the literature.

2.2. Hypothesis development

The following main hypotheses have been developed by taking into account the researches and the plot mentioned in the literature review. The sub-hypotheses, which examine the correlation and causality of each variable specified in the main hypotheses with another variable, are detailed in the findings and interpretation section of the study.

- *Dependent variables*

ROA- Return on Assets shows how effectively and efficiently business assets are used. This ratio, which shows the operating profitability, is of great importance in the measurement of management performance as the ratio clearly shows the efficiency and productivity achievements of companies (Tupy, 2008; Wang et al., 2019).

A-H1: There is a positive or negative linear relationship between SDG, ESG, ENV, SOC and GOV scores and ROA.

B-H1: There is a causal relationship between SDG, ESG, ENV, SOC and GOV scores and ROA.

ROE-Return on Equity shows how the company utilizes the company's equity capital and the extent to which shareholders benefit from the company's resources. ROE is taken into account by investors as the ratio helps potential and existing investors to make decisions (Tupy, 2008; Wang et al., 2019).

A-H2: There is a positive or negative linear relationship between SDG, ESG, ENV, SOC and GOV scores and ROE.

B-H2: There is a causal relationship between SDG, ESG, ENV, SOC and GOV scores and ROE.

Tobin's Q (TBNQ) is a market-based measure that reflects investors' expectations (Awaysheh et al., 2020) and is also used to show the financial market's response to ESG performance (Awaysheh et al., 2020; Nekhili et al., 2019). Compared to accounting-based measures, Tobin's Q is less affected by contracts and manipulation (Dechow et al., 1996).

A-H3: There is a positive or negative linear relationship between SDG, ESG, ENV, SOC and GOV scores and TBNQ.

B-H3: There is a causal relationship between SDG, ESG, ENV, SOC and GOV scores and TBNQ.

EBIT - Earnings Before Interest and Tax has a wide range of users as *EBIT* is a valuation measure based on operating profit or net profit before tax. EBIT can be adjusted according to the intended use. For this reason, there is no consensus on the EBIT calculation methodology across the literature (İge et al., 2021, p. 222).

A-H4: There is a positive or negative linear relationship between SDG, ESG, ENV, SOC and GOV scores and EBIT.

B-H4: There is a causal relationship between SDG, ESG, ENV, SOC and GOV scores and EBIT.

Net Profit Margin (NPM) shows the potential profitability in future periods. NPM provides information on the net efficiency of ongoing activities (Robinson et al., 2009).

A-H5: There is a positive or negative linear relationship between SDG, ESG, ENV, SOC AND GOV scores and NPM.

B-H5: There is a causal relationship between SDG, ESG, ENV, SOC and GOV scores and NPM.

P/E- Price Earnings Ratio shows the relationship between the stock market price and expected earnings per share. The P/E ratio shows the amount that the investor will pay in return for the earnings from the business within the scope of the value creation strategy.

A-H6: There is a positive or negative linear relationship between SDG, ESG, ENV, SOC and GOV scores and P/E ratios.

B-H6: There is a causal relationship between SDG, ESG, ENV, SOC and GOV scores and P/E ratios.

In the study, there are six dependent variables and five independent variables, for which 60 different hypotheses have been developed. In this section of the research, the formulated hypotheses are presented under six main headings. In the subsequent phases of the study, these six main headings will be subdivided into subheadings labeled A-H1a, A-H1b,… A-H1e or B-H1a, B-H1b,… B-H1e. For example, A-H1a will represent the correlation relationship between ROA and ESG, while B-H1a will represent the causality between ROA and ESG.

- *Independent variables*

SDG Scores; within the scope of this research, the studies on SDGs disclosed by the companies in their non-financial reports were analyzed by content analysis technique. From the findings obtained as a result of this analysis, percentage values showing the SDG scores of the companies for each year subject to analysis were calculated. These values obtained through the qualitative analysis method in the first stage were included as independent

variables in the quantitative analysis to be applied in the second stage. Information on the creation of the SDG score will be given in detail in the methodology section.

ESG Scores are ESG general, environmental, social and governance scores for the businesses and periods covered by the research, obtained from the Thomson Reuters Eikon-Datastream database.

3. Dataset, Methodology And Findings

3.1. Dataset and methodology

In this study, an exploratory design of a mixed research method was applied. It is aimed to gain an in-depth perspective with the exploratory design. In the exploratory design, frequency analysis of the content analysis technique, one of the qualitative analysis methods, was applied. With the frequency analysis method, the level of knowledge (SDG score developed for the research) score was created for SDGs. In the data collection method of qualitative analysis, non-financial reports of the companies were used. The non-financial reports, which are the source of these data, were retrieved from the web pages of the companies. These data, which were developed specifically within the context of the research, were later included in the quantitative analysis to expand and strengthen the research. Furthermore, for the quantitative analysis, ESG (environmental, social and governance) scores of companies and financial performance indicators obtained from financial statements were used as data collection methods. In the quantitative analysis, correlation analysis and panel Granger causality test were applied. The main body of the research consists of all companies traded in the BIST sustainability index, while the sample consists of 27 companies due to the difference in the date of ESG score publication. For this reason, the analysis of the research covers the period between 2018-2022. ROA, ROE, TBNQ, EBIT, NPM, and P/E ratio are used as financial performance indicators. Non-financial performance indicators are SDG scores developed for the research, ESG, ENV, SOC and GOV scores. The analyses were conducted with 5-year data of 27 companies and 135 firms/year observations.

Table 1: Companies included in the study

No	*Firm Code*	*Firm Name*	*No*	*Firm Code*	*Firm Name*
1	*ARCLK*	Arçelik	**15**	*KORDS*	Kordsa Teknik Tek.
2	*FROTO*	Ford Otomotiv	**16**	*MGROS*	Migros
3	*TTRAK*	Türk Traktör	**17**	*DOAS*	Doğuş Otomotiv
4	*OTKAR*	Otokar Otomotiv	**18**	*SOKM*	Şok Marketler
5	*TOASO*	Tofaş	**19**	*ENJSA*	Enerjisa
6	*ULKER*	Ülker	**20**	*ZOREN*	Zorlu Enerji
7	*CCOLA*	Coca-Cola	**21**	*AKSEN*	Aksa Enerji
8	*AEFES*	Anadolu Efes	**22**	*ASELS*	Aselsan
9	*AYGAZ*	Aygaz	**23**	*ENKAI*	Enka İnşaat
10	*TUPRS*	Tüpraş	**24**	*THYAO*	Türk Hava Yolları
11	*AKSA*	Aksa Akrilik	**25**	*TTKOM*	Türk Telekom
12	*PETKM*	Petkim	**26**	*TCELL*	Turkcell
13	*EREGL*	Ereğli Demir ve Çelik	**27**	*PGSUS*	Pegasus
14	*KRDMD*	Kardemir Kar. Dem.			

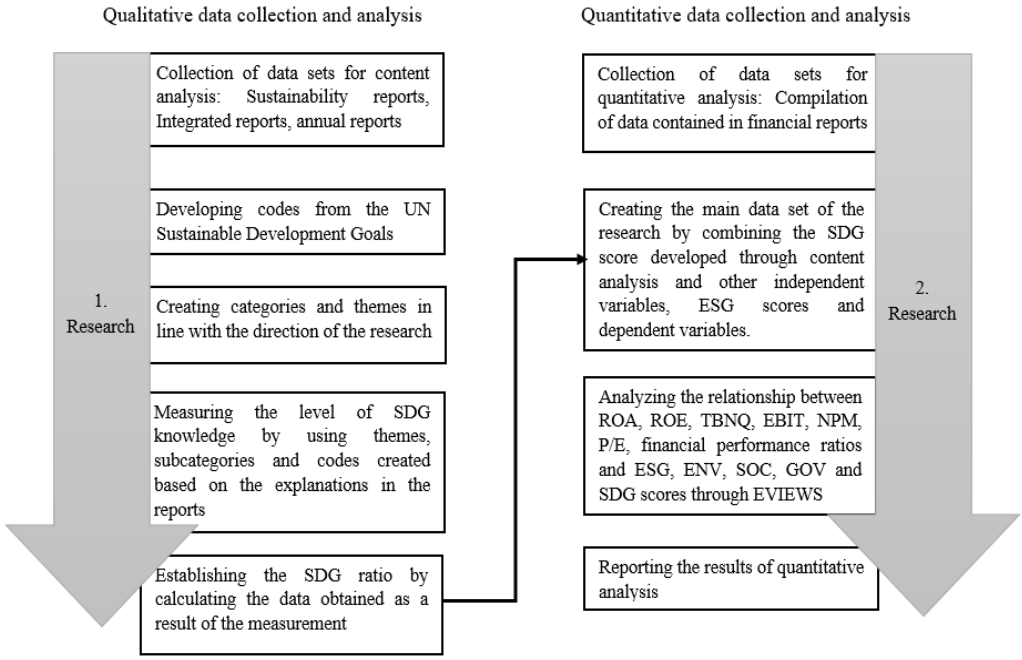
3.2. Research Method and Types of Analysis

3.2.1. Mixed Methods

The concept of mixing methods originated in 1959 when Campbell and Fisk used multiple methods to investigate the validity of psychological traits. In the 1990s, the idea of mixing

moved from seeking from seekingconvergence to integrating quantitative and qualitative data (Creswell, 2009). Thus, the mixed method constitutes a systematic form of inquiry in which qualitative and quantitative, observation and experimentation findings are integrated with qualitative and/or quantitative methods (Sandelowski et al., 2006). In this context, the general purpose of the mixed method, which combines qualitative and quantitative research components, is to expand and strengthen the results of the research and contribute to the literature (Onwuegbuzie et al., 2010). However, the mixed research method has three designs: convergent, exploratory and exploratory (Creswell, 2002). In this study, the exploratory design of the mixed research method was applied in order to gain an in-depth perspective. In the exploratory design, the findings generated by the qualitative analysis method enter the analysis as independent variables to be used in the data generated for quantitative analysis and shape the quantitative analysis.

Figure 1. Research diagram developed based on the exploratory sequential design



3.2.2. Panel Granger Causality Test with Content and Correlation Analysis

Due to its position between qualitative and quantitative analysis, *content* analysis represents a mixed method that combines qualitative and quantitative steps. Moreover, because of its systematic nature, which allows for a freer interpretation of textual analysis, content analysis was used in this study to develop the SDG score, one of the independent variables.

Correlation analysis is applied to determine the direction (positive/negative) and strength of the relationship between two or more variables. In this context, the study aims to determine the intensity of the mutual influence of the variables through correlation analysis, as well as whether this intensity is weak or strong. Nonetheless, in the research, this analysis was used to determine whether the variables affect each other positively or negatively and

the significance relationship between the variables. On the other hand, the analysis does not show the causality relationship between the variables.

Panel Granger causality test is used in this study. The reason for the preference of the Panel Granger causality test is to determine the directions in which the variables influence each other. The test analyzes whether the linear relationship between two variables is significant, whether this relationship is unidirectional or bidirectional, or whether there is no functional relationship between the variables. In this context, a causality test has been applied in this research to determine whether the SDG and ESG scores affect financial performance, and if they do, whether the effect is bidirectional or unidirectional.

The Granger causality test is designed by combining the F and t tests. The model to be created according to this test is as follows;

$$y_t = \quad \alpha + \sum_{k=1}^{K} \gamma_k \, y_t - k + \sum_{k=1}^{K} \beta_k \, x_{t-k} + \varepsilon_t \tag{1}$$

According to Equation 1, X has a causal effect on Y if the previous values of X are significant predictors of the current value of Y and H_0 is rejected as investigated by the F-test in Equation 2.

$$H_0 : \beta_1 = \cdots = \beta_K = 0 \tag{2}$$

In regression analysis, the focus is on the statistical dependency relationship between variables rather than causality, and the existence of this relationship is investigated. In this type of analysis, information regarding the direction of the relationship between variables cannot be obtained. However, in causality analysis, the direction of relationships between variables can be identified (Tarı, 2012). From this perspective, causality testing simplifies information for external users such as investors and analysts. It isolates ongoing operations that are directly affected by managers and employees. It is a simple and effective type of test that helps to detail changes in large profit/loss categories.

In causality tests, if the time dimension is short (T<10), causal analysis can be conducted directly without applying stationarity tests. On the other hand, in cases where the time dimension is long (T>10), stationarity tests are applied in the causality test. In this case, there is no requirement for the stationarity levels of the series to be of the same order in causality tests applied to long-term time series (Tarı, 2012; Akyüz, 2023). This is based on the idea that "the use of past values of one variable enhances the predictive performance of the other variable" (Akyüz, 2023:24). This notion, proposed by Granger (1969), has three important characteristics:

• There is no instantaneous causality, as there is always a time lag between independent movements.

• As a consequence of this, there is no "simultaneous causality."

• The future cannot be the cause of the present. This definition plays a significant role in testing the existence of causal relationships.

This research examines a period with a short time dimension (T<10). The panel Granger causality test in the study has been applied for a period of 5 years covering the years 2018-2022 for businesses. Despite the research period encompassing 5 years, a stationarity test will be applied to the series specifically for this article.

3.3. Development of the SDG score

Content analysis is widely used in the literature to evaluate reports on sustainability and SDGs (Amini et al., 2018; Erin and Bamigboye, 2021; Gerged and Tariq, 2021; Yadav et al., 2021). Researchers have conducted content analysis studies using data from businesses'annual reports, sustainability reports and websites (Zhang et al., 2020). In many studies, non-financial reports and corporate information have been searched with content analysis technique and the findings have been coded numerically (Camodeca and Almici, 2021; Ionaşcu et al., 2022; Khan et al., 2022; Ren and Li, 2022; Xie et al., 2019; Zhao et al., 2022).

In this study, the SDG score was created by the frequency values of the keywords identified from the UN SDGs text in the non-financial reports subject to analysis. The identified keywords are classified into sub-categories and sub-categories are classified into main themes. For all categories, 680 words were scanned. Since the SDGs are predetermined goals, there was no need for consensus on keywords. In addition, expert opinion was obtained for the 36 subcategories and 10 themes created to ensure the validity and reliability of the content analysis. The scores obtained from each subcategory were first summed and then a percentage value was created by the ratio/proportion method. Thus, a table showing the SDG score developed for the research was prepared. The steps to create this score are explained below.

Step 1: The non-financial reports of the 27 companies subject to analysis were uploaded to the NVIVO 14 program in date order.

Step 2: 680 keywords and/or phrases were derived from the text of the UN SDGs (as no previous similar study was found).

Table 2: Keywords created from the SDGs text

SDG 7: Ensure access to affordable, reliable, sustainable and modern energy for all	***SDG 13: Take urgent action to combat climate change and its impacts***
Energy	Climate change
Affordable energy	Impacts of climate change
Reliable energy	Fighting climate change
Sustainable energy	Emergency action plan
Modern energy	National policies

Step 3: The keywords and/or phrases identified separately for the SDGs were categorized in terms of their relevance. These words and/or phrases were categorized in order to provide a logical framework for frequency analysis.

Table 3. Classification of keywords

SOCIAL	***DISCRIMINATION***	***MIGRATION***
Peace	Non-discriminatory policy	Regular migration
Peaceful societies	Non-discriminatory law	Ethnicity
Local communities	Discrimination	Immigration policies
Quality life in marginalized communities	Non-discriminatory trading system	Migrant

Step 4: *The* 36 categories were then combined under 10 themes in terms of their relevance. In frequency analysis, such a process is not needed. Nevertheless, Table 4 was developed to contribute to the literature and set a precedent for new research.

Table 4: Categories and themes developed within the scope of content analysis

THEMES	CATEGORIES	UN Sustainable Development Goals
PERSON	Hunger	SDG 1, SDG 2, SDG 3, SDG 4, SDG 5, SDG 8, SDG 10, SDG 11, SDG 16, SDG 17
	Family	
	Health	
DEVELOPMENT	R&D	SDG 4, SDG 9, SDG 12, SDG 17
	Information	
	Education	
	Technology	
CLIMATE	Ecosystem	SDG 14, SDG 15, SDG 6, SDG 2, SDG 12, SDG 13, SDG 17
	Oceans	
	Atmosphere	
	Land	
	Agriculture	
PUBLIC	Residential	SDG 4, SDG 11, SDG 16, SDG 17
	Infrastructure	
	Service	
	Access	
RIGHT/JUSTICE	Law	SDG 4, SDG 5, SDG 8, SDG 10, SDG 16, SDG 17
	Ownership	
	Corruption	
SECURITY	Social	SDG 8, SDG 10, SDG 11, SDG 17
	Discrimination	
	Migration	
SUSTAINABLE	Development	SDG 8, SDG 16, SDG 17
	Financing	
	Sustainability	
ACTIVITY	Ethic	SDG 4, SDG 5, SDG 8, SDG 10, SDG 12, SDG 16, SDG 17
	Labor	
	Business	
	Industry	
	Management	
CONSUMPTION	Resources	SDG 12, SDG 7, SDG 7, SDG 8, SDG 9, SDG 17
	Wastes	
	Havoc	
	Energy	
OTHER	Disaster	SDG 11, SDG 17, SDG 8
	General	

Step 5: In the analysis phase, words or phrases in the raw data that were not meaningful were checked and excluded.

Table 5: Examples of meaningless words

Keyword	Meaningless Word
Job health security	..... LoT Security Foundation
Equality rights	… was entitled to receive.
Health care	… this service …

Step 6: The results of the 36-category frequency analysis were transferred to an Excel spreadsheet.

Table 6: Exporting frequency analysis results to Excel

Themes		**Person**				**Development**		
Categories		Hung	Fam.	Healt	R&D	Informa.	Educa.	Techno.
Firm	**Year**			.				
X Firm	2018	25	131	26	25	27	46	249
X Firm	2019	67	570	91	26	37	83	574
X Firm	2020	51	400	212	47	66	99	205
X Firm	2021	63	311	94	60	85	144	209
X Firm	2022	55	317	317	75	204	190	350

Step 7: By applying the ratio proportion method to the results of the frequency analysis, the % values shown in Table 7 were obtained. In this context, as an example, the SDG scores of the companies ARCLK, ULKER, and AKSA are presented in Table 7.

Table 7: SDG scores of companies

Firm	***Years***	***%***	***Firm***	***Years***	***%***	***Firm***	***Years***	***%***
ARCLK	2018	11.20	***ULKER***	2018	13.973	***AKSA***	2018	7.666
ARCLK	2019	15.14	***ULKER***	2019	15.119	***AKSA***	2019	22.14
ARCLK	2020	19.31	***ULKER***	2020	21.830	***AKSA***	2020	22.92
ARCLK	2021	22.37	***ULKER***	2021	21.778	***AKSA***	2021	23.81
ARCLK	2022	31.95	***ULKER***	2022	27.300	***AKSA***	2022	23.45

According to the SDG scores in Table 7, 11.20% of ARCLK's disclosure level for 17 SDGs in its non-financial reports for the years 2018-2022 belongs to 2018. In general, the level of information disclosure of the companies is seen to reach the highest level in the reports of 2022.

4. Findings and Interpretation

4.1. Findings and Evaluation

In this study, which examines the relationship between the SDG, ESG, ENV, SOC and GOV scores of companies and financial performance, the normality test for the variables is shown in Table 8.

Table 8: Descriptive Statistics of Variables

	ROA	ROE	TBNQ	EBIT	NPM	P/E	ESG	ENV	SOC	GOV	SDG
Mean	8.965	26.04	8.66E+11	6.55E+09	8.5286	6567530	67.259	65.177	73.916	59.515	19999.9
Med.	7.245	19.61	5.75E+10	3.77E+09	7.9363	7.76956	69.220	67.700	76.730	60.950	19608.0
Max.	51.598	239.53	1.40E+13	5.91E+10	38.892	1.18E+10	94.180	98.990	97.190	89.600	44823.0
Min.	-7.886	-252.68	1585551	-1.09E+09	-40.909	-2.90E+09	21.330	0.2600	17.410	26.430	4864.0
Std. Dev.	9.363	50.56	2.01E+12	8.73E+09	9.7588	1.04E+09	15.661	20.547	18.675	16.572	7250.9
Skewness	1.382	-1.199	4.44195	3.484015	-0.3569	10.3499	-0.674	-0.616	-0.922	-0.109	0.5515
Kurtosis	6.121	13.95	26.32720	18.97387	8.2336	118.757	2.915	2.986	3.424	2.062	3.4723
Jarque -Bera	94.16	707.15	3504.83	1708.41	156.94	77784.02	10.275	8.562	20.154	5.210	8.100
Prob.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0058	0.0138	0.0000	0.0738	0.0174
Obs.	135	135	135	135	135	135	135	135	135	135	135

As shown in Table 8, the descriptive statistics of the data belonging to 27 companies listed on the BIST Sustainability Index during the period from 2018 to 2022 are presented. According to the findings, the variable with the highest mean is the Price/Earnings (P/E) ratio, while the lowest is Earnings Before Interest and Taxes (EBIT). The variable with the highest median value is the Sustainable Development Goals (SDG) score, whereas the lowest is EBIT. Among the variables, the maximum value is associated with SDG, and the minimum value is associated with Return on Assets (ROA). The variable with the highest standard deviation is SDG, while the lowest is P/E. Accordingly, SDG exhibits the highest volatility among the variables. The difference between the mean and median values of a variable indicates whether that variable is normally distributed. Specifically, if the difference between the mean and median values of a variable is small, the series is considered to be normally distributed; if the difference is large, the series is considered not to be normally distributed. The information regarding whether a series is normally distributed is provided by the p-value. If the p-value is greater than 0.05, the series is considered to be normally distributed; if it is less than 0.05, the series is considered not to be normally distributed. In this regard, among the variables, only the prob. value of the GOV score is greater than 0.05 and the series is normally distributed. The prob. values of the other variables are less than 0.05 and the series are not normally distributed. In order to see whether the series are normally distributed or not, the skewness and kurtosis values of the variables are also examined. For a series to be normally distributed, the skewness value must be close to 0, and the kurtosis value must be close to 3. In this context, the skewness and kurtosis values of this series are consistent with the prob. result.

Table 9: Phillips-Perron Fisher Unit Root Tests

Variables	PP - Fisher Chi-square			
	Level			
	Intercept		Intercept and Trend	
	Statistics	Prob.*	Statistics	Prob.
ROA	52.4329	0.5350	73.6444	0.0390***
ROE	48.2171	0.6960	83.3610	0.0063**
TBNQ	3.23017	1.0000	39.7641	09261
EBIT	15.3113	1.0000	20.0812	1.0000
NPM	69.7981	0.0727****	83.5185	0.0061**
P/E	180.658	0.0000**	147.409	0.0000**
ESG	82.5733	0.0074**	116.497	0.0000**
ENV	110.562	0.0000**	83.5440	0.0061**
SOC	84.5177	0.0050**	86.4806	0.0033**
GOV	99.0576	0.0002**	147.884	0.0000**
SDG	105.733	0.0000**	122.260	0.0000**
Variables	PP - Fisher Chi-square			
	1 st difference		2 st difference	
	Intercept		Intercept and Trend or None	
	Statistics	Prob.*	Statistics	Prob.
ROA	81.9234	0.0084**	-	-
ROE	94.2659	0.0006**	-	-
TBNQ	45.7548	0.7802	83.3456	0.0063**
EBIT	23.0650	0.9999	54.4971	0.4555
NPM	97.2217	0.0003**	169.929	0.0000**
P/E	148.565	0.0000**	224.519	0.0000**
ESG	120.017	0.0000**	173.259	0.0000**
ENV	93.0045	0.0008**	164.114	0.0000**
SOC	99.4438	0.0002**	180.031	0.0000**
GOV	147.414	0.0000**	199.617	0.0000**
SDG	128.165	0.0000**	173.065	0.0000**

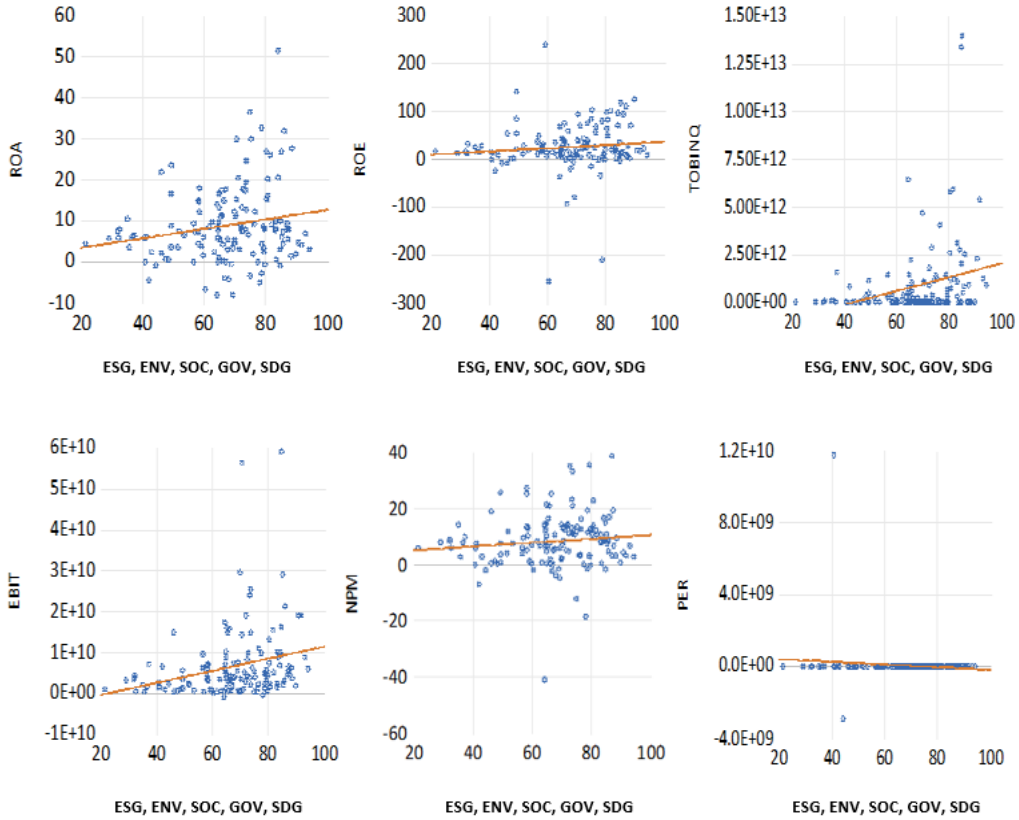
* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Note: ** $p < 0.01$, *** $p < 0.05$, **** denotes $p < 0.10$ level of significance.

This research encompasses the period from 2018 to 2022. In causality analyses, when T is less than 10, stationarity tests are not applied to the series. The stationarity test presented in Table 9 has been specifically applied for this article. Due to the insufficient number of observations over the five-year period, results could not be obtained from the "Levin, Lin, Chu," "Breitung," "Im, Pesaran, Shin," and "Fisher - ADF" unit root tests. Subsequently, the Phillips-Perron Fisher unit root test was attempted, and the results shown in Table 9 were obtained. On the other hand, in cases where the time dimension is long (T>10), there is no requirement for the stationarity levels of the series to be the same for the applied causality tests (Tarı, 2012; Akyüz, 2023). This is based on the idea that "the use of past values of one variable enhances the predictive performance of the other variable" (Akyüz, 2023:24). In the PP – Fisher unit root test conducted, the series was evaluated as "Level, 1st difference, and 2nd difference." The findings indicated that only the EBIT value was non-stationary at all three levels. It was determined that the other variables were stationary at the significance levels of 0.01, 0.05, and 0.10, and at the orders of integration I(0), I(1), and I(2). Since the TBNQ and EBIT values were not stationary at the I(0) level, regression analysis could not be applied as an additional analysis.

Graph 1 illustrates the scatter diagram analysis between the variables.

Graph 1. Scatter diagram of variables



In the study, a scatter diagram analysis was conducted separately for each independent variable and the findings in the graph were obtained. Since the scatter diagram provides information about the weak-strong, positive-negative relationship between the variables, the analyzes were shown in a single graph and a general interpretation of the findings was made.

As seen in Graph 1, in the relationship between ROA, EBIT, NPM and ESG, ENV, SOC, GOV and SDG, one variable value does not increase the other variable value at the same rate. The increase in the values of each variable deviates the relationship between the variables at a high rate. In the relationship between ROE, TBNQ and ESG, ENV, SOC, GOV and SDG, the value of one variable is observed to increase the value of the other variable, but not at a high rate. As a result of the increase in variable values, the relationship between the variables is observed to deviate at a low rate. Accordingly, a “weak positive relationship” was found between the variables. Finally, there is an inverse relationship between P/E and ESG, ENV, SOC, GOV and SDG. That is, as ESG, ENV, SOC, GOV and SDG scores increase, the P/E ratio decreases. Thus, a “strong negative relationship” is found between the variables.

Table 10: Correlation analysis of variables

Covariance Analysis: Ordinary		Sample: 2018-2022			Observations: 135	
Corellation t-Statistic Probability	**ROA**	**ROE**	**TBNQ**	**EBİT**	**NPM**	**P/E**
ROA, ROE, TBNQ, EBİT, NPM, P/E	1.000000	1.000000	1.000000	1.000000	1.000000	1.000000
	0,192715	0,102891	0,279623	0,263554	0,109843	-0,112254
ESG	2,264953	1,192933	3,358745	3,150858	1,274482	-1,302811
	0,0251	***0,2350****	0,0010	0,0020	***0,2047****	***0,1949****
	0,181483	0,061092	0,191770	0,219610	0,191583	-0,053497
ENV	2,128310	0,705870	2,253420	2,596040	2,251144	-0,617847
	0,0352	***0,4815****	0,0259	0,0105	0,0260	***0,5377****
	0,172300	0,114573	0,245554	0,237277	0,104920	-0,136334
SOC	2,017229	1,330074	2,921310	2,816859	1,216718	-1,587099
	0,0457	***0,1858****	0,0041	0,0056	***0,2259****	***0,1149****
	0,129416	0,113999	0,137578	0,088264	-0,33389	-0,101844
GOV	1,505157	1,323332	1,601864	1,021900	-0,385278	-1,180661
	0,1347*	***0,1880****	***0,1116****	***0,3078****	***0,7006****	***0,2398****
	0,236700	0,306225	0,193734	0,331415	0,141422	-0,083619
SDG	2,809599	3,709786	2,277398	4,051000	1,647511	-0,967729
	0,0057	0,0003	0,0244	0,0001	***0,1018****	***0,3349****

Note: * denotes p < 0.10 level of significance.

In the values presented in Table 10, the first row indicates the correlation coefficient between the variables, the second row shows the t-statistic value, and the last row represents the probability value. In this context, it can be observed that there is a weak but positive correlation of 0.19 between the ESG and ROA variables. This implies that a 1% increase in the ESG score would result in a 19% increase in ROA. However, the probability value between the variables is 0.0251. This value indicates that the correlation relationship between the variables is not significant at the 10% confidence level. Additionally, the t-statistic value between the two variables was found to be 2.26. When examining the SDG score, it is observed that there is only a negative correlation with the P/E ratio among the financial performance ratios. Furthermore, this relationship has been determined to be significant at the 10% confidence level. In this context, the correlation analysis reveals that there is a weak negative linear relationship between P/E ratio and ESG, ENV, SOC, GOV, SDG, and between NPM and GOV. According to the findings, there is a weak positive linear relationship between ROA and GOV, ROE and ESG, ENV, SOC and GOV, TBNQ and GOV, EBIT and GOV, and NPM and ESG, SOC, GOV and SDG. Accordingly, Table 11 shows the accepted hypotheses of the variables according to their probability values.

Table 11: Correlation relationship hypothesis results

	Hypotheses	**Prob.**	**Result**
A-H1d	*There is a significant positive or negative linear relationship between GOV and ROA*	***0.1347**>0.10*	***Accepted***
A-H2a:	*There is a significant positive or negative linear relationship between ESG and ROE*	***0,2350**>0.10*	***Accepted***
A-H2b	*There is a significant positive or negative linear relationship between ENV and ROE*	***0,4815**>0.10*	***Accepted***
A-H2c	*There is a significant positive or negative linear relationship between SOC and ROE*	***0,1858**>0.10*	***Accepted***

A-H2d	*There is a significant positive or negative linear relationship between GOV and ROE*	***0,1880**>0.10*	***Accepted***
A-H3d	*There is a significant positive or negative linear relationship between GOV and TBNQ*	***0,1116**>0.10*	***Accepted***
A-H4d	*There is a significant positive or negative linear relationship between GOV and EBIT*	***0,3078**>0.10*	***Accepted***
A-H5a	*There is a significant positive or negative linear relationship between ESG and NPM*	***0,2047**>0.10*	***Accepted***
A-H5c	*There is a significant positive or negative linear relationship between SOC and NPM*	***0,2259**>0.10*	***Accepted***
A-H5d	*There is a significant positive or negative linear relationship between GOV and NPM*	***0,7006**>0.10*	***Accepted***
A-H5e	*There is a significant positive or negative linear relationship between SDG and NPM*	***0,1018**>0.10*	***Accepted***
A-H6a	*There is a significant positive or negative linear relationship between ESG and P/E*	***0,1949**>0.10*	***Accepted***
A-H6b	*There is a significant positive or negative linear relationship between ENV and P/E*	***0,5377**>0.10*	***Accepted***
A-H6c	*There is a significant positive or negative linear relationship between SOC and P/E*	***0,1149**>0.10*	***Accepted***
A-H6d	*There is a significant positive or negative linear relationship between GOV and P/E*	***0,2398**>0.10*	***Accepted***
A-H6e	*There is a significant positive or negative linear relationship between SDG and P/E*	***0,3349**>0.10*	***Accepted***

Panel causality test is applied for 27 companies and 5 years of data. In this context the causality relationship findings of ESG, ENV, SOC, GOV and SDG variables on ROA, ROE, TBNQ, EBIT, NPM and P/E financial indicators are shown in Table 12.

Table 12: Pairwise Granger Causality Test and hypothesis results

Sample: 2018-2022						
Lags	**Null Hypothesis**	**Obs**	**F-Statistic**	**Prob.**	**Hypotheses**	**Result**
4	GOV does not Granger Cause ROA	27	2.89119	***0.0520******	***B-H1d***	***Accepted***
4	ROA does not Granger Cause GOV	27	0.25180	0.9048		
2	SDG does not Granger Cause ROA	81	3.60866	***0.0318****	***B-H1e***	***Accepted***
2	ROA does not Granger Cause SDG	81	1.29044	0.2811		
3	ESG does not Granger Cause ROE	54	0.27078	0.8461		
3	ROE does not Granger Cause ESG	54	0.27078	0.0835***		
3	SOC does not Granger Cause ROE	54	0.61936	0.6060		
3	ROE does not Granger Cause SOC	54	2.29842	0.0896***		
4	GOV does not Granger Cause ROE	27	6.00466	***0.0030****	***B-H2d***	***Accepted***
4	ROE does not Granger Cause GOV	27	0.53408	0.7124		
4	ENV does not Granger Cause EBIT	27	3.66024	***0.0238****	***B-H4b***	***Accepted***
4	EBIT does not Granger Cause ENV	27	1.45520	0.2570		
4	GOV does not Granger Cause EBIT	27	0.03902	0.9968		
4	EBIT does not Granger Cause GOV	27	2.72369	0.0621***		
2	SDG does not Granger Cause EBIT	81	1.59147	0.2103		
2	EBIT does not Granger Cause SDG	81	4.47241	0.0146**		
4	ENV does not Granger Cause NPM	27	3.55653	***0.0263****	***B-H5b***	***Accepted***
4	NPM does not Granger Cause ENV	27	0.12243	0.9726		
2	SDG does not Granger Cause NPM	27	1.39157	0.2766		
2	NPM does not Granger Cause SDG	27	2.92204	0.0503***		
3	ENV does not Granger Cause P/E	54	2.61948	***0.0618*****	***B-H6b***	***Accepted***
3	P/E does not Granger Cause ENV	54	0.68485	0.5658		

*Note: * p > 0,01, ** p > 0,05, *** denotes p > 0,10 levels of significance.*

While applying the "Granger causality test" for the establishment of a causality relationship, lags of 2nd, 3rd and 4th degree were taken. As a result of the lags applied, a causality relationship could be established only between the variables shown with *, **, *** in the table. According to the findings, a causal relationship was found from GOV to ROA and ROE. Despite this there is not a causal relationship from ROA and ROE to GOV. There is a causal relationship from ENV to EBIT, NPM and P/E. On the other hand, there is no causal relationship from EBIT, NPM and P/E to ENV. Moreover, a causal relationship is also found from the SDG to ROA. However, there is no causality from ROA to SDG. In brief, a unidirectional Granger causality relationship was found between the variables. In other words, there is no causality from ROA, ROE, TBNQ, EBIT, NPM and P/E variables to ESG, ENV, SOC, GOV and SDG variables. Finally, unidirectional causality is identified from ROE to ESG and SOC, from EBIT to GOV and SDG, and from NPM to SDG. There is no causality found among the variables not specified in the table. Accordingly, Table 12 presents the accepted hypotheses of the variables according to their prob values.

4.2. Interpretation of Findings

This research exhibits similar characteristics to the literature in terms of the correlation relationships among the variables. However, in the literature review conducted on the variables used in this analysis, only one study employing a causality test is found. The results of the hypotheses developed for the study are shown in Table 13.

Table 13: Summary of hypothesis results

Analysis	*Variables*	*ROA*	*ROE*	*TBNQ*	*EBIT*	*NPM*	*P/E*
Correlation	***ESG***	*A-H1a(R)*	***A-H2a(+)***	*A-H3a(R)*	*A-H4a(R)*	***A-H5a(+)***	***A-H6a(-)***
	ENV	*A-H1b(R)*	***A-H2b(+)***	*A-H3b(R)*	*A-H4b(R)*	*A-H5b(R)*	***A-H6b(-)***
	SOC	*A-H1c(R)*	***A-H2c(+)***	*A-H3c(R)*	*A-H4c(R)*	***A-H5c(+)***	***A-H6c(-)***
	GOV	***A-H1d(+)***	***A-H2d(+)***	***A-H3d(+)***	***A-H4d(+)***	***A-H5d(-)***	***A-H6d(-)***
	SDG	*A-H1e(R)*	*A-H2e(R)*	*A-H3e(R)*	*A-H4e(R)*	***A-H5e(-)***	***A-H6e(-)***
Granger causality	***ESG***	*B-H1a(R)*	*B-H2a(R)*	*B-H3a(R)*	*B-H4a(R)*	*B-H5a(R)*	*B-H6a(R)*
	ENV	*B-H1b(R)*	*B-H2b(R)*	*B-H3b(R)*	***B-H4b(+)***	***B-H5b(+)***	***B-H6b(+)***
	SOC	*B-H1c(R)*	*B-H2c(R)*	*B-H3c(R)*	*B-H4c(R)*	*B-H5c(R)*	*B-H6c(R)*
	GOV	***B-H1d(+)***	***B-H2d(+)***	*B-H3d(R)*	*B-H4d(R)*	*B-H5d(R)*	*B-H6d(R)*
	SDG	***B-H1e(+)***	*B-H2e(R)*	*B-H3e(R)*	*B-H4e(R)*	*B-H5e(R)*	*B-H6e(R)*

Note: (R) rejects hypotheses; (-) indicates negative linear effect; (+) indicates hypotheses with a positive linear effect and causal relationship.

The findings indicate that there is a weak but significant positive linear relationship between ESG and SOC scores and ROE and NPM, between GOV score and ROA, ROE, TBNQ and EBIT, and between ENV score and ROE. According to the results, the investments made by companies to increase ESG, ENV, SOC and GOV scores increase ROA, ROE, TBNQ, NPM and EBIT values in a low positive direction. The research results are consistent with the studies of Jha and Rangrajan (2020), Kuruusman and Afrooz (2019), Lee et al. (2018), Li et al. (2018), Lundin and Olandersson (2019), Mans-Kemp(2014), Menicucci and Paolucci (2023), Minutolo et al. (2019), Pulino et al. (2022), Şişman and Çankaya (2021), Wu and Shen (2013), which support a significant positive relationship.

The findings reveal that there is a weak but significant negative linear relationship between ESG, ENV and SOC scores and P/E ratio, between GOV score and NPM and P/E ratios, and between SDG score and NPM and P/E ratios. According to the results, the efforts of the companies to increase their ESG, ENV, SOC, GOV and SDG scores reduce their NPM and P/E

values to a low extent. The results of the study are consistent with the studies of Iqbal and Nosheen (2023), Jha and Rangrajan (2020), Khan et al. (2022), Kuruusman and Afrooz (2019), Lee et al. (2018), Lundin and Olandersson (2019), Menicucci and Paolucci (2023), which support a significant negative relationship. Throughout the literature, Jha and Rangrajan (2020), who reported that the GOV score may have negative effects on financial performance, interpreted that businesses do not see the benefits of ESG investments in terms of financial performance. Şimşek and Çankaya (2021), on the other hand, argue that the positive or negative effects of ESG on financial performance differ according to ESG breakdowns.

In this study, the relationship between the variables was analyzed by the Granger causality test. The findings indicate that there is a causal relationship between GOV score and ROA and ROE ratios, ENV score and EBIT, NPM and P/E ratios, and SDG score and ROA. According to the results, the activities of companies to increase ENV, GOV and SDG scores affect ROA, ROE, EBIT, NPM and P/E as a causal relationship. Among the results of the study, only the causal relationship between GOV and ROA is consistent with the study of Jha and Rangrajan (2020). In this context, the overall findings of Granger causality, don't give a concrete direction for non-financial performance variables and financial performance variables.

5. Conclusion and Research Recommendations

5.1. Conclusion

The importance that businesses attach to their SDGs, environmental, social and governance performance and the demand for these efforts by stakeholders are increasing day by day. Businesses that can effectively communicate their sustainability performance to their stakeholders can realize a range of benefits such as increased transparency, improved decision-making, reduced risk, investment attraction, financial performance, firm value and increased employee motivation. In addition, sustainable development sheds light on businesses' strategies and supporting mechanisms. Therefore, closely following developments in sustainability and taking action accordingly are crucial for businesses. This is important in terms of increasing stakeholders' interests and investors' confidence. In this way, businesses are paying more and more attention to sustainable development. In developed countries, the SDGs of businesses have a supportive role in financial performance. In addition, ESG disclosures of companies in these countries also increase the performance related to SDGs. This shows that ESG is an effective indicator and a regulatory mechanism that well defines SDGs. In this study, the level of disclosed information on SDGs and ESG scores are considered together and their impact on financial performance is analyzed. The findings reveal that there is a significant positive linear relationship between ESG score and SOC score and ROE and NPM, between ENV score and ROE, between ENV score and ROE, and finally between GOV score and ROA, ROE, TBNQ and EBIT. However, there is a significant negative linear relationship between ESG score, ENV score and SOC score and P/E ratio, and between GOV score and SDG score and NPM and P/E ratios. In this context, a 1% increase in the ESG score results in a 10% increase in ROE and NPM, while causing an 11% decrease in P/E. A 1% increase in the ENV score leads to a 6% increase in ROE and an 5% decrease in P/E. A 1% increase in the SOC score results in an 11% increase in ROE and a 10% increase in NPM, while causing a 14% decrease in P/E. A 1% increase in the GOV score leads to increases of 13%, 11%, 14%, and 8% in ROA, ROE, Tobin's Q (TBNQ), and EBIT, respectively, while causing decreases of 33% and 10% in NPM and P/E, respectively. Finally, a 1% increase in the SDG score results in a 14% increase in NPM, while causing an 8% decrease in P/E. In addition, there

is a causal relationship between the GOV score and the ROA and ROE ratios, between the ENV score and the EBIT, NPM, and P/E ratios, and finally between the SDG score and the ROA ratio. In this context, the percentage changes in the GOV, ENV, and SDG scores causally affect the ROA, ROE, EBIT, NPM, and P/E ratios. Additionally, the percentage change in ROE tends to causally influence the ESG and SOC scores, the percentage change in EBIT tends to causally influence the GOV and SDG scores, and the percentage change in NPM tends to causally influence the SDG score.

In general, the reason for the ineffectiveness and/or negative impact between non-financial performance and financial performance of companies may not be related to their operational activities. This can be attributed to the fact that capital investments and investments in SDGs and ESGs provide visible returns in the long run. There are also approaches that businesses should adopt in order to successfully implement SDGs and ESG criteria across their operations and achieve effective results from these efforts. These are proactive collective approach and individualistic reactive approach. Businesses need to plan in advance in order to take control of their efforts towards SDGs and ESG with a proactive collective approach. These plans will help businesses determine their road maps. In this direction, businesses will be able to intervene immediately when businesses encounter any setback or negative situation as a result of their work. In this way, businesses will have realized the individualistic reactive approach. If these approaches are adopted, businesses will be able to carry out a controlled and healthy progress. Lastly, there may be many reasons for the positive results and causality in some of the findings. The first one may be the companies'attempts to improve resource management, reduce production costs and maximize output. Secondly, companies are very active in sustainability and develop their business models to comply with ESG criteria.

The research aims to contribute to the literature by examining the effect of the SDG score, developed through content analysis of companies' non-financial reports, on financial performance. It is intended that the positive/negative impact of the SDG score, developed through qualitative analysis, on financial performance indicators, along with its significance level and causality, will assist in providing new empirical findings to the literature by highlighting the similarities and differences that future studies may reveal.

The research covers 27 companies in the BIST sustainability index, excluding holdings and investment companies, banks and insurance companies, which disclosed ESG scores for the period 2018-2022. On the other hand, the integrated and annual reports of the companies that do not regularly publish sustainability reports are analysed. Due to the effects of Covid-19, some businesses have seen decreases in their SDG scores. COVID-19 rapidly spread between 2020 and 2021, transforming into a pandemic. The pandemic has led to negative consequences globally, not only in terms of health but also economically. Following the declaration of the pandemic on March 11, 2020, numerous restrictions were implemented worldwide, particularly travel bans. As a result of these restrictions, the uncertainty in the market led to panic and anxiety, both globally and in Türkiye. In fact, this uncertainty caused declines in the market values of companies listed on the BIST indices. Additionally, there were setbacks in businesses' sustainability efforts. These setbacks were reflected in the sustainability reports of the companies. During the content analysis of the research, the effects of COVID-19 on non-financial reports from the years 2020-2021 were clearly observed in the SDG scores. Significant deviations were noted in the sustainability declarations related

to the Sustainable Development Goals for AYGAZ and TTKOM in 2020, for TTRAK, OTKAR, ENKAI, and PGSUS in 2020-2021, and for PETKİM, CCOLA, TOASA, KRDMD, and THYAO in 2021 compared to the previous year. The cause of these deviations can be attributed to disruptions in the production of goods and services due to lockdowns.

In fact, businesses in Türkiye voluntarily report sustainability information under various international regulations. Therefore, the awareness about sustainability has only recently started to develop in companies. In the future, additional studies will be needed to investigate the issue, as businesses will produce comprehensive information on ESG criteria and SDGs.

With new legal regulations, it has become mandatory for businesses that meet certain conditions to report sustainability information. It is thought that sustainability reporting will become more widespread in the future with the increase in awareness about sustainability, the increase in stakeholders' demand for information about the impacts of companies' activities on the environment and society, and the further elaboration of legal regulations. In this respect, future research can be done based on a wider time period.

The study focused on only one country and 27 companies. Future studies could focus on more than one country and more companies. Comparisons can be made across countries and sectors, emphasizing similarities and disparities.

In this study banks, holdings, insurance and investment companies are not included in the analysis due to the fact that those entities fall within the scope of the priority sectors in the main mass of the research and their financial statements are different. Future studies can be studied on such companies.

References

Al Lawati, H.; Hussainey, K. (2022), "Does Sustainable Development Goals Disclosure Affect Corporate Financial Performance?", Sustainability, 14(13), DOI:10.3390/su14137815

Akyüz, H. E. (2023), "Yapısal Kırılmalı Durağanlık Testi ve Granger Nedensellik Analizi: Türkiye'de Kadın İntihar Oranının Ekonomik Değişkenler ile İlişkisi, Çevik, E. İ. & Kırcı Altınkeski, B. (eds.), Granger Nedensellik Sınamasında Yeni Yaklaşımlar. 19-35. DOI: https://doi.org/10.58830/ozgur.pub64.c177

Amel-Zadeh, A.; Serafeim, G. (2018), "Why and how investors use ESG information: Evidence from a global survey", Financial Analysts Journal, 74(3), 87-103, https://doi-org.offcampus.anadolu.edu.tr/10.2469/faj.v74.n3.2.

Amini, M.; Bienstock. C.C.; Narcum, J.A. (2018), "Status of corporate sustainability: A content analysis of fortune 500 companies", Business Strategy and the Environment, 27(8), 1450-1461, https://doi.org/10.1002/bse.2195

Awaysheh, A.; Heron, R.A.; Perry, T.; Wilson, J.I. (2020), "On the relation between corporate social responsibility and financial performance", Strategic Management Journal, 41(6), 965-987, https://doi-org.offcampus.anadolu.edu.tr/10.1002/smj.3122

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

Brundtland Commission. (1987), "Report of the world commission on environment and development: our common future", https://www.are.admin.ch/are/en/home/media/publications/sustainable-development/brundtland-report.html (Access date 20 January 2023)

Camodeca, R.; Almici, A. (2021), "Digital transformation and convergence toward the 2030 agenda's sustainability development goals: Evidence from Italian listed firms", Sustainability, 13(21), https://www.mdpi.com/2071-1050/13/21/11831

Creswell, J.W. (2002), Research design: Qualitative, Quantitative, and Mixed Methods Approaches, (Second Edition), SAGE Publications, California, CA.

Creswell, J.W. (2009), Research design: Qualitative, quantitative, and Mixed Methods Approaches, (Third Edition), SAGE Publications, California, CA.

Dechow, P.M.; Sloan, R.G.; Sweeney, A.P. (1996), "Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC", Contemporary Accounting Research, 13, 1-36.

Düzer, M. (2018), "Sürdürülebilirlik Performans Göstergelerine İlişkin Açıklamaların Finansal Performans Üzerine Etkisi", PhD Thesis, Turkey, Anadolu University.

Düzer, M.; Önce, S. (2017), "Kurumsal sürdürülebilirlik raporlaması ve finansal performans: BİST'te işlem gören işletmeler için karşılaştırmalı bir analiz", Bilecik Şeyh Edebali Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 2(2), 637-648.

Ecless, R.; Ioannou, I.; Serafeim, G. (2014), "The impact of corporate sustainability on organizational processes and performance", Management Science, 60(11), 2835-2857, htpps://doi.org/10.1287/mnsc.2014.1984

Erin, O.A.; Bamigboye, O.A. (2021), "Evaluation and analysis of SDG reporting: Evidence from Africa", Journal of Accounting & Organizational Change, 18(3), 369- 396, https://doi.org/10.1108/JAOC-02-2020-0025

Fatemi, A.; Glaum, M.; Kaiser, S. (2018), "ESG performance and firm value: The moderating role of disclosure", Global Finance Journal, 38, 45-64.

Friede, G.; Busch, T.; Bassen, A. (2015), "ESG and financial performance: Aggregated evidence from more than 2000 empirical studies", Journal of Sustainable Finance & Investment, 5(4), 210-233, http://dx.doi.org/10.1080/20430795.2015.1118917

Ionaşcu, I.; Ionaşcu, M.; Nechita, E.; Sacarin, M.; Minu, M. (2022), "Digital transformation, financial performance and sustainability: Evidence for European Union listed companies", Amfiteatru Economic, 24(59), 94-109.

Iqbal, S.; Nosheen, S. (2023), "Moderating impact of non-performing loans on the relationship between sustainable development goals and the financial performance of banks", Future Business Journal, 9(46), https://doi.org/10.1186/s43093-023-00224-1

İge, M.; Akarçay Öğüz, A. (2021), "EBIT&EBITDA'nın tanımlanması ve kullanımına ilişkin öneriler", İşletme Akademisi Dergisi, 2(3), 220-239, DOI:10.26677/TR1010.2021.850

Gerged, A.M.; Tariq, A. (2021), "Corporate adoption of SDG reporting in a non-enabling institutional environment: Insights from Libyan oil industries", Resources Policy, 74, https://doi.org/10.1016/j.resourpol.2021.102240

Giannarakis, G.; Konteos, G.; Zafeiriou, E.; Partalidou, X. (2016), "The impact of corporate social responsibility on financial performance", Investment Management and Financial Innovations, 13(3), 171-182.

Giese, G.; Lee, L.E.; Melas, D.; Nagy, Z.; Nishikawa, L. (2019), "Foundations of ESG investing: How ESG affects equity valuation, risk, and performance", The Journal of Portfolio Management, 45(5), 69-83, https://doi.org/10.3905/jpm.2019.45.5.069

Hedqvist, L.; Larsson, A. (2020), "ESG or financial performance – Does it have to be a choice? - A regression analysis of Thomson Reuters ESG scores and financial performance in Sweden and the UK", Master Thesis, Sweden, Jönköping University.

Hoverstadt, P.; Bowling, D. (2005), "Organizational viability as a factor in sustainable development of technology", International Journal of Technology Management and Sustainable Development, 4(2), 131-146.

Jha, M.K.; Rangarajan, K. (2020), "Analysis of corporate sustainability performance and corporate financial performance causal linkage in the Indian context", Asian Journal of Sustainability and Social Responsibility, 5(1), 1-30.

Keçeli, B. (2020), "ESG (çevresel, sosyal, yönetişim) ve finansal verilerin pay değerine etkisi: Kuzey ve Latin Avrupa Ülkeleri üzerine bir araştırma", Master Thesis, Turkey, İstanbul Ticaret University.

Khan, P.A.; Johl, S.K.; Akhtar, S. (2022), "Vinculum of sustainable development goal practices and firms' financial performance: A moderation role of green innovation", Journal of Risk and Financial Management, 15(3), https://doi.org/10.3390/jrfm15030096

Khan, P.A.; Johl, S.K.; Akhtar, S. (2021), "Firm Sustainable Development Goals and Firm Financial Performance through the Lens of Green Innovation Practices and Reporting: A Proactive Approach", Journal of Risk and Financial Management, 14(12), DOI:10.3390/jrfm14120605

Koç, A. (2018), "Kurumsal sürdürülebilirlik davranışının finansal performans üzerine etkisi: Türkiye örneği", Master Thesis, Turkey, İstanbul University.

Kulakova, I. (2018), "The impact of environmental, social and corporate governance (ESG) practices on the financial performance of companies in emerging and frontier markets", Master of Science Thesis, Sweden, Stockholm.

Kuruusman, A.; Afroz, Z. (2019), "The effect of the ESG score on the stock Price Jumps: A Quantitative Study on Nordic Countries", Master Thesis, Sweden, Umea University.

Lassala, C.; Orero-Blat, M.; Riberio-Navarrete, S. (2021), "The financial performance of listed companies in pursuit of the Sustainable Development Goals (SDG)", Economic Research- Ekonomska Istrazivanja, 34(1), https://doi.org/10.1080/1331677X.2021.1877167

Lee, J.H.; Kang, Y.S.; Kim, S.S. (2018), "Corporate social responsibility and financial performance in Korean retail firms", Journal of Distribution Science, 16(5), 31-43.

Li, Y.; Gong, M.; Zhang, X.Y.; Koh, L. (2018), "The impact of environmental, social, and governance disclosure on firm value: The role of CEO power", The British Accounting Review, 50(1), 60-75.

Lundin, F.; Olandersson, M. (2019), "Sustainability and Profitability in Sweden: A Quantitative Study of Swedish Firms", Master Thesis, Sweden, Umea University.

Mans-Kemp, N. (2014), "Corporate governance and the financial performance of selected Johannesburg Stock Exchange industries", PhD Thesis, South Africa, Stellenbosch University.

Menicucci, E.; Paolucci, G. (2023), "ESG dimensions and bank performance: An empirical investigation in Italy", Corporate Governance: The International Journal of Business in Society, 23(3), 563-586, DOI:10.1108/CG-03-2022-0094

Minutolo, M.C.; Kristjanpoller, W.D.; Stakeley, J. (2019), "Exploring environmental, social, and governance disclosure effects on the S&P 500 financial performance", Business Strategy and the Environment, 28(6), 1083-1095.

Naeem, N.; Cankaya, S.; Bildik, R. (2022), "Does ESG performance affect the financial performance of environmentally sensitive industries? A comparison between emerging and developed markets", Borsa Istanbul Review, 22(2), 128-140, https://doi.org/10.1016/j.bir.2022.11.014

Nekhili, M.; Boukadhaba, A.; Nagati, H.; Chtioui, T. (2019), "ESG performance and market value: The moderating role of employee board representation", The International Journal of Human Resource Management, 32(14), 3061-3087.

Nyit Chiong, P.T. (2010), "An examination of corporate sustainability disclosure level and its ımpact on financial performance", PhD Thesis, Malezya, Multimedia University.

Onwuegbuzie, A.J.; Bustamante, R.M.; Nelson. J.A. (2010), "Mixed Research as a Tool for Developing Quantitative Instruments", Journal of Mixed MethodsResearch, 4(1), 56-78.

Pulino, S.C.; Ciaburri, M.; Magnanelli, B.S.; Nasta, L. (2022), "Does ESG Disclosure Influence Firm Performance?", Sustainability, 14(13), 1-18, DOI:10.3390/su14137595

Ren, Y.; Li, B. (2022), "Digital transformation, green technology innovation and enterprise financial performance: Empirical evidence from the textual analysis of the annual reports of listed renewable energy enterprises in China", Sustainability, 15(1), 1-15, DOI:10.3390/su15010712

Robinson, T.R.; Greuning, H.V.; Henry, E.; Broihahn, M.A. (2009), International financial statement analysis, John Wiley & Sons, New Jersey, NJ.

Sandelowski M.; Voils C.I.; Barroso J. (2006), "Defining and designing mixed research synthesis studies", Research in the Schools, 13(1), 29-40.

Şeker, Y.; Güngör, N. (2022), "Does ESG performance impact fınancial performance? Evidence From the utilities sector", Muhasebe Bilim Dünyası Dergisi, 24(MODAVICA Special Issue), 160-183, https://doi.org/10.31460/mbdd.1065217

Şimşek, O.; Çankaya, S. (2021), "Examining the relationship between ESG scores and financial performance in banks: Evidence from G8 countries", PressAcademia Procedia, 14(1), 169-170, DOI:10.17261/Pressacademia.2021.1524

Şişman, M.E.; Çankaya, S. (2021), "Çevresel, Sosyal ve Kurumsal Yönetişim (ESG) Verilerinin Firmaların Finansal Performansına Etkisi: Hava Yolu Sektörü Üzerine Bir Çalışma", Çukurova Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 25(1), 73-91.

Tarı, R. (2012), Ekonometri, Umuttepe Yayınları, Kocaeli.

Tarı, R. (2015), Ekonometri, (11. Baskı), Umuttepe Yayınları, Kocaeli.

Tupy, O. (2008), "Investimentos em meio ambiente, responsabilidade social e desempenho econômico-financeiro de empresas no Brasil", Tékhne, 6(10), 73-86.

Uşar, D. (2017), "Kurumsal sürdürülebilirlik etkileşimleri ve kurumsal finansal performans", Master Thesis, Turkey, Özyeğin University.

Velte, P. (2017), "Does ESG performance have an impact on financial performance? Evidence from Germany", Journal of Global Responsibility, 8(2), 169-178, htpps://doi.org/10.1108/JGR-11-2016-0029

Wang, H.D.; Cho, C.C.; Lin, C.J. (2019), "Related party transactions, business relatedness, and firm performance", Journal of Business Research, 101(C), 411-425, DOI: 10.1016/j.jbusres.2019.01.066

Wong, W.C.; Batten, J.A.; Mohamed-Arshad, S.B.; Nordin, S.; Adzis, A.A. (2021), "Does ESG certification add firm value?", Finance Research Letters, 39(5), DOI:10.1016/j.frl.2020.101593

Wu, Y. (2021), "The relationshıp between corporate environmental, social, and governance performance and financial performance before and after the 2008 financial crisis", Master Thesis, ABD, Georgetown University.

Wu, M.W.; Shen, C.H. (2013), "Corporate social responsibility in the banking industry: Motives and financial performance", Journal of Banking & Finance, 37(9), 3529-3547, https://doi.org/10.1016/j.jbankfin.2013.04.023

Xie, X.; Jiage, H.; Hailiang, Z. (2019), "Green process innovation, green product innovation, and corporate financial performance: A content analysis method", Journal of Business Research, 101(4), 697-706, DOI:10.1016/j.jbusres.2019.01.010

Yadav, H.,;Kar, A.K.; Kashiramka, S. (2021), "How does entrepreneurial orientation and SDG orientation of CEOs evolve before and during a pandemic", Journal of Enterprise Information Management, 35(1), 160-178, https://doi.org/10.1108/JEIM-03-2021-0149

Yang, J.; Liu, X. (2022), "The role of sustainable development goals, financial knowledge and investment strategies on the organizational profitability: Moderating impact of government support", Economic Research-Ekonomska Istrazivanja, 36(1), https://doi-org.offcampus.anadolu.edu.tr/10.1080/1331677X.2022.2090405

Yoon, B., Lee, J.H. and Byun, R. (2018), "Does ESG performance enhance firm value? Evidence from Korea", Sustainability, 10(10), https://doi.org/10.3390/su10103635

Zhang, L.; Zhao, S.; Cui, L.; Wu, L. (2020), "Exploring green ınnovation practices: Content analysis of the Fortune Global 500 companies", SAGE Open, 10(1), 1-13, https://doi.org/10.1177/2158244020914640

Zhang, D.; Wang, C.; Dong, Y. (2023), "How does firm esg performance ımpact financial constraints? An experimental exploration of the COVID-19 pandemic", The European Journal of Development Research, 35(1), 219-239, doi: 10.1057/s41287-021-00499-6.

Zhao, C.; Guo, Y.; Yuan, J.; Wu, M.; Li, D.; Zhou, Y.; Kang, J. (2018), "ESG and corporate financial performance: empirical evidence from China's listed power generation companies", Sustainability Journal, 10(8), doi:10.3390/su10082607

Zhao, X.; Sun, X.; Zhao, L.; Xing, Y. (2022), "Can the digital transformation of manufacturing enterprises promote enterprise innovation?", Business Process Management Journal, 28(4), 960-982.

Extended Summary

The Impacts of Corporate Disclosures Regarding Sustainable Development Goals and Environmental, Social, and Governance Scores of Companies on Financial Performance: The Case of Türkiye

The importance of sustainable development goals (SDG), environmental, social and governance (ESG) performances for businesses is increasing recent years. Businesses that can effectively communicate their sustainability performance to their stakeholders can gain a range of benefits such as increased transparency, improved decision-making, reduced risk, investment attraction, financial performance, firm value and increased employee motivation. In addition, sustainable development sheds light on the strategies and supporting mechanisms of businesses. This is important in terms of increasing stakeholders' interests and investors' confidence. In developed countries, businesses' efforts towards sustainable development goals have a supporting role in financial performance. In addition, ESG disclosures of companies in these countries also increase the performance related to sustainable development goals. This shows that ESG is an effective indicator and a regulatory mechanism that well defines sustainable development goals. The purpose of this study is to examine the impact of sustainable development goal disclosures and ESG scores on the financial performance of companies in Türkiye. In this direction also answers to the following questions are also sought through the analysis.

(1) Can disclosures of sustainable development goals in non-financial reports of companies be measured by content analysis technique using keywords?

(2) Does the level of information disclosed by companies on sustainable development goals (SDG scores developed for the research) and the ESG, Environment, Social and Governance scores have an impact on financial performance?

The analysis is based on the data of the companies traded in the BIST sustainability index for the years 2018-2022. In this study, exploratory design of mixed research method was applied to gain an in-depth perspective. In the exploratory design, frequency analysis of the content analysis technique, one of the qualitative analysis methods, was applied. With the frequency analysis method, the level of knowledge (SDG score was developed specially for the research) score that the companies disclosed about sustainable development goals was created. For this purpose, firstly, the level of information on sustainable development goals disclosed by the companies in their non-financial reports was determined through the SDG score. The SDG score is based on the frequency values of the keywords identified in the UN sustainable development goals statements in non-financial reports. The identified keywords are categorised into sub-categories and sub-categories are categorised into main themes. For all categories, 680 words were scanned. Since the sustainable development goals are predetermined goals, there was no need for consensus for keywords. However, expert opinion was taken for 36 subcategories and 10 themes in order to ensure the validity and reliability of the content analysis. The scores obtained from each subcategory were first summed and then a percentage value was created by the ratio/proportion method. Thus, a score table showing each enterprise's sustainable development goals, was prepared. The SDG score developed as a result of the measurement and ESG, ENV, SOC and GOV scores were determined as independent variables. ROA, ROE, TBNQ, EBIT, NPM and P/E indicators, which were determined based on the studies in the literature examining the effects of sustainability performances and ESG performances of companies on financial performance separately, were determined as dependent variables. Thus, it is aimed to determine the existence of a significant relationship and causality relationship between SDG, ESG, ENV, SOC, GOV scores and ROA, ROE, TBNQ, EBIT, NPM, P/E indicators. In the quantitative analysis based on the findings obtained, correlation analysis and panel Granger causality test were applied. The analyses were conducted with 5-year data of 27 companies and 135 firms/year observations. The findings reveal that there is a significant positive linear relationship between ESG score and SOC score and ROE and NPM, between ENV score and ROE, between ENV score and ROE, and finally between GOV score and ROA, ROE, TBNQ and EBIT. Moreover, there is a significant negative linear relationship between ESG score, ENV score and SOC score and P/E ratio, and between GOV score and SDG score and NPM and P/E ratios. In addition, there is a causal relationship between GOV score and ROA and ROE ratios, between ENV score and EBIT, NPM and P/E ratios, and finally between SDG score and ROA ratio. There may be many reasons for the positive results and causality relationship in some of the findings. The first one may be the companies' attempts to improve resource management, reduce production costs and maximise output. Secondly, it can be attributed to the fact that companies are very active in sustainability and develop their business models to comply with ESG criteria. In general, the reason for the ineffectiveness and/or negative effect between non-financial performance and financial performance of companies may not be related to their operational activities. This can be attributed to the fact that the capital investments of the companies and their investments in SDGs and ESGs provide visible returns in the long term. In addition, there are approaches that businesses should adopt in order to successfully implement SDGs and ESG criteria throughout their operations and to achieve effective results from these efforts. These are proactive collective approach and individualistic reactive approach. Companies should plan in advance in order to take control of their efforts towards SDGs and ESG with a proactive collective approach. These plans will help businesses to determine their road maps. In this direction, companies will be able to intervene immediately when they encounter any unfavourable situation as a result of their work. Thus, companies will have realised the individualistic reactive approach. If these approaches are adopted, companies will be able to make progress. Apart from these explanations, the results of the study support the literature results to a low extent, and the SDG score obtained from the textual data affects financial performance to a low extent in terms of significance and causality relationship. In fact, companies in Türkiye report voluntarily within the scope of various international regulations. However, in recent years, it has become mandatory for businesses to report with legal regulations within the scope of sustainability towards targets. For this reason, it can be considered that the long-term effects of the reports can be measured with the widespread use of reporting studies on sustainability.