



Università
Ca'Foscari
Venezia

Master's degree in Management

Final Thesis

**The Effect of Sustainability on the Financial Performance of
Businesses**

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Matriculation number 882581

Academic Year

2022 / 2023

Acknowledgement

I would like to express my sincere gratitude to Professor Diana Barro for her support throughout the course of my master's thesis. Her expertise, patience, and willingness to provide insightful feedback have been instrumental in shaping the direction and quality of this research. Another important thank you goes to my dear Alberto for always supporting and believing in me and to my great family for always trusting me to succeed.

Abstract

This study aims to investigate the relationship between firms' financial performance and their sustainability reporting in Turkey. Specifically, the study will examine the extent to which companies communicate their knowledge on sustainability performance indicators and whether industry, firm size, age, and ownership structure affect the information disclosed. The study will also explore how the level of information provided on sustainability performance metrics impacts financial performance, accounting for industry, firm size, age, and ownership structure. The study will use OLS regression to test five hypotheses on the relationship between ESG scores and financial indicators such as EBIT %, financial leverage, return on assets, return on equity, and return on investment. The sustainability variables will be expressed as economic, environmental, and social scores. The study's findings will contribute to understanding how financial performance and sustainability reporting are interconnected, and how businesses can balance economic goals with social and environmental obligations.

Key Words: Financial performance, environmental, corporate, governance, ROE, ROI, ROA

Table of Contents

Abstract	2
The list of tables	5
The list of figures	6
Abbreviations	7
Introduction	8
Chapter 1. The concept of sustainability, its dimensions, components and sustainable investment	10
1.1 Historical development of sustainability	10
1.2 Sustainability concept	12
1.3 Dimensions of sustainability	18
1.3.1 Economic Sustainability	19
1.3.2 Social Sustainability	21
1.3.3 Environmental Sustainability	23
1.4 Sustainable investment strategies	24
1.4.1 Negative Filtering	25
1.4.2 Positive Filtering	26
1.4.3 Best-in-Class Approach	28
1.4.4 Thematic Approach	29
1.4.5 ESG Integration Approach	30
Chapter 2. Sustainable performance, sustainability indices and financial performance	33
2.1 Sustainable performance	33
2.2 Sustainability indices	39
2.3 Financial performance	46

Chapter 3. Research on sustainability and financial performance indicators	50
3.1 Purpose and importance of the research.....	50
3.2 Scope of the research and data set.....	51
3.3 Research method	54
3.4 Research hypotheses	55
3.5. Analysis results	57
3.6 Evaluation of results.....	64
Conclusion	69
The list of references.....	72
Appendix.....	79

The list of tables

Table 1. Economic Dimensions of Corporate Sustainability	20
Table 2. Social Responsibility Index ESG Valuation	44
Table 3. OLS, using observations 1-138, Dependent variable: EBIT	57
Table 4. OLS, using observations 1-138, Dependent variable: ROE	58
Table 5. OLS, using observations 1-138, Dependent variable: Financial leverage	60
Table 6. OLS, using observations 1-138, Dependent variable: ROA.....	61
Table 7. OLS, using observations 1-138, Dependent variable: ROI	62
Table 8. Overall results of hypotheses	64

The list of figures

Figure 1. Fisk's Diagram of Man, Earth, and Profit.....	14
Figure 2. The Relationship Between Macro and Micro Levels of Sustainability.....	19
Figure 3. Internal and external dimensions of social sustainability.....	22

Abbreviations

BIST: Borsa Istanbul Stock Exchange

CSR: Corporate Social Responsibility

DJSI: Dow Jones Sustainability Indices

EBIT: Earnings Before Interest and Taxes

EPS: Earnings Per Share

ESG: Environmental, Social, and Governance

GPM: Gross Profit Margin

KPI: Key Performance Indicator

NGO: Non-Governmental Organization

OLS: Ordinary Least Squares

ROA: Return on Assets

ROE: Return on Equity

ROI: Return on Investment

SRI: Socially Responsible Investment

UN: United Nations

Introduction

In recent years, sustainability has emerged as one of the topics that is regularly addressed, driving a great deal of research and receiving more attention from businesses. Despite having a lengthy history, the definition of sustainable development provided in the Brundtland Report in 1987 significantly contributed to the concept's current prominence.¹ While the role of businesses to economic and technical advancement is praised, they are criticized for contributing to social and environmental issues such as pollution, resource consumption, waste, labor rights, and social responsibility. Realizing their fundamental economic objectives, such as producing a profit, helps businesses maintain the continuation of their operations. However, the degree to which social and environmental obligations are assigned together with accomplishing economic goals is intimately tied to the desire of enterprises to secure the continuity of their activities. Therefore, in order to maintain consistency in their operations, firms must complement their financial success with social and environmental consciousness.

The purpose of this study is to ascertain the impact of firms' financial performance on the knowledge level about their sustainability performance indicators provided by companies that publish sustainability reports in Turkey. For this, it will first be determined which businesses published sustainability reports in accordance with reporting frameworks between 2010 and 2017, and it will then be determined how much information these businesses disclose about sustainability performance indicators in their sustainability reports. Additionally, it will be examined whether industry, firm size, age, and ownership structure affect how much information businesses reveal on sustainability performance indicators in accordance with the reporting framework. In light of this, the following objectives of the study were established:

1. To assess the degree to which businesses that produce sustainability reports on sustainability performance metrics communicate their knowledge (economic, environmental and social).

¹ Hauff, V. (2007, June). Brundtland Report: A 20 years update. In *Keynote Speech presented at the European Sustainability: Linking Policies, Implementation, and Civil Society Action conference. Berlin* (Vol. 7).

2. To determine if industry, firm size, age, and ownership structure affect how much information about sustainability performance indicators (economic, environmental, and social) is provided by businesses that produce sustainability reports.

3. To examine the impact on the company's financial performance of the level of information provided in companies' sustainability reports about sustainability performance metrics (economic, environmental, and social).

4. To determine, after accounting for the factors of industry, firm size, age, and ownership structure, how much information organizations reveal about sustainability performance indicators (economic, environmental, and social) affects the financial performance of the company.

The study's major research question is: What impact does the degree of information provided about sustainability performance indicators have on financial performance? On the basis of this fundamental query, the following questions were developed:

1. What are the sustainability reporting firms' performance KPIs for sustainability?
2. Do firm size, age, and ownership structure affect the sustainability performance metrics of businesses that submit sustainability reports?
3. How do the sustainability performance indicators of businesses that issue sustainability reports affect the company's financial performance?
4. Taking into account the industry, company size, company age, and ownership structure variables, how can sustainability performance indicators affect a company's financial performance?

Financial performance variables are *EBIT %*, *Total Liabilities /Total Assets*(financial leverage), *Return on Assets*, *Return on Equity*, *Return on Investment*.

Sustainability variables will be expressed as economic score, environmental score and social score.

Chapter 1. The concept of sustainability, its dimensions, components and sustainable investment

1.1 Historical development of sustainability

The idea of sustaining anything over time may be traced all the way back to the time of the ancient Romans. On the other hand, the beginning of the 1980s saw the concept's implementation at the corporate level. It became increasingly important, particularly in the 1970s, to find solutions to the social issues and to impose larger obligations on corporations. This was especially the case in the United States. During this time period, in response to the actions taken by the governments, corporations began to take into consideration the requirements posed by a variety of interest groups. After the Brundtland report on sustainable development was released in 1987, political discourse on the topic of sustainable development got underway.² During this time period, the actions of corporations helped to bring environmental preservation and sustainable development to the forefront of the international community's consciousness. Environmental pollution, discrimination in employment, consumer abuses, employee health and safety, quality of business life, deterioration of urban life, and negative practices of multinational enterprises can all be cited as important concerns and expectations regarding the corporate behavior of businesses in the 1980s.³

In the 1990s, significant worldwide events and globalization transformed how people saw sustainable development and business sustainability. The most significant steps were taken with the creation of the European Environment Agency in 1990, the Rio Declaration on Environment and Development at the Rio de Janeiro UN Environment and Development Summit in 1992, the adoption of Agenda 21 and the United Nations Framework Convention on Climate Change in 1992, and the Kyoto Protocol in 1997. International attempts to raise standards on climate

² Latapí Agudelo, M. A., Jóhannsdóttir, L., & Davídsdóttir, B. (2019). A literature review of the history and evolution of corporate social responsibility. *International Journal of Corporate Social Responsibility*, 4(1), 1-23.

³ Carroll, A. B. (2008). A history of corporate social responsibility: Concepts and practices. *The Oxford handbook of corporate social responsibility*, 1.

change-related issues and, indirectly, institutional behavior were reflected by the establishment of these international organizations and the approval of international accords.⁴

Elkington and Rowlands (1999) has made a significant contribution to the enterprise-level operationalization of corporate sustainability. The idea of three-dimensional reporting was created by Elkington and Rowlands (1999) as a result of their article *Cannibals with Forks: The Triple Bottom Line of the 21st Century Business*.⁵ The idea of three-dimensional reporting gained popularity in the late 1990s as a useful strategy for sustainability and significantly expanded the conversation around corporate sustainability. In his study, Elkington and Rowlands (1999) asserted that firms' economic aims should be combined with their social and environmental goals for them to be successful. Globalization during this time period led to worries for multinational corporations about their competitiveness, reputation, worldwide visibility, and extensive stakeholder network. These developments have highlighted the need for more research on topics such as stakeholder theory, corporate sustainable performance, and corporate citizenship.⁶

With the signature of the UN Worldwide Compact by 44 multinational corporations, two trade unions, and twelve non-governmental organizations in the 2000s, corporate sustainability has gained more respect on a global scale. A mechanism to close the gaps in the management of time in terms of human rights, social, and environmental concerns as well as to bring universal values to the markets was developed with the signing of the Global Compact. Businesses will be able to develop long-term goals and an all-encompassing strategic aim using these 12 concepts. In the 2000s, the UN Global Compact was signed by 44 multinational corporations, two trade unions, and twelve non-governmental organizations, which led to increased global respect for corporate sustainability. This agreement created a mechanism to close the gaps in managing human rights, social, and environmental concerns and to bring universal values to the markets. Businesses can develop long-term goals and an all-encompassing strategic aim using concepts

⁴ Latapí Agudelo, M. A., Jóhannsdóttir, L., & Davídsdóttir, B. (2019). A literature review of the history and evolution of corporate social responsibility. *International Journal of Corporate Social Responsibility*, 4(1), 1-23.

⁵ Elkington, J., & Rowlands, I. H. (1999). *Cannibals with forks: The triple bottom line of 21st century business*. *Alternatives Journal*, 25(4), 42.

⁶ Carroll, A. B. (2015). *Corporate social responsibility: The centerpiece of competing and complementary frameworks*. *Organizational dynamics*.

that include the Millennium Development Goals and the Millennium Declaration, which were approved by the UN in 2000, setting the worldwide agenda for the following 15 years.

In 2001, the European Union published the Green Paper, which highlighted expectations and concerns of the time, including growing worries about the environmental impact of economic activities.⁷ This was one year after the adoption of the Millennium Development Goals for sustainable development and the creation of the United Nations Global Compact. International certifications that address social responsibility have also had an impact on the global awareness of business sustainability. The International Organization for Standardization (ISO) created the ISO 26000 social responsibility certificate to encourage enterprises to operate in a socially responsible way.

Corporate sustainability has come to be seen in the 2000s as a strategic approach that integrates social and environmental considerations into daily company operations.⁸ In 2015, the Paris Climate Agreement and the Sustainable Development Goals reflect a new social contract in which businesses are expected to play a global role as an important actor in sustainable development. Since then, corporate sustainability has focused on the potential of businesses' environmental and social impacts to create shared value.⁹

1.2 Sustainability concept

Since the term "sustainability" first appeared in the literature, it has garnered considerable interest from scholars and experts in the field. Sustainability encompasses a variety of academic fields.¹⁰ The definitions put out in this direction by several writers, scholars, and organizations helped to shape and develop the idea. The term "sustainability" or "sustainable development" was first used in a formal sense in the World Commission on Environment and Development's

⁷ Latapí Agudelo, M. A., Jóhannsdóttir, L., & Davídsdóttir, B. (2019). A literature review of the history and evolution of corporate social responsibility. *International Journal of Corporate Social Responsibility*, 4(1), 1-23.

⁸ Porter, M. E., & Kramer, M. R. (2006). Strategy and society: the link between corporate social responsibility and competitive advantage. *Harvard business review*, 84(12), 78-92.

⁹ Latapí Agudelo, M. A., Jóhannsdóttir, L., & Davídsdóttir, B. (2019). A literature review of the history and evolution of corporate social responsibility. *International Journal of Corporate Social Responsibility*, 4(1), 1-23.

¹⁰ Schaltegger, S., Beckmann, M., & Hansen, E. G. (2013). Transdisciplinarity in corporate sustainability: Mapping the field. *Business strategy and the environment*, 22(4), 219-229.

1987 report, *Our Common Future* (Brundtland Report). The study defines sustainable development as satisfying current demands without compromising the capacity of future generations to satisfy their own needs. Three primary goals are the subject of this paper. The first is to guarantee ecological development, the second is to respect the requirements of future generations, and the third is to better balance social equality and economic efficiency. Many writers later used this term, which was created by the World Commission on Environment and Development.¹¹

In the late 1980s and early 1990s, the Brundtland report viewed sustainability as a strategic approach to incorporate economic and ecological issues into decision-making processes.¹² The notion of three-dimensional reporting is significant in enhancing the idea of sustainability. In 1999, Elkington and Rowlands developed the idea that for a firm to be sustainable, it needs to take into account three fundamental aspects: social fairness, economic well-being, and environmental quality. They asserted that there is a connection between a company's economic, environmental, and social sustainability. In order to succeed in each of these areas, a company must consider seven aspects, which include corporate governance, values, lifelong technologies, partnerships, markets, and openness. To be sustainable, businesses must have a competitive strategy in the market, prioritize a flexible value system that reflects local culture, be more transparent, use functional technology, create long-term common values, and have a structure that accounts for all of their stakeholders.¹³

Businesses today typically disclose their sustainability efforts in three categories: environmental sustainability, social sustainability, and economic sustainability. Fisk's three-dimensional conceptualization, which is related to Elkington's three-dimensional reporting, considers the human, earth (planet), and profit as three distinct dimensions and is another crucial idea that aids in the creation of the notion of sustainability. These three elements, according to Fisk (2010), are connected to business opportunity, operational improvement, and competitive advantage. A corporate strategy should be focused on social and environmental concerns,

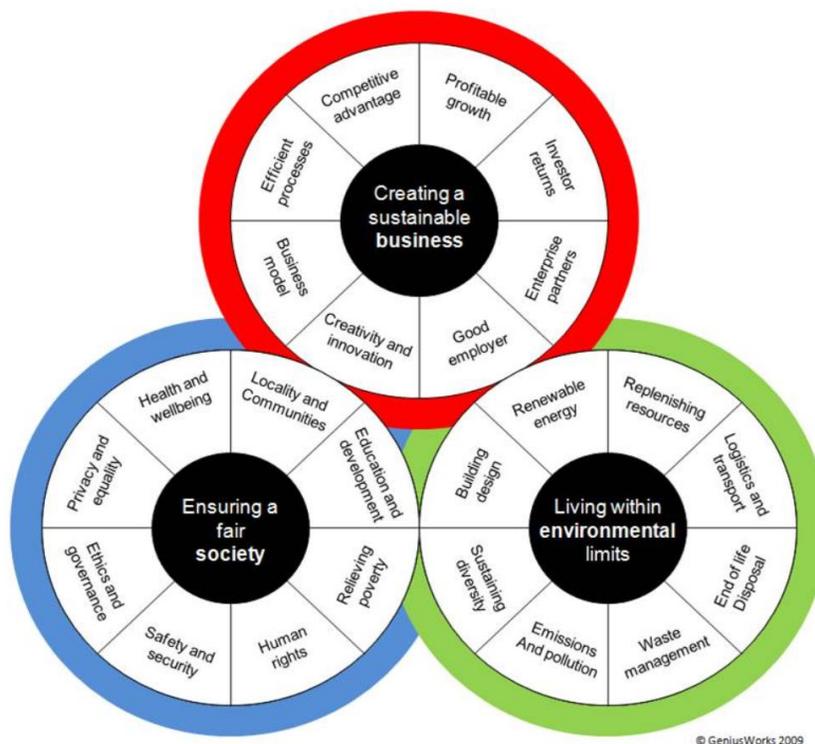
¹¹ Bansal, P., & DesJardine, M. R. (2014). Business sustainability: It is about time. *Strategic organization*, 12(1), 70-78.

¹² Keeble, B. R. (1988). The Brundtland report: 'Our common future'. *Medicine and war*, 4(1), 17-25.

¹³ Elkington, J., & Rowlands, I. H. (1999). Cannibals with forks: The triple bottom line of 21st century business. *Alternatives Journal*, 25(4), 42.

according to Fisk (2010). If businesses want to be more productive and promote innovation, they must make the most of their resources, find new methods to collaborate with partners, and include their workforce in such an organizational culture. While Elkington's idea of three-dimensional reporting and Fisk's idea of "man, earth, and snow" have many things in common, they also have a few small variances. For example, Fisk's profit dimension and Elkington's economic wellbeing dimension have distinct meanings. Fisk (2010) defines profit as the real profit and growth of the firm, not for the society and economy around the business, but Elkington and Rowlands (1999) defines economic prosperity as an increase in economic activity and growth (not confined to the business).¹⁴

Figure 1: Fisk's Diagram of Man, Earth, and Profit¹⁵



According to Fisk (2010), economic growth can only be sustained if business activities are integrated with social and environmental priorities, as shown in figure 1. It can be argued that the 3P approach, which defines the interdependence between social, environmental, and

¹⁴ Fisk, P. (2010). People planet profit: How to embrace sustainability for innovation and business growth. Kogan Page Publishers.

¹⁵ Ibid

economic dimensions, is the most popular and widely used definition to define sustainability and make it functional.¹⁶

Although the Brundtland report's definition of sustainability is the one that is generally acknowledged in the literature, other scholars and institutions from across the world have given their own definitions of the term.¹⁷ The World Business Council for Sustainable Development defines sustainability as all of an organization's operations that support economic growth. Business must improve employee, community, and societal well-being in order for economic progress to take place.¹⁸

In a similar vein, Kotler and Lee (2008) defined sustainability as an organization's commitment to enhancing societal well-being through ethical business practices and efficient use of company resources. According to the European Commission, sustainability is the concept that companies intentionally integrate social and environmental considerations into their operations and relationships with stakeholders. In this sense, business sustainability refers to a strategy that balances social, environmental, and economic concerns while maximizing their mutual benefits. Additionally, it represents a way of managing change and balancing competition with societal progress.¹⁹

Being a sustainable firm entails investing in human capital, the environment, and stakeholder relations, in addition to properly following regulatory requirements. Experience has shown that investing in environmentally friendly technology and business processes can improve a company's competitiveness, in addition to being in compliance with the law. Besides meeting basic legal requirements, societal factors such as education, working environment, and management-employee interactions can also have a direct impact on productivity.

¹⁶ Kemp, R., & Martens, P. (2007). Sustainable Development: How to Manage Something That is Subjective and Never can be Achieved? *Sustainability: Science, Practice and Policy*, 3(2), 5-14.

¹⁷ Keeble, B. R. (1988). The Brundtland report: 'Our common future'. *Medicine and war*, 4(1), 17-25.

¹⁸ Malacarne, R., & Brunstein, J. (2021). Discourses and Educational Initiatives for Developing Sustainability Competences of the World Business Council for Sustainable Development. *Organizações & Sociedade*, 28, 917-943.

¹⁹ Kotler, P., & Lee, N. (2008). *Corporate social responsibility: Doing the most good for your company and your cause*. John Wiley & Sons.

- Sustainability, according to Vilanova et al. (2009), has five components: vision, community connections, accountability, workplace, and market.²⁰
- Governance, ethical codes, values and reputation that enable corporate sustainability to develop conceptually within the business within the vision dimension;
- Cooperation and partnerships with different stakeholders within the dimension of community relations, corporate philanthropy;
- Employee rights and labor practices within the workplace dimension;
- Corporate transparency, reporting and communication within accountability;
- Within the market area, there are corporate sustainability practices that are directly related to core business activities such as research and development, pricing, fair competition, marketing or investment.

Sustainability refers to a firm's ability to meet the needs of its present stakeholders without compromising its ability to meet those of its future stakeholders, including shareholders, consumers, workers, pressure groups, and society. To achieve sustainability, businesses must maintain and expand their economic, social, and environmental capital bases while actively promoting sustainability in the political arena. This definition highlights three essential components of business sustainability: managing not only economic capital, but also natural and social capital, integrating short-term and long-term dimensions, and ensuring long-term sustainability.

According to Krajnc and Glavic (2005), corporate sustainability involves creating environmentally friendly products using non-polluting processes and minimal energy and resources, while also considering the well-being of society and employees. To achieve these goals, businesses must significantly modify their practices and adopt new strategies to support sustainable growth.²¹

Labuschagne et al. (2005) defined sustainability as the adoption of business strategies and activities that meet the current needs of the company and its stakeholders while preserving, enhancing, and maintaining the natural and human resources that will be necessary in the future.

²⁰ Vilanova, M., Lozano, J. M., & Arenas, D. (2009). Exploring the nature of the relationship between CSR and competitiveness. *Journal of business Ethics*, 87(1), 57-69.

²¹ Krajnc, D., & Glavič, P. (2005). A model for integrated assessment of sustainable development. *Resources, conservation and recycling*, 43(2), 189-208.

The authors argue that only a systematic approach can enable firms to contribute to sustainable development. To move in this direction, businesses should take the following steps:²²

- Address social and environmental sustainability at the fundamental principle level;
- Transform sustainability from a general to a corporate level;
- Manage economic performance step-by-step with a strategic perspective, including short-term risks as well as long-term risks;
- With such a perspective, businesses should advocate for the development of sustainability indicators;
- Demonstrate how various initiatives.

Sustainability is a wide strategy that covers economic, environmental, and social aspects, according to Perrini and Tencati (2006)²³, who based their definition on Elkington and Rowland's (1999) three-dimensional reporting. A company that develops its own procedures and practices in the direction of sustainability, considering its economic, social, and environmental aspects, is known as a sustainability-oriented company. Hence, building trustful relationships with all stakeholders is crucial for its sustainability. To achieve robust relationships, businesses should engage with suppliers, public authorities, local communities, non-governmental organizations, as well as shareholders, workers, and consumers. The quality of stakeholder interactions, or sustainability, should be the fundamental principle of management decision-making and a comprehensive corporate strategy for today's organizations.

Long-term sustainability practices need to be turned into a business strategy to accomplish this integration.²⁴ A company's long-term viability and its ability to maintain relationships with its stakeholders are both vital components of sustainability. Salvioni et al. (2016) defined a sustainable business as a company that generates profits for its shareholders while also preserving the environment and the well-being of those who interact with it.

²² Labuschagne, C., Brent, A. C., & Van Erck, R. P. (2005). Assessing the sustainability performances of industries. *Journal of cleaner production*, 13(4), 373-385.

²³ Perrini, F., & Tencati, A. (2006). Sustainability and Stakeholder Management: The Need for New Corporate Performance Evaluation and Reporting Systems. *Business Strategy and the Environment*, 15(5), 296-308.

²⁴ Weber, M. (2008). The business case for corporate social responsibility: A company-level measurement approach for CSR. *European Management Journal*, 26(4), 247-261.

Sustainable business practices embody a global concept of corporate responsibility that encompasses legal, economic, social, and environmental considerations. Sustainability is a long-term perspective that distinguishes socially responsible companies.²⁵ This strategy is referred to as balancing the interests of those who contribute to the present and future success of the business through sustainable value creation that benefits both shareholders and stakeholders over the long term.

Muntean (2018) defined corporate sustainability as a business strategy that creates long-term shareholder value by capturing opportunities and managing risks associated with social, environmental, and economic changes.²⁶ Sustainable enterprises can increase their market value in the short, medium, and long terms by addressing a range of economic, social, and environmental issues. Social, environmental, and economic factors should be considered when evaluating a company's sustainability, and business decisions must balance these factors. Current corporate sustainability policies and practices embody sustainable development, which encompasses social welfare, environmental protection, efficient use of natural resources, and economic welfare. These policies and practices address ESG components (E-environment, S-social, and G-governance).²⁷

1.3 Dimensions of sustainability

Today, sustainability is most commonly explained by the integration of economic, social and environmental (or ecological) factors or goals.²⁸ Accordingly, the concept of triple reporting proposed by Elkington and Rowlands (1999) is used by many organizations to evaluate and measure economic, environmental and social performance.²⁹ However, Bansal (2005) transformed the concept into principles of economic welfare, environmental integrity and social equality and underlined that all of them should be supported in order to achieve sustainable

²⁵ Salvioni, D. M., Gennari, F., & Bosetti, L. (2016). Sustainability and convergence: the future of corporate governance systems?. *Sustainability*, 8(11), 1203.

²⁶ Muntean, M. (2018). Business intelligence issues for sustainability projects. *Sustainability*, 10 (2), 335.

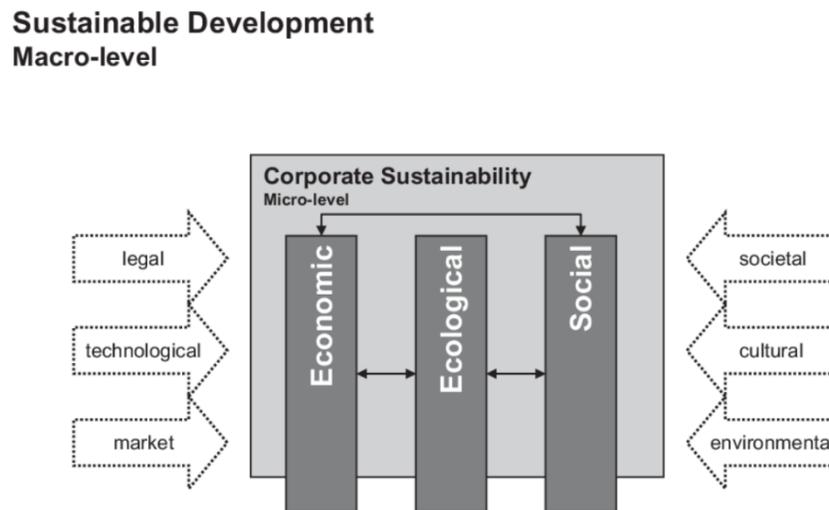
²⁷ Mikołajek-Gocejna, M. (2016). The relationship between corporate social responsibility and corporate financial performance: Evidence from empirical studies. *Comparative Economic Research*, 19(4), 67-84.

²⁸ Purvis, B., Mao, Y., & Robinson, D. (2019). Three pillars of sustainability: in search of conceptual origins. *Sustainability science*, 14(3), 681-695.

²⁹ Elkington, J., & Rowlands, I. H. (1999). Cannibals with forks: The triple bottom line of 21st century business. *Alternatives Journal*, 25(4), 42.

economic development.³⁰ Figure 2 illustrates how corporate sustainability at the micro or company level is impacted by sustainable development at the macro level. The macroeconomic economic, environmental/ecological, and social components of sustainable development have an impact on the microeconomic or firm level variables as well.³¹

Figure 2: The Relationship Between Macro and Micro Levels of Sustainability³²



1.3.1 Economic Sustainability

Economic sustainability is concerned with maintaining the economic structure through effective use of resources and capital, providing for people's basic needs, improving living standards by maximizing returns on goods and services, and ensuring economic equity.³³ Economic sustainability is the capacity of a company to make profits in order to maintain itself over the long term in the local, national, and international economic systems.³⁴ While ensuring their corporate profitability and financial stability, sustainable enterprises must also consider their

³⁰ Bansal, P. (2005). Evolving sustainably: A longitudinal study of corporate sustainable development. *Strategic management journal*, 26(3), 197-218.

³¹ Ebner, D., & Baumgartner, R. J. (2006, September). The relationship between sustainable development and corporate social responsibility. In *Corporate responsibility research conference* (Vol. 4, No. 5.9, p. 2006). Queens University, Belfast Dublin.

³² Baumgartner, R. J., & Ebner, D. (2010). Corporate sustainability strategies: sustainability profiles and maturity levels. *Sustainable development*, 18(2), 76-89.

³³ Zyadat, A. A. H. (2017). The impact of sustainability on the financial performance of Jordanian Islamic banks. *International Journal of Economics and Finance*, 9(1), 55-63.

³⁴ Roberts, S., & Tribe, J. (2008). Sustainability indicators for small tourism enterprises—An exploratory perspective. *Journal of sustainable tourism*, 16(5), 575-594.

economic impact on society, including the creation of jobs, local salaries, and support for local economic development.³⁵ To achieve long-term economic success, firms should focus less on short-term financial outcomes and more on the economic components of sustainability such as innovation and technology, cooperation, knowledge management, processes, procurement, and sustainability reporting.³⁶ These factors are explained in detail in Table 1.

Table 1: Economic Dimensions of Corporate Sustainability

Innovation and Technology	To strive to carry out R&D activities related to sustainability in order to reduce the environmental impacts of new products and business activities. To achieve this, using best available techniques, integrated environmental technologies and focusing on cleaner production and zero emission technologies.
Cooperation	Being in good and active cooperation with stakeholders such as suppliers, R&D institutions, universities. Working in joint programs and networks related to innovative products and technologies.
Information Management	Activities and approaches to keep sustainability-related information in the organization. Methods of planning, developing, organizing, maintaining, transferring, applying and measuring specific knowledge and developing the organizational knowledge base.
Processes	Clear processes and roles related to sustainability are defined as the efficient execution of business activities and the fact that each employee knows what the organization expects of him. Integration of sustainability into daily business life.
Buy	Consideration of sustainability issues in purchasing. Awareness and consideration of sustainability-related issues in the organization as well as the supply chain. Relationships with suppliers focused on sustainability.
Sustainability Reporting	Evaluation and reporting of sustainability issues in business reports, in a separate sustainability report or integrated into the business report.

³⁵ Landrum, N. E., & Edwards, S. (2009). Sustainable business: an executive's primer. Business Expert Press.

³⁶ Baumgartner, R. J., & Ebner, D. (2010). Corporate sustainability strategies: sustainability profiles and maturity levels. *Sustainable development*, 18(2), 76-89.

1.3.2 Social Sustainability

The relationships that a business maintains with its most important stakeholders, including its workers, society at large, the public sector, suppliers, and consumers, are part of the social aspect of sustainability.³⁷ Due to the nature of the relationships with the company's most important stakeholders, social justice and equality are brought to the forefront in the allocation of the company's natural and economic resources. At the same time, socially sustainable businesses should contribute to the preservation of cultural diversity and the protection of human rights by encouraging social engagement and involvement in the communities in which they operate.³⁸ According to Savitz (2013), the following criteria are important to consider as social sustainability performance indicators of the enterprise:³⁹

- Health and safety records within the enterprise,
- Female labor force participation rate,
- Social impact,
- Human rights and privacy,
- Product responsibility,
- Employee relations.

The goal of social sustainability is to improve all existing and future connections with stakeholders. Meeting the desires and requirements of the stakeholders might boost stakeholder loyalty in this approach.⁴⁰ The social dimension of sustainability involves the fulfillment of ethical business practices that benefit labor, human capital, and society. The fundamental assumption here is that society will respect these activities and react favorably to them. In general, social sustainability refers to a business's internal workforce training and development,

³⁷ Delai, I., & Takahashi, S. (2013). Corporate Sustainability in Emerging Markets: Insights From The Practices Reported by The Brazilian Retailers. *Journal of Cleaner Production*, 47, 211-221.

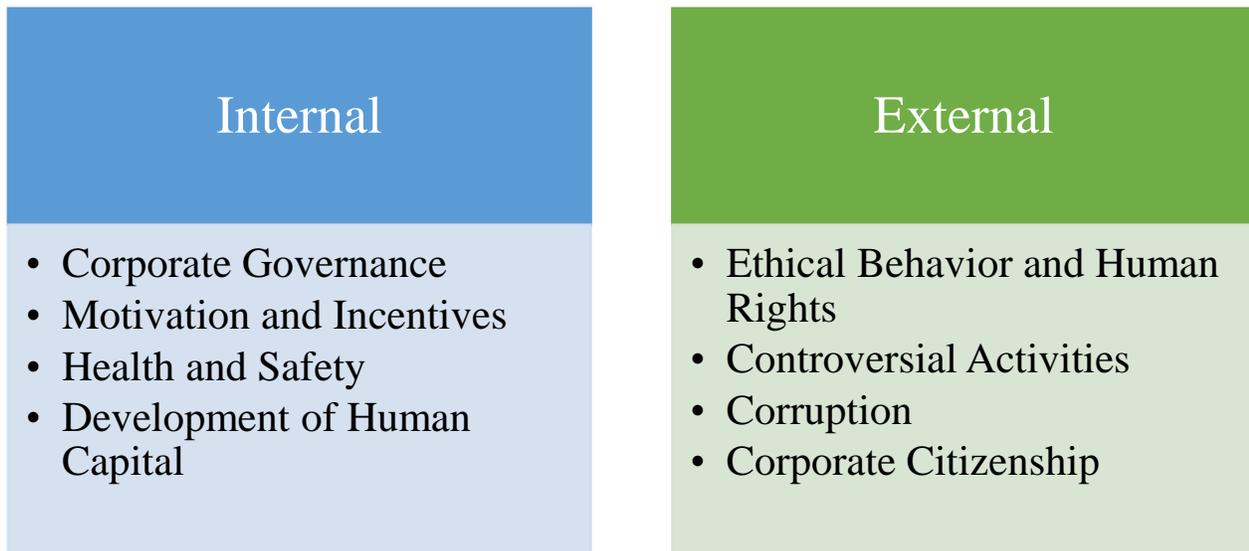
³⁸ Vallance, S., Perkins, H. C., & Dixon, J. E. (2011). What is Social Sustainability? A Clarification of Concepts. *Geoforum*, 42(3), 342-348

³⁹ Savitz, A. (2013). *The Triple Bottom Line: How Today's Best-Run Companies are Achieving Economic, Social And Environmental Success-and How You Can Too*. John Wiley & Sons

⁴⁰ Ebner D. (2008). *Assessing Corporate Social Responsibility in Industrial Firms: the CSR Assessment*. Montanuniversität Leoben.

as well as the establishment of positive relationships with stakeholders and the local community.⁴¹ Internal and exterior aspects are two categories into which social sustainability may be divided.

Figure 3. Internal and external dimensions of social sustainability⁴²



According to Bebbington and Dillard (2008), businesses have many social effects due to their interactions with employees, suppliers, society and consumers. These impacts may vary depending on the nature of the business, its activities and stakeholder interactions. According to the authors, these social effects can be explained as follows:⁴³

Employees:

- Employment terms and conditions (including pay, benefits, and the fairness of hiring and firing decisions);
- Trade union rights and cooperation;
- Possibilities for company development and training,

⁴¹ Linnenluecke, M. K., Russell, S. V., & Griffiths, A. (2009). Subcultures and Sustainability Practices: The Impact on Understanding Corporate Sustainability. *Business Strategy and the Environment*, 18(7), 432-452.

⁴² Baumgartner, R. J., & Ebner, D. (2010). Corporate Sustainability Strategies: Sustainability Profiles and Maturity Levels. *Sustainable Development*, 18(2), 76-89.

⁴³ Bebbington, J., & Dillard, J. (2008). Social Sustainability: An Organizational-Level Analysis. In *Understanding The Social Dimension of Sustainability* (pp. 173-189). Routledge.

- It is the involvement of the workforce in business management.

Suppliers:

- Interaction with suppliers and fair pay,
- Concerns about human rights violations in supply chains, such as slavery and the implications of consuming goods that might intensify war;
- Issues with the host country's supply chain include corruption, bribery, and human rights breaches.

Society:

- Health issues brought on by residing close to a producing plant,
- Communities being uprooted for commercial purposes,
- Social and economic repercussions of the closure of a firm, including job chances;
- Business initiatives that benefit the community, including charity.

Customers:

- Safety of products,
- Adopting ethical marketing (especially for tobacco and alcohol products),
- Additional detrimental impacts brought on by consuming produced goods, including but not limited to weapons, violent entertainment, and pornography.

1.3.3 Environmental Sustainability

Environmental sustainability is concerned with the effects that business operations have on the environment.⁴⁴ Factors such as greenhouse gas emissions, ozone layer depletion, poor soil and water management, loss of biological diversity, photochemical smog, pollutants harmful to humans and the environment, and desertification are among the main environmental issues. Sustainable environmental practices are those that do not compromise the availability of natural resources for future generations. Environmental sustainability also involves minimizing ecological impact, reducing greenhouse gas emissions, and making optimal use of energy

⁴⁴ Baumgartner, R. J., & Ebner, D. (2010). Corporate Sustainability Strategies: Sustainability Profiles and Maturity Levels. *Sustainable Development*, 18(2), 76-89.

resources. Businesses can significantly harm the environment by generating waste, emitting pollution, or consuming natural resources.⁴⁵

- Additionally, the effects of global climate change may have an influence on company operations. The natural ecosystem has been seriously harmed, particularly in light of the 3.3 million barrel oil leak into the Gulf of Mexico by the British oil company BP. In general, environmental sustainability emphasizes the following topics, according to Moldan et al. (2012):
- Climate systems (climate and climate change, climate risk management, mitigation, and adaptation);
- Human settlements and habitats (cities, urbanization and transport),
- Terrestrial systems (natural and managed ecosystems, forestry, food systems, biodiversity, and ecosystem services);
- Carbon and nitrogen cycles (resources, feedback mechanisms, and connections with other systems);
- Aquatic systems (marine and freshwater ecosystems, fisheries, biodiversity).

1.4 Sustainable investment strategies

Sustainable investing techniques consider economic, social, and environmental factors within a portfolio of investments. The distinguishing feature of sustainable mutual funds compared to conventional funds is their incorporation of environmental and social components. Ethical issues related to corporate governance or commercial activities may also be considered. European Sustainable Investment Forum categorizes sustainable investment strategies into basic and general strategies. Basic investing strategies involve filtering methods that consistently alter the portfolio structure. These strategies often reflect a values-based approach, including best-in-class and theme approaches, norms and values-based exclusions, and positive filtering. General investment methods that institutional investors frequently use include proactive shareholder engagement and the incorporation of ESG (environmental, social, and governance) issues into investment procedures. Both active and passive sustainable investment techniques can be categorized. Passive strategies rely on the application of established criteria and norms, while

⁴⁵ Stead WE, Stead JG. (2004). Sustainable Strategic Management. Sharpe: Armonk, NY.

active strategies seek to effect change.⁴⁶ The only active strategies included by this definition are shareholder policy and participation strategies.

1.4.1 Negative Filtering

Negative filtering keeps out of the investing universe companies or sectors that flout moral, social, and ethical standards. Negative filtering's main justification is to avoid investing in sectors or companies that hurt the environment or violate moral or ethical standards. As a result, some investors may delete from their portfolios the assets of companies engaged in activities related to alcohol, tobacco, gambling, and nuclear weapons.⁴⁷

Investors using a simple negative filtering method may face issues with companies that have multiple distinct business divisions. For example, a company that produces both food and cigarette products may fall under the negative screening criteria. In such cases, investors must determine a threshold percentage to follow. Such investors may partially filter out relevant businesses in a negative way. Investment decisions are frequently binary choices. Norm-based filtering includes investments in sectors or companies that adhere to international standards and norms established by organizations such as the Organization for Economic Cooperation and Development, the International Labor Organization, or the United Nations. Consequently, companies that fail to comply with these standards are not included in the investment universe. Negative filtering may also be based on subjective moral or ethical values.⁴⁸

For investors who are sensitive to environmental issues, industries or sectors involved in climate change, nuclear energy, fossil fuels, the use of tropical forests, the manufacture and sale of ozone-depleting compounds, or hazardous substances, may be prohibited. Such an exclusionary strategy keeps particular goods and business practices out of the investment portfolio.⁴⁹

⁴⁶ Schoemaker, D. (2018). Sustainable investing: How to do it (No. 2018/23). Bruegel Policy Contribution.

⁴⁷ Berry, T. C., & Junkus, J. C. (2013). Socially Responsible Investing: An Investor Perspective. *Journal of Business Ethics*, 112(4), 707-720.

⁴⁸ Staub-Bisang, M. (2012). *Sustainable Investing for Institutional Investors: Risks, Regulations and Strategies*. John Wiley & Sons.

⁴⁹ Camilleri, M. A. (2017). *Corporate sustainability, social responsibility and environmental management*. Cham, Switzerland: Springer International Publishing.

Human rights abuses, child labor, and harsh regimes can be removed from the investment portfolio in the social sector. Corruption, gene technology and embryonic research, animal experimentation, cigarette and alcohol use, the manufacturing of military weapons, gambling, and pornographic companies are all things that can be prohibited from the ethical realm.⁵⁰ Exclusion rules apply to both government bonds and investments in corporate stocks and bonds. Therefore, bonds from nations that practice the death penalty and violate human rights are not available for investment. Negative filtering is a suitable method for incorporating ethical preferences into investment decisions and for sending a clear message. This strategy gives institutional investors who manage public funds the opportunity to create clean portfolios and have completely transparent investment strategies. However, limiting the investment phase while using negative filtering may have a detrimental effect on the risk/return profile of a portfolio. The longer the exclusion list becomes, the more challenging it could be for the portfolio manager to compare it to a benchmark.

The oldest sustainable investment strategy, negative filtering or exclusion, is still regarded as the most crucial investment strategy method in the European region. In the past eight years, the number of professionally managed sustainable investment funds using the exclusionary investing approach has expanded in the European region by 23.5%. Poland (159%) and Italy (154%) have seen a notable increase in the past two years in Europe. Professionally managed sustainable assets worldwide total 1.5 trillion euros, with Italy leading the way. Conventional weapons lead the excluded sectors with 63.6%, followed by tobacco products with 49.1%.⁵¹

1.4.2 Positive Filtering

Positive filtering concentrates on the deliberate selection and integration of desirable securities, whereas negative filtering strives to exclude investments in particular companies or industries. In other words, positive filtering is a method for diversifying your portfolio. A positive filtering method is more difficult to create investments with than a straightforward negative filtering strategy. As a result, some social factors could be impossible to assess or challenging to quantify.

⁵⁰ Berry, T. C., & Junkus, J. C. (2013). Socially Responsible Investing: An Investor Perspective. *Journal of Business Ethics*, 112(4), 707-720.

⁵¹ European Sustainable Investment Forum. (2020) European SRI Study 2018 <http://www.eurosif.org/wp-content/uploads/2018/11/European-SRI-2018-Study.pdf>

As a result, positive filtering is heavily reliant on the investor's criteria or expertise. The following are examples of positive filtering:⁵²

- Corporate Governance: The composition of a company's board of directors and supervisors, the internal and external control systems, the rights of shareholders,
- Customers and Suppliers: Product safety, customer data, contracts made in good faith, positive supplier relationships, consideration of social and environmental factors in the supply chain, avoidance of corruption, and avoidance of anti-competitive behavior,
- Local participation: promoting social and environmental progress, the influence of goods and services on the general public,
- Human rights: Advocating for and upholding human rights, recognizing unions and collective bargaining, preventing child labor and other forms of forced labor, and refraining from discriminatory acts,
- Human resources policy: Addressing human resources issues as part of an organization's policy, encouraging union activities and employee involvement, providing opportunities for education and training, ensuring the effectiveness of the compensation plan, actively managing health and safety, and upholding working hours,
- Environment: Environmental management includes reducing emissions and monitoring them, developing environmentally friendly goods and services, safeguarding biodiversity and endangered species, conserving water, cutting emissions from energy use, cutting emissions to the atmosphere, and managing waste. Using a combination of negative and positive filtering processes, integrating ESG elements into sustainable investing portfolios can be a useful strategy to reduce risk and boost financial returns. Portfolios utilizing mixed scanning methods include those based on the FTSE4Good and DJSI indexes.

For instance, diversified selection procedures produce superior results when creating sustainable mutual funds, according to research by Renneboog et al. (2006).⁵³

⁵² Staub-Bisang, M. (2012). Sustainable Investing for Institutional Investors: Risks, Regulations and Strategies. John Wiley & Sons.

1.4.3 Best-in-Class Approach

Before making an investment choice, the best-in-class method takes into account whether ethical and environmental criteria are being satisfied by companies or nations that issue securities. Therefore, the best-in-class strategy is a type of positive selection. The goal is to invest in companies that adhere to widely recognized sustainability standards (such as active climate and environmental policy, social justice, and poverty eradication) or concentrate on ecologically friendly production methods or renewable energy sources.⁵⁴

The best-in-class strategy aims to compare assets that are categorized and ranked within a certain category side by side. Using this method, investors may compare a company to other companies in the same pre-selected group. Groups may be based on market segments or a reference index.⁵⁵ A best-in-class approach is more intricate than straightforward filtering techniques and is particularly beneficial for companies that don't fit neatly into one of the two categories—good investments for companies with numerous lines of operation. The best-in-class approach makes use of weighted criteria. A weighted chart may be used to measure environmental and social performance and make small adjustments to valuation indicators like set rates.⁵⁶

Overall, the best-in-class strategy rigorously assesses every sector, product, and service before including it in the investment universe. For instance, to determine the sector leader, companies involved in the oil and natural gas industry are evaluated based on environmental and social standards. In this way, a sustainable investment universe is created, and sustainability leaders in each sector are identified. The best-in-class approach is particularly useful when selecting investments in government bonds and corporate stocks.⁵⁷

⁵³ Renneboog, L., Ter Horst, J., & Zhang, C. (2006). Is Ethical Money Financially Smart?. ECGI Finance Working Paper, (117).

⁵⁴ Townsend, B. (2020). From sri to esg: The origins of socially responsible and sustainable investing. *The Journal of Impact and ESG Investing*, 1(1), 10-25.

⁵⁵ Weber, B., Staub-Bisang, M., & Alfen, H. W. (2016). Infrastructure as an asset class: investment strategy, sustainability, project finance and PPP. John Wiley & sons.

⁵⁶ Fung, H. G., Law, S. A., & Yau, J. (2010). *Socially Responsible Investment in A Global Environment*. Edward Elgar Publishing.

⁵⁷ Staub-Bisang, M. (2012). *Sustainable Investing for Institutional Investors: Risks, Regulations and Strategies*. John Wiley & Sons

The investment procedure operates in accordance with the best-in-class methodology. Non-financial sustainability criteria are used to determine the investing universe. The investor decides which non-financial data should be taken into account while making an investment choice. If a company is not the best in its sector, it is eliminated from the investing universe. Consequently, only assets that satisfy sustainability requirements remain, creating a diversified and benchmark-focused best-in-class investing universe. The asset manager uses financial analysis to choose the assets from this universe of sustainable investments that will stay in the portfolio. The inclusion of every sector in the resulting portfolio is a crucial component of this strategy. However, opponents of this strategy criticize this circumstance. In response to these critiques, strategy committees frequently impose further exclusion standards. For example, the entire industry or certain subsectors, such as nuclear energy or oil exploration and extraction, might be left out of the investment universe. The portfolio built in this way is environmentally sustainable and eco-friendly.⁵⁸

It's possible that sustainability analyses don't always provide what's expected. There are still concerns, even in the case of British oil, which is the industry leader in sustainability. British oil was regarded as the industry leader in the Dow Jones sustainability index until to the boom in 2010. Firms operating in areas that are riskier in terms of sustainability have greater entrance hurdles to the sustainable investment universe in this direction, whereas businesses operating in less risky sectors can be included more readily.

1.4.4 Thematic Approach

The thematic method is renowned for its focus on particular investing ideas and industries. This strategy reflects a specific investment subject with economic potential while pursuing social and environmental goals. Environmental topics of this strategy, which do not require considerable diversification, include water, renewable energy, clean technology, climate change, and resource efficiency. The most significant investment concept that arises from this strategy is microfinance based on social factors. The goal of thematic investments is to deliver immediate environmental and/or social benefits in addition to financial returns, hence they may also be categorized as

⁵⁸ Fung, H. G., Law, S. A., & Yau, J. (2010). *Socially Responsible Investment in A Global Environment*. Edward Elgar Publishing.

impact investments. The fundamental tenet of impact investing is that investors seek to have a beneficial impact on society and the environment, in addition to seeking financial gains.⁵⁹

Thematic funds involve selecting companies that operate in industries such as microfinance, clean technology, and climate change. These portfolios are constructed based on financial standards. Microfinance is among the most well-known socially focused investments. Although they may offer lower potential returns, microfinance investments are less speculative and risky than some environmental-focused investments. This is particularly true for microloans given to organizations providing microfinance in impoverished nations. These organizations offer fixed-rate loans to micro-entrepreneurs for a specific period. Microfinance generates not only financial rewards for investors but also social returns by helping enterprising individuals, particularly women, improve their lives and combat poverty. According to research, women's status significantly influences their families' quality of life, particularly that of their children.⁶⁰

1.4.5 ESG Integration Approach

Financial experts have noted that companies that disregard environmental, social, and governance (ESG) considerations tend to do poorly financially. In order to address risk factors, ESG criteria have therefore started to be partially integrated into standard financial analyses. Here, minimizing possible opportunity costs related to ESG risks, particularly reputational risks, is the main objective. Rating agencies, asset managers, or banks give information on ESG criteria for firms or governments.⁶¹ The ESG integration strategy is especially well suited to institutional investors that wish to include ESG concerns into investments for risk reasons without having to significantly alter their established investing procedures or restrict the universe of possible assets. ESG problems may therefore be realistically taken into account in financial

⁵⁹ Jackson, E. T. (2013). Interrogating the Theory of Change: Evaluating Impact Investing Where It Matters Most. *Journal of Sustainable Finance & Investment*, 3(2), 95-110.

⁶⁰ Karrer-Rüedi, E. (2011). The Importance of The Link Between Socially Responsible Investors and Microfinance Institutions. In *The Handbook Of Microfinance* (pp. 323-340).

⁶¹ Staub-Bisang, M. (2012). *Sustainable Investing for Institutional Investors: Risks, Regulations and Strategies*. John Wiley & Sons.

analysis and investing procedures. The UN Principles for Responsible Investment serve as a helpful manual for investors who seek to include ESG factors into their investment operations.⁶²

Investors may take sustainability into account without having to drastically alter their investing methods or objectives in order to optimize risk-adjusted returns thanks to the incorporation of ESG criteria into their investment operations. As a result, adding ESG elements to investing processes enhances them.⁶³ Portfolio managers employ negative or positive filtering techniques to only select assets that meet sustainability standards in their investment procedures. However, integrating ESG criteria into investment processes considerably enhances financial flexibility. The primary rationale behind including ESG criteria in the analytical process is to manage risks. Thus, social and environmental factors are given significant weight if they can improve financial performance by addressing potential risks and opportunity costs. In 2018, ESG integration was the fastest-growing investment strategy in Europe, increasing by 27% since 2016.⁶⁴ Global sustainable investing study indicates that investments in ESG integration increased by 69% in 2018 compared to 2016 and totaled around 17.5 trillion USD. The USA leads the world market for investments integrating ESG factors with 54%, followed by Europe with 28%.⁶⁵

The shareholder involvement strategy involves investors directing and guiding the enterprises in which they have invested or plan to invest. In other words, shareholder engagement seeks to have a direct influence on corporate management. The simplest way to participate is to cast your vote at a company's annual general meeting, where you can express your views on corporate strategy and decision-making. Many people have suggested that shareholders should utilize their voting rights to maintain the balance of power in a company,

⁶² Tang, A., Chiara, N., & Taylor, J. E. (2012). Financing Renewable Energy Infrastructure: Formulation, Pricing and Impact of A Carbon Revenue Bond. *Energy Policy*, 45, 691–703.

⁶³ Cappucci, M. (2018). The ESG Integration Paradox. *Journal of Applied Corporate Finance*, 30(2), 22-28.

⁶⁴ European Sustainable Investment Forum. (2020) European SRI Study 2018 <http://www.eurosif.org/wp-content/uploads/2018/11/European-SRI-2018-Study.pdf>

⁶⁵ Global Reporting Initiative. (2016). GRI 201: Economic Performance 2016.

particularly in light of the numerous accounting scandals and other irregularities in recent years.⁶⁶

In contrast to the engagement model, shareholder influence supports certain ESG problems and frequently results in tense confrontations. This tactic frequently include encouraging shareholder motions and participation in annual meetings. The business policies of the firm can be influenced in this regard by investors who make ethical investments. Investors communicate their requests to corporate management in regards to their rights and the ESG standards. As a result, investors may withdraw their funds if corporate management rejects their wishes. Additionally, this strategy significantly aids in the creation of corporate rules and procedures.⁶⁷

The objective of active shareholder participation and influence is to urge firms to carefully analyze their practices while raising knowledge of the management of sustainable development concerns. The investment universe is not initially constrained, but some investors could elect to sell out if the management of the firm does not agree to the suggested modifications. The firm may have favorable, long-term returns as opposed to only short-term gains. Actively influencing and engaging shareholders is an expensive and time-consuming effort, but it may be successful if shareholders band together.⁶⁸

Between 2010 and 2018, investments in active shareholder involvement and impact grew at an annual rate of 14% in the European region, reaching €4.8 trillion. The UK leads this sector with a rise of 11% and €2.8 trillion. Sweden is second to the UK, with an increase of 97% and €874 billion. Italy had a substantial rise with a 213% increase.⁶⁹

⁶⁶ Fung, H. G., Law, S. A., & Yau, J. (2010). *Socially Responsible Investment in A Global Environment*. Edward Elgar Publishing.

⁶⁷ Camilleri, M. A. (2017). *Corporate sustainability, social responsibility and environmental management*. Cham, Switzerland: Springer International Publishing.

⁶⁸ Staub-Bisang, M. (2012). *Sustainable Investing for Institutional Investors: Risks, Regulations and Strategies*. John Wiley & Sons.

⁶⁹ European Sustainable Investment Forum. (2020) European SRI Study 2018 <http://www.eurosif.org/wp-content/uploads/2018/11/European-SRI-2018-Study.pdf>

Chapter 2. Sustainable performance, sustainability indices and financial performance

2.1 Sustainable performance

Many criteria have been created to quantify sustainable performance as a result of the rise in studies examining the connection between sustainable performance and financial performance. There isn't, however, a generally used or acknowledged way to gauge sustainable performance. This is understandable given that many scientists and professionals have various definitions and objectives for sustainability. The holistic assessment of all three dimensions—environmental, social, and economic—is necessary to gauge sustainable performance in a healthy way. These factors are assessed as environmental, social, and economic performance, which stands for environmental preservation, racial and social equity, and company economic well-being. However, if a firm wants to be a source of value creation, it must define and measure sustainable performance.⁷⁰ The level to which a company integrates economic, environmental, and social concerns into its operations and, as a result, the effects it has on the company and society, is referred to as sustainable performance.

Therefore, it is challenging to define and quantify sustainable performance since it is a multifaceted construct (environmental, social, and economic variables). For measuring sustainable performance, a variety of approaches have been devised and put forth, but each has drawbacks. Numerous restrictions result from the fact that firms disclose their sustainability data according to various rules and frameworks and that sustainability reporting is still not standardized. The literature makes use of a variety of assessment techniques to functionalize sustainable performance.⁷¹ The most popular techniques are content analysis and third-party

⁷⁰ López, M. V., Garcia, A., & Rodriguez, L. (2007). Sustainable development and corporate performance: A study based on the Dow Jones sustainability index. *Journal of business ethics*, 75, 285-300.

⁷¹ Artiach, T., Lee, D., Nelson, D., & Walker, J. (2010). The determinants of corporate sustainability performance. *Accounting & Finance*, 50(1), 31-51.

indexes, despite the fact that there is no widespread agreement on them. In addition to these strategies, measures like reputation measurement and survey-based metrics have also been utilized, though seldom. The frequency of sustainability-related words and concepts in annual reports or sustainability reports of enterprises is referred to as content analysis.⁷²

Another measuring technique involves calculating a company's reputation ratings and using these scores to gauge sustainable performance for research needs. For instance, Fortune magazine releases a reputation-based corporate reputation index each year for America's most admired companies. Businesses can achieve legitimacy and a competitive edge by using business reputation as a sustainability strategy. Reputation-based metrics have the drawback that respondents' impressions and the consequent corporate reputation ratings are skewed by the company's prior financial structure. Reputation-based metrics are therefore unlikely to accurately gauge sustained performance.⁷³

Indicators developed by outside parties have become the most popular way to gauge sustainable success in recent years. Numerous indexes have been developed to track organizations' sustainability performance, particularly in light of the rise in sustainable investment funds. Sustainability indices typically assign firm rankings based on criteria set by outside parties. The focus and diversity of the individual or organization conducting the assessment are the basis for the criteria employed in this procedure. Given that they are to some extent objective, these criteria can be applied to all types of businesses. However, because each sustainability index has a different sample size, the accuracy of the data that is generated could be compromised. Sustainability indices are regarded as significant indicators to examine the relationship between sustainable performance and financial performance today, despite concerns about measurement and indicators.⁷⁴

2.1.1 Economic Sustainable Performance

⁷² Landrum, N. E., & Ohsowski, B. (2018). Identifying worldviews on corporate sustainability: A content analysis of corporate sustainability reports. *Business Strategy and the Environment*, 27(1), 128-151.

⁷³ Sun, W., & Cui, K. (2014). Linking corporate social responsibility to firm default risk. *European Management Journal*, 32(2), 275-287.

⁷⁴ Oberndorfer, U., Schmidt, P., Wagner, M., & Ziegler, A. (2013). Does the stock market value the inclusion in a sustainability stock index? An event study analysis for German firms. *Journal of Environmental Economics and Management*, 66(3), 497-509.

The economic capital of an enterprise is referred to as economic sustainable performance. In other terms, the proper management of an organization's multiple economic capitals, including financial capital (such as equity, debt), tangible capital (such as machinery, land), and intangible capital (such as reputation, inventions, know-how), is referred to as economic sustainability. A business cannot function without financial resources. While striving to give their shareholders above-average returns, economically healthy enterprises also generate cash flow to prevent liquidity issues. There are seven basic categories under which the economic aspect of sustainability can be explained. The following succinct summary of these major subjects:

- **Corporate Governance:** Corporate governance makes sure a company is run in the shareholders' best interests (including minority interests),
- **Materiality:** This criterion intends to evaluate the organization's capacity to recognize long-term sources of value creation, comprehend the relationship between long-term problems and the condition of the organization, generate long-term measures, and transparently communicate such metrics.
- **Managing risks and crises:** Effective risk and crisis management is essential for organizational resilience and long-term financial planning,
- **Commercial ethics:** Economic crime frequently has a detrimental influence on a company's intangible assets, such as its reputation, staff morale, and the ability to form and maintain successful business connections. Internal controls appear to be insufficient when considering how economic crimes are actually found.
- **Influence on public policy:** While corporations may rightfully speak for themselves in public, political, and legal debate, they are also permitted to fund political campaigns, lobbying efforts, trade associations, and tax-exempt organizations. Businesses' reputations may suffer as a result. This criterion assesses how much money businesses spend on influencing or forming public policy, legislation, and regulations.
- **Supply chain management:** When a company outsources its production, service, or business processes in today's increasingly globalized world, it also outsources its corporate duties and reputational hazards. As a result, organizations must develop fresh approaches to the traditional risk and opportunity management that focus on the company's own products or services. Additionally, in order to meet supplier demands and boost profitability, the company must reduce prices and delivery times without compromising product quality or

imposing significant environmental or social costs. Investors are becoming more aware of the significance of supply chain risk management and its adverse effects if poorly handled. By using supply chain features or effective risk management, this criterion seeks to identify companies with lower supply chain risk profiles.

- Tax Strategy: While tax optimization has a positive impact on profitability and therefore business value, a tax strategy that is too aggressive may not be sustainable in the medium to long term and may pose some risk to long-term profits.

2.1.2 Environmental Sustainable Performance

Many people and institutions around the world pay particular attention to how corporations respond to environmental concerns such as global climate change, environmental degradation, resource depletion, water scarcity, and biodiversity. Environmental sustainability performance has begun to draw the attention of many players in the fields of business and policy at the national and international levels. Negative environmental implications include the loss of non-renewable resources, global warming, a decline in soil resources, acidification of the oceans, a decline in water resources, and significant risks to the health and safety of workers even as economic prosperity rises throughout the world. Various industries, governments, and non-governmental groups have launched plans to address sustainability development challenges in response to environmental abuses and degradation. Environmental challenges are becoming more and more significant to corporate stakeholders of the firm, including customers, shareholders, potential investors, creditors, employees, and the general public.⁷⁵

The enterprise's future assets and liabilities, risk profile, and investment value can all be impacted by the enterprise's sensitivity to environmental sustainability. Environmental concerns have prompted firms to look into the effects of their operations in this direction. Performance that is environmentally sustainable can be summed up as a company's greenhouse gas emissions, a reduction in the use of dangerous and toxic substances, and an effective use of resources. In this regard, environmental sustainable performance is strongly linked to lowering the frequency of environmental mishaps and creating tools for companies to better the environment.

⁷⁵ Marshall, R. S., Akoorie, M. E., Hamann, R., & Sinha, P. (2010). Environmental practices in the wine industry: An empirical application of the theory of reasoned action and stakeholder theory in the United States and New Zealand. *Journal of World Business*, 45(4), 405-414.

Environmental performance indicators promote policy development and external communication while also assisting companies (both public and commercial) in reducing their overall and specific environmental impacts. To discover, quantify, and transmit pertinent information, desired environmental indicators are variables.⁷⁶ Among the United Nations sustainable development goals, four main goals have been determined within the scope of environmental sustainability Goal 7. These four main goals are:

- Goal 7A: Integrating sustainable development principles into country policies and programs and reversing the loss of environmental resources,
- Goal 7B: Reducing biodiversity loss, achieving a significant reduction in loss rate by 2030,
- Goal 7C: Halve the proportion of the population without sustainable access to safe drinking water and basic sanitation by 2030.
- Goal 7D: To achieve a significant improvement in the lives of at least 100 million slum dwellers by 2030.

Indicators in the evaluation of environmental performance are very important especially for reporting and comparing the environmental performance of different organizations and for the adoption of relevant indicators to improve communication between stakeholders.

2.1.3 Social Sustainable Performance

A measure of a company's socially responsible performance is how it affects its customers and the community. In a broad sense, human rights, gender equality, fair working conditions, the development of human capital, charitable endeavors, relationships with suppliers and consumers, and contacts with the local community all have a role in how socially sustainable a firm is. Identification and management of both positive and negative effects of enterprises on people and society are key components of socially sustainable performance. In this regard, a company's relationships with and communication with its stakeholders are crucial. It is crucial for the company to proactively manage effects on its workforce, value chain participants, clients, and the neighborhood. Businesses' social initiatives depend heavily on their attempts to achieve socially sustainable performance. In addition to these initiatives, a lack of social development,

⁷⁶ Mazzi, A., Mason, C., Mason, M., & Scipioni, A. (2012). Is It Possible to Compare Environmental Performance Indicators Reported by Public Administrations? Results from an Italian Survey. *Ecological indicators*, 23, 653-659.

such as poverty, inequality, and lax legal regulations, might impede corporate operations and expansion. The foundation of human rights is the social dimension of sustainability, which is the subject of the first six articles of the UN Global Compact.⁷⁷

Businesses that place a greater emphasis on social sustainability take into account the value of their interactions with individuals, society, and society as a whole. Their primary business strategy incorporates social responsibility, and they think about the impact of their actions on others. A socially responsible company must take into account the security of its personnel wherever it operates. A socially responsible company won't make its workers' safety a priority by making them work in a dangerous structure. Certain dangers can be decreased by a company's socially responsible performance. Brand quality as well as product quality might be put at risk by poor socially responsible performance. A global company's reputation may suffer if a disaster results from outsourcing dangerous or malfunctioning manufacturing facilities, or if word about this gets to the public and the media. Similar to how failing to take precautions to safeguard public health may cost companies millions of dollars in product recalls.⁷⁸ Social sustainable performance of enterprises are discussed under four main headings. These main topics are:

Human rights and labor practices indicators: Employees are one of a company's most valuable assets. The success of business operations depends on maintaining positive relationships with employees, particularly in sectors with an organized workforce. Businesses should support fair treatment practices, such as ensuring diversity, equitable pay, and fostering freedom of association, in addition to providing a safe and healthy work environment. Businesses are required to adhere to equal standards of labor and human rights in their internal activities in accordance with international labor and human rights norms. Higher expectations for businesses in their capacities as responsible global citizens and promoters of sustainable business practices are also a result of growing customer knowledge. This criterion places an emphasis on freedom of association, equitable remuneration, and gender diversity in management.

⁷⁷ UN, Global Compact (2020).<https://www.unglobalcompact.org/what-is-gc/our-work/social>

⁷⁸ Rodriguez-Fernandez, M. (2016). Social responsibility and financial performance: The role of good corporate governance. *BRQ Business Research Quarterly*, 19(2), 137-151.

Human capital development: This term not only refers to having personnel with the necessary abilities to carry out the business strategy, but it also refers to enhancing talent attractiveness, employee retention, and motivation, which has a positive impact on productivity and innovation potential. Intellectual capital also contributes significantly to the enterprise's intangible assets in sectors of the economy that are more and more knowledge-based. Successful management of talent attraction and retention enables companies to uphold their competitive edge and carry out their corporate strategy.

Corporate Citizenship and Philanthropy: Corporate philanthropy initiatives must be well managed if they are to serve as a stimulus for growth. Businesses' philanthropy actions must be driven by a clear direction and emphasis in order to be effective from a cost/benefit standpoint. This creates value for both beneficiaries and shareholders. The benchmark primarily focuses on how firms evaluate the worth of corporate citizenship and philanthropy programs and how their programs are in line with the Sustainable Development Goals of the United Nations.

2.2 Sustainability indices

As a result of the growth in sustainable investment funds, a variety of sustainable performance indicators have been developed at both the national and international levels. These indicators aim to highlight the commitment of firms to economic, social, and environmental sustainability. The goal of sustainability performance indexes is to serve as a benchmark for various financial instruments as well as to measure the financial success of firms that are at the forefront of their respective industries in terms of environmental and social responsibility. These indices, which were developed in response to the growing investor interest in sustainable investments and in order to develop a performance assessment for sustainability, are designed to compare the performance of global sustainable investments and to assist investors in identifying businesses that use sustainable business practices that include the desire or the practice of social responsibility. The 1990s marked the beginning of a movement toward the creation of sustainable performance indexes. Accordingly, the first index created in 1990 was the MSCI KLD 400 social index. This index consists largely of US businesses and is the oldest US social responsibility index. Later in 1999, the Dow Jones Sustainability indices (DJSI) became the first global index to track the financial performance of leading sustainability-focused businesses

worldwide. The Dow Jones Sustainability index was followed by the Calvert Social Index, E. Capital Partners Ethics Index, and Jantzi Social Index (JSI), respectively.⁷⁹

Sustainable performance indices, created to measure the sustainable performance of businesses, provide useful information to investors and stakeholders by reporting their sustainability information through various channels. Institutional and individual investors have increasingly begun to take these indices into account when making their investment decisions. Because these indices are seen as objective and professional criteria evaluated by impartial actors. Since there is no generally accepted method on which criteria to measure the sustainable performance of businesses, many sustainability indexes have been created.

Sustainable performance indices are accepted as an appropriate indicator to measure the ESG performance, corporate sustainable performance and social responsibility performance of businesses.⁸⁰ Investors now make judgments while investing by taking socio-economic and ecological variables into account in addition to financial ones. Investors keep a careful eye on whether companies are added to or removed from sustainability indices. Different methodologies are used by sustainability indexes working at the national and worldwide levels to assess the sustainability performance of firms. Therefore, investors and particularly enterprises should pay attention to the selection criteria of sustainability indices.

2.2.1 Dow Jones Sustainability Index

The Dow Jones Sustainability Index (DJSI) is a family of indices that track the performance of companies that are leading the way in sustainable business practices. The DJSI assesses companies based on economic, environmental, and social factors and is considered one of the most widely used benchmarks for sustainable investing. Companies that are included in the DJSI are evaluated on a wide range of issues, including climate change, labor practices, and corporate governance. The DJSI is updated annually, and companies that meet the criteria for inclusion are added to the index.

⁷⁹ Hawn, O., Chatterji, A. K., & Mitchell, W. (2018). Do investors actually value sustainability? New evidence from investor reactions to the Dow Jones Sustainability Index (DJSI). *Strategic Management Journal*, 39(4), 949-976.

⁸⁰ Oberndorfer, U., Schmidt, P., Wagner, M., & Ziegler, A. (2013). Does the stock market value the inclusion in a sustainability stock index? An event study analysis for German firms. *Journal of Environmental Economics and Management*, 66(3), 497-509.

In addition, some criteria may have different weights within the corporate sustainability assessment, even when applied to more than one sector. For example, the occupational health and safety criteria within the social dimension of businesses operating in banking, electricity institutions and pharmacy sector have different relative weights for businesses operating in each sector. Although the occupational health and safety criterion is a general criterion, as can be seen in Table 10, its relative weight is 4% for businesses operating in the electricity sector, while it is 3% for businesses operating in the banking and pharmacy sectors.

2.2.2 FTSE4Good Index

The FTSE4Good Index is a stock market index created by the FTSE Group, a subsidiary of the London Stock Exchange Group. The index is designed to measure the performance of companies that meet certain environmental, social, and governance (ESG) criteria. Companies that are included in the index are evaluated based on a wide range of ESG factors, such as their environmental impact, labor practices, and corporate governance. The FTSE4Good Index is updated semi-annually, and companies that meet the criteria for inclusion are added to the index. The index is widely used as a benchmark for responsible investment funds and is considered one of the leading ESG indices in the world. FTSE4Good indices can be used in four basic ways. These:

- Financial Products: Index-based investments focused on sustainable investment are used as a tool in the creation of financial instruments or fund products;
- Research: Used to identify environmentally and socially sustainable businesses;
- Reference: Used to set a transparent and evolving ESG standard where businesses can evaluate their progress and success;
- Benchmark: It can be used as an indicator index to monitor the performance of sustainable investment portfolios.

The ESG rating data model includes more than 300 indicators, consisting of 14 themes and three main pillars. ESG data is based on publicly available information only. It does not accept information provided by businesses in order to increase reliability and transparency in the market. Ratings are made under the supervision of an independent committee that includes experts from investors, businesses, NGOs, trade unions and academia.

Adding and removing businesses to the FTSE4Good index series is created by the following steps: (FTSE4Good Index Series, 2019: 11)

- ESG scores are used as the basis to identify businesses in the FTSE4Good index series,
- Each business in the research universe is given an ESG score between 0 and 5,
- FTSE Russell classifies countries as developed and leading developing countries,
- Businesses in developed markets must have an ESG score of at least 3.1 or higher,
- Businesses in developing countries must have an ESG score of 2.5 or higher,
- If the ESG scores of enterprises in developed markets are below 2.7, the enterprise is at risk of being excluded from the index,
- Businesses in emerging markets are at risk of being excluded from the index if their ESG score is below 2.1,
- Businesses in the tobacco, firearms, coal and investment partnerships sectors are not included in the index and if the indexed businesses operate in these sectors, they are excluded from the index,
- FTSE4Good index components are reviewed twice a year, in June and December.

2.2.3 ETHIBEL Sustainability Index

The ETHIBEL Sustainability Index (ESI) is a stock market index created by the Belgian organization VBDO (Association of Flemish Investment Companies for Sustainable Development) and Ethibel, a European sustainability label. The index is designed to measure the performance of companies that meet certain environmental, social and governance (ESG) criteria and are considered leaders in sustainability. The ESI is based on the analysis of a wide range of ESG factors, such as environmental impact, labor practices, and corporate governance. The index is updated annually and companies that meet the criteria for inclusion are added to the index. The ESI is widely used as a benchmark for responsible investment funds and is considered one of the leading ESG indices in Europe. Forum ETHIBEL outsources the research to Vigeo Eiris, a leading European rating agency, in order to strictly separate the evaluation and selection processes for inclusion and removal of businesses from the Ethibel indices, and to guarantee

quality and impartiality. Vigeo Eiris independently evaluates according to Ethibel specifications and reports the results to Forum ETHIBEL. Vigeo Eiris conducts corporate sustainability research in line with six factors identified by ETHIBEL that cover all aspects of corporate social responsibility:

- Human rights,
- Human Capital,
- Environment,
- Social Impact,
- Market Ethics,
- Good Governance. As a result of the evaluation made according to these six criteria, businesses are graded between 0 and 100 points.
- Little or very low commitment 0 points,
- Poor or average commitment 30 points,
- Strong commitment 65 points,
- Very strong commitment is 100 points.

As a result of this rating, businesses are defined in 6 different ways. These:

- A. Pioneers, extremely powerful or innovative,
- B. Best in class. Businesses with the best scores in their industry,
- C. Above average in the industry,
- D. Below average in the industry,
- E. Well below average and/or not transparent (not enough information),
- F. Businesses with activities related to armament, gambling, nuclear energy and tobacco.

The index does not include businesses operating in the arms, tobacco, alcohol, soil regulation, shale gas, gambling, nuclear energy, dangerous chemicals, porn industry, GMO

product sector. It evaluates twice a year, in March and September, in order to include and exclude businesses from the index.

2.2.4 Social Responsibility Index (SRI)

The index, which is the first index to start operating in developing countries, was launched in 2004 by the Johannesburg stock market with the participation of 51 companies. Businesses that want to voluntarily participate in the Responsible Investment index are evaluated according to the environmental, social and corporate valuation criteria prepared by the FTSE Russell enterprise.

Table 2. Social Responsibility Index ESG Valuation

Environmental	Social	Corporative
biodiversity	Customer Responsibilities	Anti-Corruption
Climate Change	Health and safety	Corporate Governance
Environmental pollution and resources	Human Rights and Society	Risk management
Supply chain	Labor Standards	Tax Transparency
Water use	Supply chain	

More than 300 sub-criteria are included in the 14 fundamental criteria in Table 2. Each firm is subjected to 125 criteria in this approach. Businesses must surpass the qualitative levels from 14 criteria in these three main areas in order to be counted in the SRI index. Enterprise data that is publicly available is used for evaluation; no surveys are undertaken to gather data. People can see the reasons why a business is underperforming or undervaluing itself when the evaluation is made public. Businesses also get the chance to evaluate and analyze the evaluation's findings. The index includes 71 companies as of May 31, 2019, representing 17 distinct industries. The largest weights in the index are banks and technology companies, with respective weights of 27.85% and 15.15 percent.

2.2.5 Corporate Sustainability Index (ISE)

In December 2005, the second sustainability index (ISE) for use in developing nations was developed. The International Finance Corporation (IFC), a division of the World Bank, provided the financial and technical support for the creation of ISE, which seeks to be a voluntary participation index of 39 companies chosen for their environmental, social, and management performance. Businesses must be among the 200 most liquid companies on the Brazilian Sao Paulo Stock Exchange in order to qualify for participation in the ISE. The companies chosen for the ISE remain in the index for the duration of the year, and the ISE can only include a maximum of 40 companies. Every year, candidates are chosen for the index based on their responses to the questions in the poll, which typically have 300 questions. Businesses now have the chance to assess their own performance by contrasting it with the anticipated values thanks to this survey.

The 200 most liquid companies on the Brazilian Stock Exchange (B3) participated in the 13th elections of the ISE Corporate Sustainability Index, in which the shares and companies included are chosen annually since its founding in 2005. The index spans the period from January 2018 to January 2019. The list will feature 33 shares of 30 different companies, according to the announcement. These 30 companies, which represent 12 distinct industry sectors, account for 41.47% of the market value of all companies listed on the Brazilian Stock Exchange (B3).

2.2.6 BIST Sustainability Index

Corporate sustainability studies in Turkey started with the Borsa İstanbul Sustainability Index project in October 2013 as a result of the cooperation between Ethical Investment Research Services Limited (EIRIS) and Borsa İstanbul (BIST). BIST Sustainability Index started to be calculated and published as price and yield with the code XUSRD as of November 4, 2014. The starting value of the index is 98.020.09, which is the closing value of the BIST 30 price index for the Second Session dated 03.11.2014. The weight of a share in the index is limited to 15%.

For the BIST Sustainability Index, there is 1 index period per year, from November to October. For the index, which started with the valuation of the businesses included in the BIST 30 index in 2014, as of 2019, volunteers from the businesses included in the BIST 100 or BIST Sustainability indices are evaluated. In the index research methodology, businesses are included or excluded from the index by considering the criteria listed below:

- Environment,
- Biodiversity,
- Climate Change,
- Board of Directors Structure,
- Anti-Bribery,
- Human rights,
- Supply chain,
- Health and Safety.

2.3 Financial performance

Financial performance refers to the ability of a company to generate profits and create value for its shareholders.⁸¹ It is a measure of how well a company is using its resources to generate revenue, manage costs, and generate profits over time. Financial performance can be measured through various financial ratios and indicators such as Return on Equity (ROE), Return on Investment (ROI), Earnings Per Share (EPS), and Gross Profit Margin (GPM). Financial performance has a significant impact on a company's long-term success and can be influenced by factors such as management decisions, industry competition, and macroeconomic conditions. Financial performance can be used to evaluate a company's operational efficiency, profitability, and liquidity, and can be used to make informed investment decisions.

The fulfillment of economic goals may be judged in a variety of ways, though. Businesses, investment managers, analysts, and researchers all utilize various gauges in this direction depending on the scenario. The capacity of a company to reduce operational expenses, utilize resources effectively, and maximize shareholder value is measured overall by its financial success.⁸² Two financial performance metrics often stand out when looking at the studies on both sustainable performance and financial performance. Both market-based and accounting-based

⁸¹ Molina-Azorín, J. F., Claver-Cortés, E., López-Gamero, M. D., & Tarí, J. J. (2009). Green management and financial performance: a literature review. *Management decision*.

⁸² Ameer, R., & Othman, R. (2012). Sustainability practices and corporate financial performance: A study based on the top global corporations. *Journal of business ethics*, 108(1), 61-79.

measures are used in these techniques. Both measuring methods have benefits and drawbacks. While market-based metrics concentrate on the firm's future success rather than its previous financial performance, accounting-based measures stress the historical characteristics of the firm's financial performance. Because market-based assessment conveys investor expectations, it is less impacted by accounting standards and managerial prejudice.

2.3.1 Accounting Based Financial Performance Measurements

Accounting-based metrics highlight historical aspects of a business's financial performance. Accounting-based measurements are made with data obtained from financial statements such as balance sheets and income statements of enterprises. Accounting-based measurements may not yield reliable results due to differences in accounting procedures and managerial manipulation. These ratios somehow represent the internal efficiency of the business. Accounting-based metrics can be used by business managers to fund different projects and policy choices. Therefore, accounting-based financial performance measures reflect management's performance and decision-making capacity for the business, rather than external reactions from the market. Accounting-based measures show efficiency and organizational capabilities better than market-based measures. In line with the studies examining the relationship between sustainable performance and financial performance, the most widely used accounting-based financial performance measures in the literature are variables such as return on assets, return on equity, sales revenues and earnings per share ratios.⁸³

The return on assets ratio is the accounting-based metric that is most commonly used in research exploring the connection between sustainable performance and financial performance. Return on assets is a fundamental metric of profitability used to assess a company's capacity to create profits in relation to its assets or to gauge the efficiency of its assets. The return on assets ratio, in other words, exhibits overall profitability. This yields a single ratio for profit-cost and investments. Given that it can be compared to the return on assets of all investments made both inside and outside the company, it is one of the most often used performance evaluation metrics. The return on assets ratio demonstrates how efficiently an organization uses its total assets. The return on assets ratio has been utilized as a measure of financial success in several research

⁸³ McGuire, J. B., Sundgren, A., & Schneeweis, T. (1988). Corporate social responsibility and firm financial performance. *Academy of management Journal*, 31(4), 854-872.

looking at the connection between return on assets and sustainable performance in the literature. This is how the return on assets is determined:

$$ROA = \frac{Net\ profit}{Total\ assets}$$

In general, equity is a reflection of a company's short-term financial performance since it measures how a company uses its equity to make profits, and earnings are the primary indicator of a company's success. The most often used indicator of financial performance is return on equity, coupled with return on assets. Return on equity can be a sign of a company's effective corporate governance practices as a financial performance metric compared to sustainable performance. Return on equity is another measure that aids investors in decision-making. As a benchmark, the difference in return on equity between the two time periods might be employed. Investors might consider this information to be essential. High-growth companies are thought to have a greater return on equity and are more likely to have made prior investments in reputation capital. The formula for return on equity is as follows:⁸⁴

$$ROE = \frac{Net\ profit}{Equity\ Capital}$$

2.3.2. Market Based Financial Performance Measurements

Because market-based financial performance measurement methods are less dependent on accounting rules, they are less susceptible to managerial subjectivity, manipulation and opportunism. Market-based measures of financial performance are determined by an external and independent assessment of the business's performance, as it reflects investors' perceptions and expectations of the business's future performance. Market-based measures reflect investors' perceptions and expectations of the future performance of the business. Since market-based metrics use capital market parameters such as stock prices to evaluate the financial performance of the business, their focus is only on financial stakeholders, while non-financial stakeholders are also affected by corporate social behavior and mismanagement. The advantage of market-based measurements is that businesses are less dependent on accounting policies and managerial manipulation. They also represent an assessment of investors' ability to generate future economic

⁸⁴ Van Horne, J. C., & Wachowicz, J. M. (2008). *Fundamentals of Financial Management*. Pearson Education.

gains rather than past performance.⁸⁵ The most often employed market-based performance evaluation techniques in research exploring the link between sustainable performance and financial success in the literature are Tobin's q ratio, stock performance, and market value-book value ratio. These metrics are consistent with the notion that the main stakeholder group influencing the company's future is its shareholders. Two significant market-based financial performance metrics that are widely cited in the literature are described in this way.

Tobin's q ratio is a widely used market-based financial performance evaluation tool in research looking at the connection between sustainable performance and financial performance. James Tobin proposed the q ratio, which is a ratio used when deciding how much to invest in a company. In this regard, a ratio larger than 1 denotes successful use of organizational resources, whereas a ratio lower than 1 denotes ineffective use, or inefficiency, of organizational resources. The corporation will raise its investment if the ratio q is higher than 1. The firm will cut its investment if the ratio is less than 1.⁸⁶ The Tobin q ratio reflects the expected future performance of the business in addition to past and current performance. For this reason, it can be said that the tobin q ratio is a good criterion in the evaluation of business performance. As a market-based performance indicator, the Tobin q value is calculated as follows:

$$\text{Tobin's Q Ratio}(TQ) = \frac{(\text{Total Assets} + \text{Equity Market Cap} - \text{Equity Book Value})}{\text{Total Assets}}$$

Or

$$\text{Tobin's Q Ratio}(TQ) = \frac{\text{Total Market Cap of the Business}}{\text{Total Assets}}$$

The performance of the stock reflects the expectations of investors and the outcome of management's actions by investors buying or selling shares of the business. In recent years, stock returns have been used as a measurement tool in many studies as a financial performance indicator in studies examining the relationship between sustainable performance and financial performance. Assuming that the financial markets reflect all the information, the stock price is

⁸⁵ Gregory, A., Tharyan, R., & Whittaker, J. (2014). Corporate Social Responsibility and Firm Value: Disaggregating the Effects on Cash Flow, Risk and Growth. *Journal of Business Ethics*, 124(4), 633-657

⁸⁶ Elsayed, K., & Paton, D. (2005). The impact of environmental performance on firm performance: static and dynamic panel data evidence. *Structural change and economic dynamics*, 16(3), 395-412.

used as an indicator of the financial performance of the business. Especially after the emergence of sustainability indices, stock returns stand out as an important financial performance indicator in studies examining the relationship between sustainability and financial performance using the event study method.⁸⁷s

Chapter 3. Research on sustainability and financial performance indicators

3.1 Purpose and importance of the research

Sustainability has become a vital topic in recent years, and it is increasingly being emphasized by businesses worldwide. While the significance of businesses' role in economic and

⁸⁷ Wang, Y. S., & Chen, Y. J. (2017). Corporate social responsibility and financial performance: Event study cases. *Journal of Economic Interaction and Coordination*, 12(2), 193-219.

technological progress is acknowledged, the contribution of businesses to social and environmental problems such as pollution, resource depletion, waste, labor rights, and social responsibility is also criticized. Therefore, businesses must balance their financial success with social and environmental responsibility to maintain consistency in their operations. This research aims to investigate the impact of firms' financial performance on their sustainability performance indicators' knowledge level provided by companies that publish sustainability reports in Turkey.

The study's importance lies in providing insight into the degree to which businesses in Turkey disclose their sustainability performance indicators in their sustainability reports. Furthermore, the research aims to identify the factors that influence businesses' disclosure of sustainability performance indicators, such as industry, firm size, age, and ownership structure. By examining the relationship between financial performance and sustainability reporting, this research contributes to the literature on sustainable development and business management.

The study's first objective is to assess the degree to which businesses that produce sustainability reports communicate their knowledge of sustainability performance metrics, including economic, environmental, and social indicators. This objective is essential because it enables us to understand how much information businesses disclose about their sustainability performance, which is critical for stakeholders to assess businesses' sustainability performance. The second objective is to examine the impact of sustainability performance indicators on the company's financial performance. This objective is essential because it enables us to understand the relationship between sustainability reporting and financial performance, which is critical for businesses to assess the benefits of sustainability reporting.

3.2 Scope of the research and data set

The dataset covers the financial performance indicators of different companies for the years 2019, 2020, and 2021. The author derived the indicators from the annual reports of these companies. The dataset provided contains information about several firms. Here is a description of the dataset: The dataset includes information about 46 firms belonged to the following industries. The sectors mentioned in the dataset include: Utilities (3 companies), Basic Materials (6 companies), Consumer Cyclical (12 companies), Consumer Non-Cyclical (9 companies), Industrial (8 companies), Energy (3 companies), and Technology (5 companies).

- List of Indicators:
- Name: The name of the firm.
- RIC: Reuters Instrument Code, a unique identifier for the firm.
- TRBC Economic Sector Name: The economic sector to which the firm belongs.
- ESG Score: Environmental, Social, and Governance (ESG) score, which indicates a firm's performance in these areas.
- Presentation Currency: The currency in which the financial data is presented.
- Revenues: The total revenues generated by the firm.
- Profit (Loss) Before Financing Income (Expense) (EBIT): The profit or loss before taking into account financing income or expense.
- EBIT % (EBIT/Rev): The EBIT as a percentage of revenues, representing the profitability of the firm.
- Net Profit (Loss): The net profit or loss generated by the firm.
- Profit Margin (Net Profit/Rev): The net profit as a percentage of revenues, representing the profitability of the firm.
- Total Liabilities: The total liabilities of the firm.
- Total Assets: The total assets owned by the firm.
- Total Equity: The total equity or shareholders' equity of the firm.
- Total Liab/Total Assets (Financial Leverage): The ratio of total liabilities to total assets, indicating the financial leverage of the firm.
- ROA (Net Profit / Total Assets): Return on Assets, calculated as the net profit divided by total assets.
- ROE (Net Profit/Total Equity): Return on Equity, calculated as the net profit divided by total equity.
- ROI (EBIT/Total Assets): Return on Investment, calculated as EBIT divided by total assets.

Banks and holdings are excluded from the dataset because they often have different methods of calculating financial indicators compared to other types of firms. Banks and holdings operate in the financial sector and have unique financial structures, regulatory requirements, and accounting standards that are specific to their industry.

Banks, for example, have complex financial operations that involve lending, borrowing, and managing deposits. They generate revenue through interest income, fees, and other financial activities. Their financial statements and indicators are heavily influenced by factors such as loan provisions, credit risk, liquidity ratios, and capital adequacy ratios, which are not typically applicable to non-financial firms.

Similarly, holdings or holding companies have a different structure and purpose. They typically own controlling interests in other companies, known as subsidiaries, and their primary function is to manage and control these subsidiary companies. Their financial statements and indicators may include consolidated figures that reflect the performance of the subsidiaries, making it challenging to isolate the financial performance of the holding company itself.

Due to these unique characteristics and different methods of calculating financial indicators, including banks and holdings in the dataset could lead to misleading or incomparable results when analyzing the overall dataset. Therefore, to ensure consistency and comparability, banks and holdings are often excluded from datasets that focus on non-financial firms or when analyzing specific industries.

The dataset provides financial and performance indicators for each firm, including revenues, profitability, leverage, and returns on assets and equity. These indicators are important for analyzing the financial health and performance of the firms in their respective sectors. The financial indicators used in the dataset provide an insight into the performance of the companies in terms of profitability, efficiency, and financial stability. EBIT represents the company's profitability before taking into account the interest and tax expenses. ROE and ROA indicate the company's ability to generate profits using its equity and assets, respectively. ROI represents the company's ability to generate profits using its investment. Financial leverage shows how much debt the company has compared to its assets. The dataset also includes the ESG Score provided by BIST, which represents the Environmental, Social, and Governance Score of the company. This score measures how well the company is managing its environmental and social impact and how well it is governed.

3.3 Research method

OLS (ordinary least squares) regression is a statistical technique that is commonly used to analyze the relationship between two or more variables. In the context of this study, OLS regression will be used to test the hypotheses and examine the relationship between the ESG scores announced by the companies for their sustainability performance indicators and the financial indicators of the company. The OLS regression is a simple linear regression model that assumes a linear relationship between the dependent variable and the independent variable(s). In OLS regression, the goal is to find a line that best fits the data, where the line is defined by the slope and the intercept. The slope represents the rate of change in the dependent variable as a result of a one-unit change in the independent variable, while the intercept represents the expected value of the dependent variable when the independent variable is equal to zero. The suitability of OLS regression for this study lies in its ability to estimate the relationship between two or more variables, which is important for understanding the impact of sustainability performance indicators on financial performance. OLS regression also allows for the identification of potential outliers and influential observations that can impact the relationship between the variables, which is important for ensuring the validity of the results. Moreover, OLS regression is a widely used technique in econometrics, and it provides a clear and concise way of testing hypotheses about the relationship between variables. This makes it a suitable choice for this study, where the focus is on testing the hypotheses about the relationship between ESG scores and financial indicators of the company. To test the hypotheses using Ordinary Least Squares (OLS) regression, we can formulate the following models:

Model for Ho1:

$$\text{EBIT \%} = \beta_0 + \beta_1 * \text{ESG score} + \varepsilon$$

Model for Ho2:

$$\text{RoE} = \beta_0 + \beta_1 * \text{ESG score} + \varepsilon$$

Model for Ho3:

$$\text{Financial leverage} = \beta_0 + \beta_1 * \text{ESG score} + \varepsilon$$

Model for Ho4:

$$\text{RoA} = \beta_0 + \beta_1 * \text{ESG score} + \varepsilon$$

Model for Ho5:

$$\text{RoI} = \beta_0 + \beta_1 * \text{ESG score} + \varepsilon$$

In each model, the dependent variable represents the financial indicator (EBIT %, RoE, Financial leverage, RoA, RoI) of the company, while the independent variable is the ESG score announced by the companies for their sustainability performance indicators. The coefficients β_0 and β_1 represent the intercept and slope of the regression line, respectively. The null hypothesis (H_0) assumes that there is no significant relationship between the ESG score and the respective financial indicator, implying that β_1 is equal to zero. The error “ ε ” provides an explanation for the difference between the theoretical value of the model and the actual observed results. To test these hypotheses, statistical techniques such as hypothesis testing or examining the significance of the regression coefficient can be applied.

3.4 Research hypotheses

The hypotheses listed are related to testing the relationship between a company's ESG (Environmental, Social, and Governance) score and various financial indicators, namely EBIT %, RoE, Financial leverage, RoA, and RoI. The study aims to use OLS regression to examine the existence and strength of any relationships between these variables.

H₀₁: There is no significant relationship between the ESG score announced by the companies for the sustainability performance indicators and the EBIT % financial indicator of the company.

H₀₁ suggests that there is no significant relationship between a company's ESG score and its EBIT % financial indicator. EBIT %, also known as Earnings Before Interest and Taxes, is a measure of a company's profitability, indicating how much profit a company generates from its operations. In contrast, ESG scores measure a company's performance in environmental, social, and governance areas. The null hypothesis suggests that these two variables are unrelated, meaning that a company's ESG performance does not impact its profitability.

Ho₂: There is no significant relationship between the ESG score announced by the companies for the sustainability performance indicators and the RoE financial indicator of the company.

Ho₂ suggests that there is no significant relationship between a company's ESG score and its RoE (Return on Equity) financial indicator. RoE is a measure of a company's profitability relative to the equity shareholders have invested in the company. This hypothesis implies that a company's ESG score does not affect its ability to generate profits using shareholder equity.

Ho₃: There is no significant relationship between the ESG score announced by the companies for their sustainability performance indicators and the company's Financial leverage financial indicator.

Ho₃ proposes that there is no significant relationship between a company's ESG score and its Financial leverage financial indicator. Financial leverage is a measure of a company's debt level compared to its equity. The null hypothesis suggests that a company's ESG score does not impact its debt levels and, therefore, does not impact its financial structure.

Ho₄: There is no significant relationship between the ESG score announced by the companies for the sustainability performance indicators and the RoA financial indicator of the company.

Ho₄ suggests that there is no significant relationship between a company's ESG score and its RoA (Return on Assets) financial indicator. RoA is a measure of a company's profitability relative to its total assets. This hypothesis implies that a company's ESG score does not impact its ability to generate profits from its assets.

Ho₅: There is no significant relationship between the ESG score announced by the companies for the sustainability performance indicators and the RoI financial indicator of the company.

Ho₅ proposes that there is no significant relationship between a company's ESG score and its RoI (Return on Investment) financial indicator. RoI is a measure of a company's profitability relative to the amount of money invested in the company. The null hypothesis implies that a company's ESG score does not impact its profitability relative to its investments.

To test these hypotheses, the study will use OLS regression, a statistical method used to examine the relationship between two or more variables. The study will likely collect data on the ESG scores and financial indicators of several companies and use regression analysis to determine whether there is a statistically significant relationship between these variables. If the null hypothesis is rejected, it means that there is a statistically significant relationship between the ESG score and the respective financial indicator. If the alternative hypothesis is accepted, it means that the ESG score has an impact on the financial indicator, which could be positive or negative, depending on the strength of the relationship.

3.5. Analysis results

H01: There is no significant relationship between the ESG score announced by the companies for the sustainability performance indicators and the EBIT % financial indicator of the company.

Table 3. OLS, using observations 1-138, Dependent variable: EBIT

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	26.1470	8.05029	3.248	0.0015	***
ESG Score	-0.0950178	0.107446	-0.8843	0.3781	
Mean dependent var	19.09420	S.D. dependent var	12.86533		
Sum squared resid	22546.13	S.E. of regression	12.87557		
R-squared	0.005717	Adjusted R-squared	-0.001594		
F(1, 136)	0.782035	P-value(F)	0.378080		
Log-likelihood	-547.4420	Akaike criterion	1098.884		
Schwarz criterion	1104.739	Hannan-Quinn	1101.263		

The OLS regression analysis aims to investigate whether there is a statistically significant relationship between the ESG (Environmental, Social, and Governance) score of 47 companies listed in BIST (Borsa Istanbul) and their EBIT (Earnings Before Interest and Taxes) for the years

2019-2020-2021. The regression results are presented in the table above. The coefficient of determination (R-squared) is 0.005717, which means that only 0.57% of the variation in EBIT can be explained by changes in the ESG score. The coefficient of ESG score is negative (-0.0950178), indicating that there is a negative relationship between ESG score and EBIT. However, this coefficient is not statistically significant at the 5% level since the p-value (0.3781) is greater than the critical value of 0.05.

The regression also reports the F-statistic, which tests the overall significance of the model. In this case, the F-value is 0.782035 with a corresponding p-value of 0.378080, which means that the model is not statistically significant. Therefore, based on the regression results, we cannot reject the null hypothesis (Ho1) that there is no significant relationship between the ESG score and EBIT % financial indicator of the company. The regression analysis does not provide evidence that the ESG score is a significant predictor of the company's financial performance, as measured by EBIT. However, it is worth noting that the coefficient of determination is relatively low, which suggests that other factors not included in the regression analysis may be driving the variation in EBIT. Additionally, the regression assumes that the relationship between the ESG score and EBIT is linear, which may not be the case in reality.

Ho2: There is no significant relationship between the ESG score announced by the companies for the sustainability performance indicators and the RoE financial indicator of the company.

Table 4. OLS, using observations 1-138, Dependent variable: ROE

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	57.6357	11.3893	5.061	<0.0001	***
ESGScore	-0.386571	0.152012	-2.543	0.0121	**
Mean dependent var	28.94203	S.D. dependent var	18.57585		
Sum squared resid	45127.65	S.E. of regression	18.21595		
R-squared	0.045393	Adjusted R-squared	0.038374		

F(1, 136)	6.467014	P-value(F)	0.012109
Log-likelihood	-595.3233	Akaike criterion	1194.647
Schwarz criterion	1200.501	Hannan-Quinn	1197.026

The OLS (ordinary least squares) test results show that the model has a statistically significant relationship between the ROE (Return on Equity) financial indicator of the company and the ESG (Environmental, Social, and Governance) score announced by the companies for sustainability performance indicators. The coefficient of the constant term (intercept) is 57.6357, indicating that if the ESG score is zero, the expected value of the ROE is approximately 57.6357. The coefficient of the ESG score is -0.386571, indicating that for every unit increase in the ESG score, the expected value of the ROE decreases by 0.386571 units.

The p-value associated with the ESG score is 0.0121, which is less than the significance level of 0.05, suggesting that the ESG score has a significant effect on the ROE financial indicator of the company. Therefore, we can reject the null hypothesis Ho2: There is no significant relationship between the ESG score announced by the companies for the sustainability performance indicators and the ROE financial indicator of the company. The R-squared value, which represents the proportion of the variance in the dependent variable (ROE) that can be explained by the independent variable (ESG score), is 0.045393. This indicates that only 4.5% of the variation in the ROE can be explained by the ESG score, which is a relatively small effect.

Based on the OLS test results, we can reject the null hypothesis Ho2: There is no significant relationship between the ESG score announced by the companies for the sustainability performance indicators and the ROE financial indicator of the company. The p-value associated with the ESG score is 0.0121, which is less than the significance level of 0.05, indicating that the ESG score has a significant effect on the ROE financial indicator of the company.

Ho3: There is no significant relationship between the ESG score announced by the companies for their sustainability performance indicators and the company's Financial leverage financial indicator.

Table 5. OLS, using observations 1-138, Dependent variable: Financial leverage

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	19.5979	10.7728	1.819	0.0711	*
ESGScore	0.104214	0.143784	0.7248	0.4698	
Mean dependent var	27.33333	S.D. dependent var		17.20012	
Sum squared resid	40374.71	S.E. of regression		17.23000	
R-squared	0.003848	Adjusted R-squared		-0.003477	
F(1, 136)	0.525332	P-value(F)		0.469821	
Log-likelihood	-587.6442	Akaike criterion		1179.288	
Schwarz criterion	1185.143	Hannan-Quinn		1181.667	

The OLS (ordinary least squares) test provides insights into the relationship between the ESG score and financial leverage of companies. The OLS regression model with a dependent variable financial leverage indicates that the intercept or constant value is 19.5979, with a standard error of 10.7728, and a t-ratio of 1.819. The coefficient of the ESG score is 0.104214, with a standard error of 0.143784, and a t-ratio of 0.7248. The p-value associated with the ESG score coefficient is 0.4698, which is greater than the standard alpha level of 0.05. The mean and standard deviation of the dependent variable, i.e., financial leverage, are 27.33333 and 17.20012, respectively. The sum of squared residuals is 40374.71, and the standard error of regression is 17.23000. The R-squared value, which indicates the proportion of the variance in the dependent variable explained by the independent variable(s), is 0.003848. The adjusted R-squared value, which takes into account the number of independent variables and the sample size, is -0.003477. The F-statistic value, which tests the overall significance of the model, is 0.525332 with a p-value of 0.469821.

Based on the OLS test results, we cannot reject the null hypothesis (Ho3) that there is no significant relationship between the ESG score announced by the companies for their

sustainability performance indicators and the company's financial leverage financial indicator. The p-value associated with the ESG score coefficient is greater than the standard alpha level of 0.05, indicating that the ESG score is not a statistically significant predictor of financial leverage. From a financial perspective, the results suggest that ESG scores may not have a significant impact on a company's financial leverage. Financial leverage measures the extent to which a company uses debt financing relative to equity financing to fund its operations. A higher financial leverage ratio indicates that a company has a higher proportion of debt relative to equity. A company with a high financial leverage ratio may have difficulty paying off its debt obligations if its earnings decrease, which could negatively impact its creditworthiness and financial stability. However, the ESG score may not be a critical factor affecting a company's financial leverage ratio, and other factors such as market conditions, business strategy, and management decisions may play a more significant role in determining a company's leverage.

Ho4: There is no significant relationship between the ESG score announced by the companies for the sustainability performance indicators and the RoA financial indicator of the company.

Table 6. OLS, using observations 1-138, Dependent variable: ROA

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	25.1043	5.49909	4.565	<0.0001	***
ESGScore	-0.144231	0.0733958	-1.965	0.0514	*
Mean dependent var	14.39855	S.D. dependent var		8.886585	
Sum squared resid	10520.36	S.E. of regression		8.795202	
R-squared	0.027611	Adjusted R-squared		0.020461	
F(1, 136)	3.861677	P-value(F)		0.051439	
Log-likelihood	-494.8467	Akaike criterion		993.6933	
Schwarz criterion	999.5478	Hannan-Quinn		996.0725	

The OLS regression model with the dependent variable ROA indicates that the intercept or constant value is 25.1043, with a standard error of 5.49909, and a t-ratio of 4.565. The coefficient of the ESG score is -0.144231 , with a standard error of 0.0733958, and a t-ratio of -1.965 . The p-value associated with the ESG score coefficient is 0.0514, which is slightly greater than the standard alpha level of 0.05.

The mean and standard deviation of the dependent variable, i.e., ROA, are 14.39855 and 8.886585, respectively. The sum of squared residuals is 10520.36, and the standard error of regression is 8.795202. The R-squared value, which indicates the proportion of the variance in the dependent variable explained by the independent variable(s), is 0.027611. The adjusted R-squared value, which takes into account the number of independent variables and the sample size, is 0.020461. The F-statistic value, which tests the overall significance of the model, is 3.861677 with a p-value of 0.051439. Based on the OLS test results, we cannot reject the null hypothesis (Ho4) that there is no significant relationship between the ESG score announced by the companies for their sustainability performance indicators and the ROA financial indicator of the company. The p-value associated with the ESG score coefficient is slightly greater than the standard alpha level of 0.05, indicating that the ESG score may not be a statistically significant predictor of ROA.

From a financial perspective, the results suggest that ESG scores may not have a significant impact on a company's return on assets. Return on assets measures how efficiently a company uses its assets to generate profits. A higher ROA indicates that a company is generating more profits from its assets, which is a positive sign of its financial health. The ESG score may be an important factor in determining a company's sustainability practices, but it may not have a direct impact on its financial performance, especially in terms of ROA. Other factors such as operational efficiency, competitive landscape, and market conditions may play a more significant role in determining a company's ROA. Therefore, we cannot reject the null hypothesis that there is no significant relationship between the ESG score and ROA.

Ho5: There is no significant relationship between the ESG score announced by the companies for the sustainability performance indicators and the RoI financial indicator of the company.

Table 7. OLS, using observations 1-138, Dependent variable: ROI

	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-ratio</i>	<i>p-value</i>	
const	21.2944	5.45424	3.904	0.0001	***
ESGScore	-0.108816	0.0727972	-1.495	0.1373	
Mean dependent var	13.21739	S.D. dependent var		8.762677	
Sum squared resid	10349.44	S.E. of regression		8.723466	
R-squared	0.016164	Adjusted R-squared		0.008930	
F(1, 136)	2.234389	P-value(F)		0.137287	
Log-likelihood	-493.7165	Akaike criterion		991.4330	
Schwarz criterion	997.2875	Hannan-Quinn		993.8121	

The fifth regression analysis examines the relationship between the ESG score announced by the companies for their sustainability performance indicators and the ROI financial indicator of the company. The coefficient for ESGScore is -0.108816, and the p-value is 0.1373. The adjusted R-squared value is 0.008930, which implies that only 0.9% of the variations in ROI can be explained by the ESG score. Since the p-value is higher than the significance level of 0.05, we fail to reject the null hypothesis (Ho5), which states that there is no significant relationship between the ESG score and ROI of the company.

From a financial perspective, ROI is a profitability ratio that measures how much profit a company generates in relation to the capital invested. Companies with higher ROI are considered more efficient and profitable. Therefore, a higher ESG score does not necessarily guarantee a better ROI. The lack of a significant relationship between ESG and ROI could be because ESG initiatives can be costly to implement, and the financial benefits may not be realized in the short term. Thus, companies may not see a significant return on investment in terms of their financial performance. Nonetheless, companies that prioritize ESG initiatives tend to have a more sustainable business model that can contribute to their long-term success.

3.6 Evaluation of results

From a financial perspective, the results of the hypotheses can provide insight into the relationship between a company's ESG score and its financial performance. The result of Ho1 indicates that there is no significant relationship between a company's ESG score and its EBIT% financial indicator. EBIT is a measure of a company's profitability and stands for Earnings Before Interest and Taxes. The lack of a significant relationship between a company's ESG score and its EBIT% financial indicator could be attributed to several factors. First, the relationship between sustainability performance and financial performance is often complex and indirect. While sustainability initiatives may lead to increased efficiency, cost savings, and improved risk management, they may not necessarily translate into higher profitability in the short term. Therefore, a company's ESG score may not have a direct impact on its EBIT%.

Table 8. Overall results of hypotheses

H	Dep. Var.	Ind. Var.	Coeff.	t-ratio	p-value	conclusion
1	EBIT	ESG score	-0.0950178	-0.8843	0.3781	Accepted
2	RoE	ESG score	-0.386571	-2.543	0.0121	Rejected
3	Financial	ESG score	0.104214	0.7248	0.4698	Accepted
4	RoA	ESG score	-0.144231	-1.965	0.0514	Accepted
5	RoI	ESG score	-0.108816	-1.495	0.1373	Accepted

Second, the impact of sustainability initiatives on financial performance may vary across different industries and companies. For example, a company in the renewable energy industry may have a stronger relationship between its sustainability practices and financial performance compared to a company in the oil and gas industry. This is because the renewable energy industry is closely tied to sustainability and environmental concerns, while the oil and gas industry is often associated with negative environmental impacts. Third, the lack of a significant relationship could also be due to other factors that may impact financial performance, such as market conditions, competitive landscape, and company-specific factors. For example, a company that operates in a highly competitive market may have a lower EBIT% even if it has

strong sustainability practices, as it may need to invest heavily in marketing and R&D to remain competitive.

It is important to note, however, that while the lack of a significant relationship between a company's ESG score and its EBIT% financial indicator may suggest that sustainability practices do not have a direct impact on profitability, this does not mean that companies should not invest in sustainability initiatives. Sustainable practices can lead to other long-term benefits, such as increased customer loyalty, brand value, and a stronger reputation, which can positively impact financial performance over the long term. Therefore, companies that prioritize sustainability initiatives may benefit from these indirect benefits even if they do not see an immediate impact on their financial performance.

The result of Ho2 indicates that there is a significant negative relationship between a company's ESG score and its Return on Equity (RoE) financial indicator. RoE is a measure of how effectively a company is using its equity to generate profits. The significant negative relationship between a company's ESG score and its RoE financial indicator, as indicated by the rejection of Ho2, suggests that companies that prioritize sustainability practices may experience a decrease in their RoE. This is a noteworthy finding, as RoE is a key measure of a company's profitability and efficiency in generating returns for its shareholders.

One possible reason for this negative relationship is that sustainability initiatives may require significant upfront investment, which could impact a company's profitability in the short term. For instance, a company that invests in renewable energy or energy-efficient technologies may experience higher capital expenditures and operating costs, which can negatively impact their RoE. Additionally, companies that prioritize environmental and social sustainability may choose to forego certain business opportunities or revenue streams that may conflict with their sustainability goals. This could lead to a decrease in revenues and profitability, ultimately resulting in a lower RoE.

However, in the long term, these sustainability initiatives may lead to improved customer loyalty and brand value, which can positively impact RoE. Companies that invest in sustainability practices are more likely to attract and retain customers who value socially responsible and environmentally sustainable products and services. Moreover, these practices

can enhance a company's reputation and brand image, which can translate into increased sales and customer loyalty. This can ultimately lead to improved profitability and a higher RoE.

Another possible explanation for the negative relationship between ESG scores and RoE is that the relationship may be spurious, meaning that other variables could be driving both the ESG score and the RoE. For instance, companies that prioritize sustainability practices may also have different business models, management practices, or other factors that impact their profitability and RoE. Hence, it may be difficult to isolate the impact of ESG scores on RoE from other confounding variables. The result of Ho3 indicates that there is no significant relationship between a company's ESG score and its financial leverage financial indicator. Financial leverage measures the amount of debt a company has relative to its equity. The result suggests that a company's sustainability performance, as measured by its ESG score, does not have a significant impact on its financial leverage. High levels of debt can make a company more vulnerable to economic downturns and can negatively impact its ability to access capital in the future.

There are several possible reasons why a company's ESG score may not have a significant impact on its financial leverage. First, sustainability initiatives may be financed through equity or alternative financing methods, rather than through debt. For example, a company may issue green bonds to finance a renewable energy project, which would not increase its financial leverage. Second, companies with higher ESG scores may be more attractive to socially responsible investors who prioritize sustainability and may be willing to invest in equity rather than debt. This can lead to a lower debt-to-equity ratio for companies with higher ESG scores. Finally, it is important to note that financial leverage is just one of many financial indicators, and a company's overall financial performance is influenced by a variety of factors beyond its ESG score. For example, a company's profitability, market share, and competitive position can all impact its ability to access capital and manage its debt levels.

As an example, consider the case of Patagonia, an outdoor apparel company known for its commitment to sustainability. Patagonia has a strong ESG score and has implemented several sustainability initiatives, such as reducing its carbon footprint and promoting fair labor practices. However, the company also has a relatively high debt-to-equity ratio compared to its peers in the apparel industry. This is partly due to its decision to finance its sustainability initiatives through

debt rather than equity. Despite this, Patagonia has maintained a strong financial performance and has been able to access capital when needed, suggesting that financial leverage may not be the most important financial indicator for evaluating the impact of sustainability on a company's financial performance.

The result of Ho4 indicates that there is a significant negative relationship between a company's ESG score and its Return on Assets (RoA) financial indicator. RoA is a measure of how effectively a company is using its assets to generate profits. The negative coefficient between ESG score and RoA suggests that companies that prioritize sustainability initiatives may be sacrificing short-term profitability for long-term sustainability goals. This may occur due to increased investment in research and development, renewable energy sources, or sustainable supply chain practices, which can be expensive in the short term but have long-term benefits.

For example, a company that invests in renewable energy sources such as solar panels may initially have higher costs associated with installation and maintenance, which can lead to lower profits in the short term. However, in the long term, this investment can lead to cost savings on energy and a positive impact on the environment, which can improve the company's reputation and brand value. Similarly, companies that invest in sustainable supply chain practices may have higher costs associated with sourcing environmentally friendly materials or reducing waste, but this investment can lead to improved efficiency and cost savings in the long term.

It is important to note that the negative relationship between ESG score and RoA is not necessarily a cause for concern, as the long-term benefits of sustainability initiatives may outweigh the short-term costs. Additionally, companies with higher ESG scores may attract socially responsible investors, who prioritize sustainability initiatives over short-term profitability. Therefore, while the negative relationship between ESG score and RoA may suggest short-term sacrifices in profitability, it may lead to long-term benefits in terms of customer loyalty, brand value, and investor interest.

The result of Ho5 indicates that there is no significant relationship between a company's ESG score and its Return on Investment (RoI) financial indicator. RoI is a measure of how effectively a company is generating profits from its investments. The result suggests that a company's sustainability performance, as measured by its ESG score, does not have a significant impact on its RoI. The absence of a significant relationship between ESG score and RoI may

indicate that a company's sustainability initiatives are not viewed as immediate investments, but rather as long-term investments in the company's success.

Sustainability initiatives often require significant investments of time and resources and may not yield immediate returns in terms of profitability. For example, a company may invest in renewable energy infrastructure or carbon emissions reduction programs, which may not yield significant financial benefits in the short term. However, over the long term, these initiatives may lead to cost savings, increased operational efficiency, and enhanced brand value, which can positively impact RoI.

Moreover, companies that prioritize sustainability and social responsibility may have a competitive advantage over their peers in the long term. They may attract customers who value sustainability and are willing to pay a premium for eco-friendly products and services. For example, Tesla, which is known for its sustainability initiatives and electric vehicles, has experienced significant growth in recent years due to increased demand for sustainable transportation.

Furthermore, companies that prioritize sustainability may be more attractive to investors who are looking for socially responsible investments. Studies have shown that companies with strong sustainability performance tend to have better financial performance over the long term, which can positively impact RoI.

Conclusion

The concept of sustainability has become increasingly important in the business world due to the growing awareness of environmental and social issues. This has led to an interest in the relationship between sustainability and financial performance. While the specifics may vary depending on the research, the general conclusion is that there is a positive correlation between sustainability and financial performance. Companies that prioritize sustainability tend to perform better financially, and sustainability initiatives can create long-term value for businesses. As such, it is important for businesses to integrate sustainability into their practices and strategies, not just for the benefit of society and the environment, but also for their own financial success.

The research findings suggest that the relationship between a company's sustainability performance, as measured by its ESG score, and its financial performance is complex and multifaceted. While sustainability initiatives may lead to long-term benefits such as increased customer loyalty and a stronger reputation, the results show that there is no significant relationship between a company's ESG score and its short-term profitability, as measured by its EBIT%. This lack of a direct relationship could be attributed to factors such as the indirect nature of the impact of sustainability practices on financial performance, variations across industries and companies, and other factors such as market conditions and competition.

However, the research also shows that there is a significant negative relationship between a company's ESG score and its Return on Equity (RoE) financial indicator, which indicates that companies that prioritize sustainability practices may experience a decrease in their RoE. This could be due to the upfront investment required for sustainability initiatives or a trade-off

between sustainability goals and revenue opportunities. Nonetheless, in the long term, companies investing in sustainability practices may benefit from improved customer loyalty, brand value, and a stronger reputation that can positively impact their RoE. Finally, the research findings suggest that a company's sustainability performance does not have a significant impact on its financial leverage, indicating that sustainability initiatives may be financed through equity or alternative financing methods, rather than through debt.

The results also suggest that the impact of sustainability on financial performance may depend on industry, company size, age, and ownership structure. Therefore, it is crucial for companies to carefully assess the relationship between sustainability and financial performance and develop customized sustainability strategies that align with their business objectives and industry-specific factors. The following are the recommendations which can be derived from the research:

1. Companies should continue to prioritize sustainability initiatives, even if they do not see an immediate impact on their financial performance. While the lack of a direct impact on profitability was observed in the study, sustainable practices can lead to other long-term benefits, such as increased customer loyalty, brand value, and a stronger reputation, which can positively impact financial performance over the long term.
2. Companies should carefully consider the potential trade-offs between sustainability practices and short-term profitability. The study found a significant negative relationship between a company's ESG score and its Return on Equity (RoE) financial indicator, suggesting that companies that prioritize sustainability practices may experience a decrease in their RoE. Companies should weigh the potential benefits of sustainable practices against the short-term impact on profitability.
3. Companies should tailor their sustainability initiatives to their specific industry and business model. The impact of sustainability initiatives on financial performance may vary across different industries and companies. For example, a company in the renewable energy industry may have a stronger relationship between its sustainability practices and financial performance compared to a company in the oil and gas industry. Therefore, companies should carefully consider the unique challenges and opportunities in their industry when designing their sustainability initiatives.

4. Companies should be transparent about their sustainability practices and their impact on financial performance. Investors and other stakeholders are increasingly interested in a company's ESG performance. Companies should provide clear and transparent disclosures about their sustainability initiatives, including their potential impact on financial performance.
5. Further research is needed to better understand the complex relationship between sustainability practices and financial performance. The study identified several factors that could impact the relationship between a company's ESG score and its financial performance, including industry-specific factors, market conditions, and company-specific factors. Further research is needed to better understand the complex and indirect relationship between sustainability practices and financial performance. Companies can use this research to make more informed decisions about their sustainability initiatives and their potential impact on financial performance.

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Appendix

Below the list of the company names included in the sample selected for testing the model:

AK ENERJI
AKCANSAN
AKSA
ANADOLU EFES
ARCELIK
ASELSAN
AYGAZ
BIM MAGAZALAR
BIZIM MAGAZALARI
BRISA
CIMSAN
COCA COLA ICECEK
DOGAN HOLDING
DOGUS OTOMOTIV
ENERJISA ENERJI
ENKA INSAAT
EREGLI DEMIR CEL

FORD OTOSAN
ISKENDERUN DEMIR
KARDEMIR (D)
KARSAN OTOMOTIV
KEREVITAS GIDA
KORDSA TEKNİK TE
LOGO YAZILIM
MAVI GIYIM
MIGROS TICARET
NETAS TELEKOM.
OTOKAR
PEGASUS
PINAR SUT
POLISAN HOLDING
SISE CAM
SOK MARKETLER TI
TAT GIDA
TAV HAVALIMANLAR
TEKFEN HOLDING
TOFAS OTO. FAB.
TUPRAS
TURK HAVA YOLLAR
TURK TELEKOM
TURK TRAKTOR
TURKCELL
ULKER BISKUVI
VESTEL
VESTEL BEYAZ ESY
ZORLU ENERJI