UNIVERSITY OF TURKU
Turku School of Economics

Strategic alignment of corporate sustainability and financial performance

Insights from Europe’s top-performing companies across sensitive and non-sensitive industries

International business,
Department of international business and marketing
Master's thesis

Author:
Hanna Nikkilä

Supervisor(s):
D. Sc. Riikka Harikkala-Laihinen
D. Sc. Jonathan Mumford

08.12.2025
Turku

Student’s statement regarding the use of Artificial Intelligence (AI) for preparing and/or writing this thesis:
☐ **I have not used any AI-based tools.**

☒ **I have used AI-based tools**. Their use is documented in the Appendix 4. The AI tools were used in a way that complies with academic integrity guidelines.

The originality of this thesis has been checked in accordance with the University of Turku quality assurance system using the Turnitin Originality Check service.

Master's thesis

Subject: International business
Author: Hanna Nikkilä
Title: Strategic alignment of corporate sustainability and financial performance: Insights from Europe's top-performing companies across sensitive and non-sensitive industries
Supervisors: D. Sc. Riikka Harikkala-Laihinen, D. Sc. Jonathan Mumford
Number of pages: 118 pages (+ appendices 6 pages)
Date: 08.21.2025

Abstract

This thesis delves into the contemporary issue of whether it pays off to behave well. A company's sustainability practices can be seen through its commitment to the triple bottom line (TBL) and environmental, social, and governance (ESG) principles, reflected in measurable outcomes as evidenced by ESG scores. Sustaining competitive advantage requires companies to adapt to evolving legal standards and place greater emphasis on ESG practices. ESG is nowadays a critical and common component in companies' strategies. Europe seeks to become the first carbon-neutral continent by 2050 under the European Union (EU) Green Deal, necessitating companies to adopt and further develop their ESG frameworks. Companies can embed ESG into their strategies in different ways, thereby complying with EU Green Deal goals and fulfilling the EU Corporate Sustainability Reporting Directive (CSRD). Advancing ESG practices has little strategic relevance unless it aligns with favorable financial outcomes. This thesis examines how high ESG-performance companies align their strategies to implement ESG practices without compromising financial performance.

The intense interest in the association between ESG performance and corporate financial performance (CFP) has attracted numerous studies; however, the evidence remains mixed. Prior research has mainly focused on the US market or worldwide, giving the European market minimal attention. Similarly, industry specification has not yet gained much popularity.

This thesis explicitly addresses the European market, focusing on the EU, Switzerland, and Norway, and paying special attention to sensitive and non-sensitive industries, as well as the ESG-CFP relationship of top-performing companies. To address the laid premises, an unbalanced panel data set of 1254 companies is used, and a fixed-effect regression is applied to analyze data from 2016 to 2023.

This thesis provides valuable insights into the interrelation between ESG and CFP and finds a significant and positive association between companies' ESG performance and profitability, measured as long-term operating performance using an accounting-based indicator, return on assets (ROA). Overall, in the sample, no positive link was found between ESG and CFP. Positive findings were observed in sensitive industries. Indicating that ESG performance does enhance financial performance. When studying individual pillar associations with CFP in a non-sensitive industry, when focusing solely on the EU-market environmental performance, a positive, significant correlation was found.

It was found that top-performing companies' strategies excel when assessed against ESG commitment indexes, contributing to their high ESG performance. Consistent with stakeholder theory, the findings indicate that stakeholders reward substantial ESG commitments, enhanced risk mitigation, and more favorable debt-financing terms.

Keywords: Environment, social and governance responsibility, green deal, corporate financial performance, corporate social responsibility, corporate sustainability reporting directive, triple bottom line

Pro gradu -tutkielma

Oppiaine: Kansainvälinen liiketoiminta
Tekijä: Hanna Nikkilä
Otsikko: Strategic alignment of corporate sustainability and financial performance: Insights from Europe's top-performing companies across sensitive and non-sensitive industries
Ohjaajat: D. Sc. Riikka Harikkala-Laihinen, D. Sc. Jonathan Mumford
Sivumäärä: 118 sivua (+ liitteet 6 sivua)
Päivämäärä: 08.12.2025

Tiivistelmä

Tämä opinnäytetyö käsittelee ajankohtaista kysymystä siitä, kannattaako yritysten panostaa vastuullisuuteen. Yrityksen kestävän kehityksen käytännöt näkyvät sen sitoutumisessa kolmoistilinpäätökseen sekä ympäristöön, yhteiskuntaan ja hyvään hallintotapaan (ESG), jotka heijastuvat mitattavissa olevina tuloksina, ESG-pisteissä. Tutkimus keskittyy ESG-pisteisiin sekä kestävässä kehityksessä parhaiten suoriutuvien yritysten strategioihin.

Kilpailuedun ylläpitäminen edellyttää yrityksiltä sopeutumista muuttuviin lakisääteisiin standardeihin sekä yritysvastuuseen, mikä pitää sisällään ympäristövastuun, sosiaalisen vastuun ja hyvän hallintotavan. ESG on nykyään kriittinen ja yleinen osa yritysten strategioita. Eurooppa pyrkii ensimmäiseksi hiilineutraaliksi mantereeksi vuoteen 2050 mennessä Euroopan unionin (EU) vihreän siirtymän mukaisesti, mikä edellyttää yrityksiltä ESG-viitekehysten omaksumista. Yritykset voivat sisällyttää ESG-tekijät strategioihinsa eri tavoin ja siten saavuttaa EU:n vihreän siirtymän tavoitteet ja täyttää EU:n yritysvastuuraportointidirektiiviä (CSRD). ESG-käytäntöjen edistämisellä on vain vähän strategista merkitystä, ellei se ole linjassa suotuisten taloudellisten tulosten kanssa. Tämä opinnäytetyö tarkastelee, kuinka korkean ESG-suorituskyvyn yritykset yhdenmukaistavat strategioitaan ESG-käytäntöjen toteuttamiseksi vaarantamatta taloudellista suorituskykyään.

ESG-käytäntöjen ja yritysten taloudellisen suorituskyvyn (CFP) välisen yhteyden tutkiminen on herättänyt kiinnostusta, mutta näyttö on edelleen ristiriitaista. Aiempi tutkimus on keskittynyt pääasiassa Yhdysvaltojen tai maailmanlaajuisiin markkinoihin, antaen Euroopan markkinoille vain vähän huomiota. Samoin toimialakohtainen tarkastelu ei ole vielä saavuttanut suosiota. Tämä opinnäytetyö käsittelee nimenomaisesti Euroopan markkinoita, keskittyen EU:hun, Sveitsiin ja Norjaan sekä kiinnittäen erityistä huomiota ympäristösensitiivisiin ja ei-sensitiivisiin toimialoihin sekä parhaiten suoriutuvien yritysten ESG-CFP-suhteeseen. Tutkimus kohdistui epätasapainoiseen aineistoon 1254 yrityksestä, joiden vastuullisuus toimien ja taloudellisen tuloksen välistä yhteyttä tutkittiin kiinteävaikutusmallin avulla vuosien 2016–2023 aikana.

Tämä opinnäytetyö tarjoaa arvokasta tietoa ESG:n ja taloudellisen suorituskyvyn välisestä vuorovaikutuksesta. Tulokset viittaavat merkittävään ja positiiviseen yhteyteen. Tätä yhteyttä tarkastellaan kirjanpidolliseen, pitkän aikavälin operatiivisen suorituskyvyn, omaisuuden tuotto (ROA) avulla. Positiivisia tuloksia havaittiin ympäristösensitiivisillä toimialoilla. Tämä osoittaa, että ESG-suorituskyky parantaa taloudellista suorituskykyä sensitiivisillä toimialoilla. ESG voidaan jakaa sen kolmeen eri osa-alueeseen. Tutkittaessa yksittäisten osa-alueiden yhteyttä CFP:hen, ei-sensitiivisellä toimialalla, huomioiden ainoastaan EU-maiden yritykset, ympäristökäytännöt osoittivat positiivisen ja tilastollisesti merkitsevän yhteyden.

Havaittiin myös, että korkean ESG-suorituskyvyn yritysten strategiat mahdollistavat erinomaisen ESG-käytänteet. Sidosryhmäteorian mukaisesti havainnot osoittavat, että sidosryhmät palkitsevat merkittäviä ESG-sitoumuksia, tehostettua riskienhallintaa ja suotuisampia velkarahoitusehtoja.

Avainsanat: ympäristövastuu, sosiaalinen vastuu, hyvät hallintotavat, yritysvastuu, yrityksen taloudellinen suorituskyky, vihreä siirtymä, kolmoistilinpäätös, yritysvastuuraportointidirektiivi

TABLE OF CONTENTS

FIGURES

TABLES

Abbreviations

Abbreviation	Definition
CFP	Corporate financial performance
CSR	Corporate social responsibility
CSRD	Corporate sustainability reporting directive
ESG	Environment, social and governance
ESGC	ESG Controversy
ESRS	European sustainability reporting standard
EU GD	European Union green deal
ICB	Industry Classification Benchmark
KPI	Key performance indicators
LSEG	London Stock Exchange Group
MNC	Multinational corporation
NFR	Non-financial reporting
NFRD	Non-financial reporting directive
NGO	Non-governmental organization
ROA	Return on assets
ROE	Return on equity
SBM	Sustainable business model
SDG	Sustainable development goals
TBL	Triple-bottom line

1 Introduction

1.1 Research background and motivation

Globalization is a powerful phenomenon with far-reaching effects. Companies' growing focus on shareholder value, often at the expense of society and the environment, especially when governments are sidelined (Madhok, 2021, 199–200), has fueled globalization, and its consequences are visible around us. Human activity has exceeded ecological limits, resulting in biodiversity loss, resource overexploitation, and climate change, all of which have profound impacts on the environment and society (Stockholm Resilience Centre, 2025). Efforts are now focused on mitigating the severe consequences of past actions, while economic inequality persists and social discontent intensifies. Besides this neglect, turbulent times are being faced: the war in Ukraine, widespread market instability driven by the USA (Egan, 2025), slow economic growth in Europe, and potential trade wars (Blot et al., 2025). These factors influence the extent to which multinational corporations (MNCs) commit to sustainability.

Sustainability is a pervasive topic that extends beyond academic discourse and corporate responsibility, increasingly becoming integral to broader public and organizational discussions. Sustainability can be understood according to the World Commission on Environment and Development (WCED1987, 37) as “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. Sustainability embraces environmental, economic, and social factors, stresses the long-term perspective, and explicitly incorporates a concern for future generations (Caroll, 2015, 92–93).

Given the ongoing climate crisis, urgent measures are essential to reduce emissions and enhance sustainability. The goals of the Paris agreement, particularly to keep global warming below 1.5 degrees, remain distant from being achieved. Building on the climate commitments made in the Paris agreement, the United Nations’ Sustainable Development Goals (SDGs) provide a comprehensive plan for sustainable development. To shape a better future, the 17 SDGs establish universal principles to guide businesses through the complexities of sustainable practices. The UN SDGs serve as guiding principles, helping companies develop specific, targeted initiatives aligned with broader sustainability goals. The SDGs offer organizations economic, environmental, and social benefits. When integrated correctly, the SDGs can give companies a competitive advantage. (EU Council, 2025; UN SDG, 2025.)

The UN SDGs offer a global sustainability framework that the EU has adopted through the European Green Deal (EU GD). This strategic initiative aims to make the EU the world's first climate-neutral continent by 2050, setting ambitious targets for climate action and sustainable growth. To align corporate practices with these goals, the Corporate Sustainability Reporting Directive (CSRD) and the European Sustainability Reporting Standards (ESRS) translate policy objectives into specific corporate disclosure requirements. Since the start of 2024, the CSRD has required large, publicly listed EU companies to include non-financial reporting alongside financial statements. The ESRS ensures companies disclose social and environmental risks related to their operations, the impact of their activities on people and the environment, and report value-chain information critical for understanding their sustainability impacts, risks, and opportunities, making it the most comprehensive unified reporting standard worldwide. (EU, 2025a; EU Council, 2025; EU, 2025b; UN SDG, 2025.)

While these initiatives and standards provide broad guidance at the international level, their successful implementation depends on translating them into actionable organizational steps. Corporate social responsibility (CSR) is a framework that helps understand the relationship between businesses and society (Caroll, 2015, 90). CSR acts as a bridge between global goals and concrete business practices, allowing organizations to adopt sustainability principles, align their operations with established standards, and make meaningful contributions to societal and environmental efforts to address non-economic issues and measure non-financial performance. Government intervention to promote CSR has been key to mitigating climate change and establishing good sustainability practices. This highlights the importance of measuring CSR practices and aligning them with stakeholder expectations and corporate value creation (Schaltegger et al., 2006). Stakeholders are various groups interested in a company's activities, including employees, customers, communities, suppliers, financiers, and the government, among others (Andersson et al., 2023). This is discussed further in Chapter 2, where the foundation of responsible and sustainable conduct is outlined.

Whereas CSR emphasizes a company's moral and philanthropic responsibilities, ESG builds on these principles by incorporating measurable indicators and reporting standards. In other words, ESG reflects companies' CSR commitments based on their philosophical foundation (Wang H. et al., 2024, 1116). As a result, ESG has become a prominent concept, frequently used to describe a company's non-financial or intangible assets (Edmans, 2023, 3). The initial use of ESG principles emerged within sustainable finance after the global financial crisis of 2008–2009 (Lins et al., 2017). Various stakeholders, including governments, regulators, corporations, and employees, recognize the importance of ESG practices. ESG practices encompass the actions a company takes to address environmental, social, and governance (ESG) issues within its operations. Implementing ESG initiatives can yield non-financial benefits that ultimately enhance economic performance by adding value (Wang, N. et al., 2024). These benefits include an improved corporate reputation, increased attractiveness as an employer (drawing skilled workers and fostering innovation), lower financing costs, greater market power, stronger property rights, better employee retention, higher customer satisfaction, and increased loyalty (Che et al., 2024, 1–2, 20; Cek & Eyupoglu, 2020, 1175–1176).

When implementing ESG practices, it is essential to recognize that they vary across industries, particularly depending on whether the company operates in a sensitive or non-sensitive industry. Industry sectors, including both sensitive and non-sensitive ones, exhibit differing trajectories in ESG performance, reflecting variations between environmentally sensitive and non-sensitive sectors. Environmentally sensitive industries (such as oil, gas, coal, chemicals, paper and pulp, steel, copper, or mining) are characterized by elevated environmental risks, necessitating greater emphasis on sustainability practices than companies in less sensitive sectors (Garcia et al., 2017). These industries are frequently regarded as highly polluting and face substantial environmental risk, yet can achieve better ESG performance (Qureshi et al., 2019). Given this pressure, companies in sensitive industries tend to have higher ESG scores because they often compete with peers. Frequently, business ethics are more demanding, as employees and external stakeholders affected by the company´s actions may also have higher social and governance scores. (Amor-Esteban et al., 2018; Richardson & Welker, 2001.)

In addition to specific industry characteristics, adopting ESG practices does not automatically lead to high ESG performance. The results of ESG practices can be measured using externally provided scoring systems, commonly referred to as ESG scores. These scores are among the most comprehensive and up-to-date methods for assessing progress toward sustainability goals. ESG scores are valuable tools for evaluating corporate sustainability and are widely used. Companies with high ESG performance, particularly those that outperform their peers, are considered top or superior performers. High ESG performance, particularly in comparison to industry peers, is closely tied to the implementation of robust CSR practices within the company. (Ademi & Klungseth, 2022; Ahmad et al., 2021; Chen et al., 2023.)

ESG provides measurable criteria for sustainability, guiding organizations to develop strategies and business models that incorporate long-term value creation along with ethical, social, and environmental considerations. Chevrollier and colleagues (2020) have found that a company's strategic orientation and alignment influence its ESG performance. Strategic alignment, in the context of sustainability and ESG, refers to the degree to which a company's environmental, social, and governance initiatives are integrated with its overall business strategy to generate long-term value for both the organization and its stakeholders (Bocken & Geradts, 2020; Engert et al., 2016). Furthermore, embedding sustainability within the business model allows companies to identify new opportunities, enhance resilience, and secure long-term competitive advantage. In the contemporary, fast-evolving business environment, organizations must continuously reassess their sources of competitive advantage and critically evaluate their value proposition, value delivery, and value capture mechanisms within their business models. (Bocken et al., 2014.) The sustainable business model (SBM) has emerged as a foundational framework for advancing sustainable performance and integrating them into core business operations. The SBM can be framed as a holistic view of how a company operationalizes its strategy through resource-efficient operations, governance, and management systems, ensuring that outputs generate greater economic, social, and environmental value than the inputs used. The SBM is also a framework that serves as a base for companies to analyze how CSR has been integrated. (Lozano, 2018, 1164.) The core activity under the SBM is new value creation, which addresses sustainability while considering the broad variety of stakeholders (Ferlito & Faraci, 2021). Unveiling the strategic advantages of ESG practices is crucial for understanding why the importance of SBM becomes increasingly evident in the pursuit of climate neutrality.

Studies aimed at understanding the link between ESG practices and financial performance are crucial for both companies and for protecting our planet. Financial performance measures a company's financial well-being in terms of revenue, expenses, profitability, assets, liabilities, and equity. It refers to the extent to which a company uses its assets to generate profits. (Ademi & Klungseth, 2022, 430.) Trade-offs are often weighed, as Campbell and Kelly (1994) explain; therefore, evidence is required to demonstrate to shareholders and stakeholders that doing good can be financially beneficial. According to Branco and Rodrigues (2006), the connection between ESG and a company's financial performance is not always a trade-off. When evaluating whether sustainable initiatives help meet climate goals, it is vital to demonstrate their effects in clear financial terms. Providing financial evidence of sustainability benefits can persuade even the most hesitant corporate leaders to adopt and support these practices. Over the past decade, the market for environmental and climate solutions has grown significantly faster than the broader market, with a market capitalization that has increased at a compound annual growth rate (CAGR) of 13.8%, compared to 8.3% in global equity markets (Segal, 2024). Sustainable revenue growth exceeded other revenue growth; it is no surprise that companies are increasingly investing in ESG practices to support their financial growth (Ademi & Klungseth, 2022, 422). Additionally, ESG practices help identify and assess risks in companies´ in-house and outside processes (Estevez-Mendoza & Infante, 2025).

1.2 Research gap and purpose

The purpose of this thesis is to examine the relationships among ESG, corporate financial performance (CFP), and strategic alignment in this context. Additionally, this thesis seeks to address several gaps identified in the literature (Almnadheh et al., 2015; Chen et al., 2023; Friede et al., 2015; Nirino et al., 2021; Qureshi et al., 2020). Previous studies indicate that, first, there is no clear consensus on whether ESG practices enhance financial performance (Chen et al., 2023; Friede et al., 2015). Second, limited research has explored how companies' strategic alignment influences the relationship between ESG practices and CFP, leaving the underlying mechanisms largely unexamined (Nirino et al., 2021). Third, the EU's evolving regulatory framework regarding sustainability reporting and ESG disclosure introduces new dynamics that are not yet fully understood, especially concerning how prepared EU companies are to meet the ambitious requirements set by the EU GD. The significance of ESG within the EU is further emphasized by the mandate for companies to report their corporate sustainability performance in compliance with the CSRD. (Deloitte, 2024; EU, 2025b.) Moreover, there is a lack of empirical studies investigating the impact of ESG performance on financial outcomes for publicly listed companies within European economies (Chen et al., 2023; Qureshi et al., 2019).

Research on the link between ESG practices and CFP has grown significantly since the start of the 21st century, showing nearly exponential growth (Friede et al., 2015). This increasing academic interest highlights the relevance of this thesis as a timely contribution to a widely debated topic with both educational and practical value. As global concerns over sustainability rise, more empirical studies are examining the connection between sustainability and CFP. For example, Friede and colleagues (2015) present evidence from over 2,000 publicly listed companies, indicating that ESG practices generally enhance company performance. However, the literature presents mixed findings on the relationship between ESG and CFP. Some studies find a positive association (Li et al., 2018, 60; Narula et al., 2025, 1096; Qureshi et al., 2019, 1213; Velte, 2017), while others report a negative association (Raimo et al., 2021; Shaikh, 2022, 233) or mixed effects (Behl et al., 2022, 231; Nirino et al., 2020, 1). However, most previous studies have not explored the influence of industry differences between ESG and CFP (Qureshi et al., 2020; Sassen et al., 2016). Company-specific factors, industry, and the effectiveness of strategic implementation may have different impacts on financial performance. In light of this, multiple industries, categorized as either sensitive or non-sensitive, are studied to mitigate industry bias and address the gap noted by Baldini and colleagues (2018), who called for exploring ESG reporting initiatives in specific industries and economies. To fill this research gap, this thesis takes further steps to understand better whether the ESG-CFP relationship differs between sensitive and non-sensitive industries. (Liao et al., 2024.)

Although the significance of extensive research on ESG practices and sustainability is well established, the connection between these topics and strategic planning remains underexamined. In particular, Nirino and colleagues (2021) emphasize a research gap: understanding how companies' strategic alignment affects the positive relationship between ESG practices and financial performance. Building on earlier discussions, Almnadheh and colleagues (2025) identify a gap in academic research, noting that sustainable business strategies remain underexplored in the context of ESG integration. This thesis aims to address this strategic gap by examining the relationship between CFP and ESG disciplines, as well as the strategies adopted by top-performing companies. ESG considerations are now central to corporate strategy, with many organizations integrating ESG principles to realign core competencies and strengthen their competitive position in the market (Gauthier & Zhang, 2020).

Having highlighted the main gaps in current research and practice, the following points summarize these deficiencies.

- No consensus on ESG's effect on financial performance
- Little research on how strategic alignment affects ESG-CFP link
- Unclear impact of new EU sustainability/ESG regulations and company readiness
- Industry differences in ESG–CFP relationship understudied (sensitive vs. non-sensitive sectors)
- ESG integration in sustainable strategies is not well explored

As there have been contradictory conclusions regarding whether engagement in ESG improves financial outcomes and its connection to the strategy used to enhance the company's ESG performance, the following central research question is:

How do top-performing companies in sensitive and non-sensitive industries align their strategy to implement ESG performance without compromising financial performance?

The answer is addressed through two sub-questions:

1) What kind of relationship exists between ESG and CFP?

2) Which strategies lead to superior ESG performance?

Consequently, this thesis's focus on ESG performance, CFP, and the underlying strategic approaches reflects a forward-looking examination of business practices expected to generate substantial long-term value. ESG practices do not differentiate between various types of initiatives; these actions may arise from strategic considerations or from altruistic motives intended to enhance legitimacy. Recognizing this distinction is essential for fostering sustainable economic development and ensuring that the progress European companies have made in ESG is maintained. In light of the misalignment findings, this thesis sets the stage by examining the ESG scores of European companies from 2016 to 2023. The timeframe reflects the current situation and has not been widely covered in prior studies. (Wang, N. et al., 2024.)

The ESG-CFP relationship is further explored by focusing on top-performing companies across both ESG and financial performance. Evaluating the top-performing companies and their ESG strategies reveals current sustainability practices. The strategies' connection to financial performance provides insight into whether top-performing companies exhibit positive financial performance. To address the former, panel regression analysis is applied to an unbalanced panel data set comprising over 1000 European companies from 2016 to 2023.

To gain a deeper understanding of the relationship between ESG and CFP, the first sub-question examines the impact of industry-specific characteristics. Specifically, it distinguishes between sensitive and non-sensitive industries. Sensitive industries are those that operate in environmentally sensitive fields, where their organizational commitment to environmental responsibility is expected to be stronger, resulting in higher ESG performance and, consequently, a higher ESG score (Garcia et al., 2017; Qureshi et al., 2019). The focus is to explore the ESG performance of sensitive and non-sensitive industries in Europe, excluding the financial sector, banks, and insurance companies. These are excluded due to differences in accounting standards and the EU Taxonomy's influence on capital flows. Moreover, exclusions are based on prior research. (EU Taxonomy, 2025; Nirino et al., 2021, 3; Petitjean, 2019, 504; Velte, 2017, 172.)

Additionally, following other studies (Chen et al., 2023; Garcia et al., 2017; Qureshi et al., 2019; Velte, 2017), the first sub-question is divided into three main ESG areas: environment, social, and governance. Each of these areas is examined in the context of industry specifics and top-performing companies, providing more detailed insights. The second sub-question specifically addresses how ESG practices are integrated into the strategies of leading companies. This helps reveal the strategies that drive high ESG performance, ultimately benefiting other companies in the industry.

The EU market appears practicable from several perspectives. First, it provides a homogeneous regulatory environment (Bronca, 2025; Qureshi et al., 2019). Secondly, Eccles and others (2020, 576) stated that ESG metrics are complex, data sources differ, and ratings are unstructured worldwide, except in the EU. ESG disclosure has been voluntary; the EU is the only market with at least some unification of ESG measures, and those measures are becoming more unified since the CSRD was adopted at the beginning of 2024. This is the far most unified reporting standard in the world. (EU, 2025a.)

This thesis has the potential to support organizational decision-making in the transition toward sustainable business models and strategies. Additionally, it identifies profitable ESG practices within the EU, providing policymakers with insights into which industrial strategies promote sustainable growth. By emphasizing approaches that create value for shareholders and stakeholders, the study contributes to a vision of a future where economic and social objectives are mutually reinforcing rather than at odds. The contribution of this thesis goes beyond the ongoing debate about whether investing in sustainability benefits companies financially. It also explores whether ESG performance leads to financial gains and pinpoints industry-specific strategic tools.

The structure of this thesis is organized into six chapters as follows. The introduction outlines the study's scope, key characteristics, motivation, and implications for academia, business managers, and policymakers. Through a comprehensive literature review, Chapter 2 connects the study topic to relevant theories and concepts, including CSR, ESG, SBM, sustainable strategies, stakeholder theory, institutional theory, and the TBL, as well as to the ESG framework, reporting standards, and ESG scoring. In this chapter, the ESG-CFP connection is discussed and linked to previous research. Chapter 3 details the study’s methodology, covering quantitative approaches, evaluation of the study, and ethical considerations. Yet the chapter ends with a discussion of the AI tools used. Chapter 4 presents the results and findings. Chapter 5 presents conclusions, contributions, limitations, and suggestions for future research. Finally, Chapter 6 is the thesis summary.

2 Sustainability as strategy: connecting environmental, social, and governance practices to financial performance

2.1 ESG practices for sustainability initiatives

2.1.1 Corporate social responsibility as a foundation

Recent developments in sustainability underscore the importance of both current and future generations; the actions companies take now will have lasting impacts that extend beyond what their managers will witness in their lifetime. As companies have relationships with other groups and individuals, they must consider their existence outside their organizational boundaries. (Freeman, 1984, 25, 31). This viewpoint aligns with stakeholder theory, which is, as Freeman (2010, 9) stated, “how business works at its best and how it could work. It is also about value creation, trade, and managing business effectively. This viewpoint aligns with stakeholder theory, which is, as Freeman (2010, 9) stated, “how business works at its best and how it could work. It is also about value creation, trade, and managing business effectively.” Despite the comprehensive view offered by stakeholder theory, it diverges fundamentally from shareholder theory.

In contrast to stakeholder theory, shareholder theory emphasizes that a company’s primary goal is to generate profit for its shareholders, who are considered the main group served by the company. As Friedman stated in The New York Times Magazine, “the only social responsibility of business is to increase its profits,” with management’s main objective being to maximize shareholder value (Friedman, 1970). In other words, the stakeholder theory conflicts with shareholder value because investments in sustainability initiatives can potentially reduce a company’s financial gains. Allocating financial and managerial resources to maximize stakeholder value may decrease shareholder returns, such as dividends (Brown & Deegan, 1998). This trade-off between the main groups in the two theories is one aspect that this thesis addresses by providing evidence that the duty towards all stakeholders, including shareholders, pays off in the long term. To further clarify the framework used in this thesis, it is essential to distinguish between the types of stakeholders involved and their respective roles within and outside the organization.

Stakeholders are different interest groups with which businesses interact. They are the driving force behind a company's sustainability efforts. Stakeholders can be classified into two main groups: internal and external. These groups are often referred to as primary and secondary stakeholders, respectively. Primary stakeholders include customers, employees, managers, owners, communities, financiers, and suppliers. Secondary stakeholders include the government, competitors, consumer advocacy groups, suppliers, creditors, investors, unions, and the media. (Freeman et al., 2007, 51.)

Additionally, external stakeholders can be categorized as upstream (suppliers, manufacturers, and raw material producers), downstream (wholesalers, retailers, and intermediaries), market stakeholders (consumers, markets, and society), and societal stakeholders (government, interest groups, and the general public). As shown, companies have multiple stakeholders that can be classified in various ways. Regardless of classification, a company must engage with all stakeholders on sustainability issues to be seen as a legitimate market actor (Andersson et al., 2023, 1886, 1888–1889; Dathe et al., 2024, 146). In this context, internal stakeholders, as well as market and societal stakeholders, are the most important groups in this thesis. With these interest groups, the sustainability commitment and the financial outcome are legitimized through the ESG practices. By addressing the priorities of these key stakeholder groups through responsible ESG and CSR initiatives, companies not only validate their actions but also position themselves to build sustained legitimacy and competitiveness in an evolving business landscape.

Corporate legitimacy and long-term competitiveness are increasingly linked to responsibilities that go beyond the company itself. Stakeholder theory addresses this broader scope by acknowledging that companies must consider the interests of multiple groups to maintain both financial success and societal trust (Baumgartner & Ebner, 2010). There is growing pressure from all stakeholders for companies to implement CSR (Andersson et al., 2023, 1888). Derived from stakeholder theory, CSR represents the practical implementation of companies' responsibilities toward their stakeholders, integrating ethical, social, and environmental considerations into business strategy. Regarding CSR, stakeholder theory suggests that investing in socially responsible activities enhances the company's relationship with stakeholders by meeting their diverse and sometimes conflicting expectations (Dakhli, 2021, 376). CSR serves as the guiding philosophy for responsible business conduct. Its overarching goal is to promote sustainability.

Companies have adopted CSR and sustainability to deliver their commitment to the public. In this thesis, sustainability is conceptualized through the lens of CSR to ensure alignment with the broader discussion. CSR can be understood as the 2001 and 2011 European Commission definition: "a concept whereby companies integrate social and environmental concerns in their business operations and their interaction with their stakeholders voluntarily" (2001, 6) and the updated definition "the responsibility of enterprises for their impacts on society" (2011, 6). As a concept, CSR emerged from the needs after World War II. Increasing interest in corporate social performance has been growing since the late 1970s. From philosophical thinking to company strategy, CSR has been introduced as a concept that calls on companies to take responsibility and create social value. (Caroll, 1991.) The following elaboration clarifies how this evolution has been conceptualized in the literature.

CSR is a concept that incorporates ethical considerations and economic, legal, and philanthropic perspectives. Companies must have a solid financial foundation to commit to and deliver their practices legally and ethically within the social-ecological system in which they operate. (Caroll, 2015, 91; Schaltegger et al., 2016, 267.) Caroll has illustrated the ethical, economic, legal, and philanthropic responsibilities in a pyramid shape. Financial responsibility at the pyramid's base serves as the foundation for the other layers, emphasizing that companies must be profitable; otherwise, the entire structure would collapse. The second layer, legal responsibility, involves fulfilling societal laws and regulations. The third layer, ethical responsibility, pertains to a company's value-based practices aimed at doing no harm and acting rightly within society. The fourth layer, philanthropic practices, extends beyond the organization's borders to positively impact the community in which the company operates. (Caroll, 1991.)

Understanding why companies engage in sustainability and how this connects to CSR is essential for this thesis. As outlined in the stakeholder section, CSR can be divided into internal and external responsibilities. Internal CSR refers to a company's relationships with its employees and managers, while external CSR encompasses obligations that extend beyond the company's boundaries, including regulatory compliance (Macassa et al., 2021, 867). By adopting responsible processes and committing to CSR, companies can identify new business opportunities. Additionally, companies invest in CSR to manage stakeholder pressure, reduce risks, improve employee satisfaction, and support social and environmental goals, which ultimately increase their economic value. The opportunities and investments boost value creation, both financial and non-financial, and are among the main reasons for CSR practices, as discussed throughout this thesis. (Rafi, 2022.) Building on these motivations and impacts of CSR, it is essential to consider the frameworks used to evaluate how companies put such values into practice. Thus, the following section reviews established approaches for assessing corporate sustainability performance.

2.1.2 Frameworks for assessing corporate sustainability performance

To connect the topics of CSR, triple bottom line (TBL), and ESG, they can be seen as distinct yet interconnected, as they all assess sustainability in various ways. Organizations demonstrate their commitment to sustainability by adopting the CSR framework, which incorporates the TBL and

ESG. TBL has fundamental similarities with ESG practices, which are increasingly standardized in their calculation methods (Slaper & Hall, 2011). Within these frameworks, performance is increasingly communicated through ESG reporting, and the TBL can be further enhanced by ESG practices (Lee, 2024, 5260). The three pillars of TBL are integrated with the three pillars of the ESG criteria. Figure 1 illustrates the foundation of sustainability within a company context through the CSR framework and demonstrates how the TBL and ESG frameworks align. This alignment meets stakeholders' expectations and guides the sustainable investments that companies undertake.

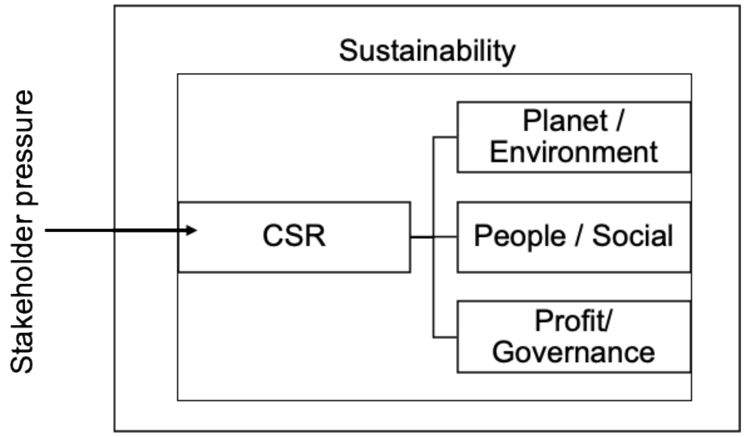

Figure 1. Connecting CSR with TBL, and ESG (adapted from Carter & Rogers, 2008; van Marrewijk, 2003)

Figure 1 demonstrates that sustainability is the overarching contemplative premise that explains why companies commit to CSR, TBL, and ESG. Stakeholders are pressuring companies to integrate CSR. CSR involves aligning the planet, people, and profit by implementing ESG principles through three pillars: environmental (ENV), social (SOC), and governance (GOV) (Evans et al., 2017, 599–600; Caiazza et al., 2021, 2). As competition intensifies, sustainability becomes an increasingly important tool for gaining a competitive advantage; at the same time, it helps mitigate climate change. Sustainable corporate activities, positioned at the intersection of social, environmental, and economic performance, deliver long-term financial benefits and help maintain competitive advantage (Carter & Rodgers, 2008). Stakeholder relationships significantly influence a company's sustainability commitment. However, simply adopting ESG principles is ineffective unless they are fully integrated and operationalized within the business model to enable measurable evaluation (Dathe, 2022, 112). The adoption is understood in relation to the TBL and ESG practices, which will be discussed in the next section.

While CSR provides the ethical foundation for responsible business conduct, the TBL framework offers a structured framework for assessing this responsibility. TBL operationalizes CSR by emphasizing the balance between people, planet, and profit (3Ps), linking moral commitments to performance measurement and strategic decision-making. Companies pursue CSR activities because they contribute to economic, social, and environmental performance, as highlighted by the TBL framework. To meet environmental, economic, and social responsibilities, John Elkington introduced the TBL framework in the mid-1990s, which companies have widely accepted as a means to deliver sustainability performance figures and achieve increased profitability. (Slaper & Hall, 2011.) This foundational concept is essential to this thesis because it links sustainability practices to the financial objectives companies strive for. TBL focuses on economic prosperity, environmental quality, and societal legitimacy, which the company seeks to achieve through the social justice of its existence (Elkington 1999, 2). The following section extends this discussion by linking the TBL framework to contemporary ESG performance.

The TBL framework laid the conceptual groundwork for integrating social and environmental considerations into business performance. ESG extends this logic by providing quantifiable, comparable metrics that guide both corporate reporting and investment decisions. Both frameworks, TBL and ESG, are connected to stakeholder theory, with ESG serving as a quantitative tool to measure stakeholders' interests and concerns. It enables a competitive advantage by creating new value opportunities and minimizes internal and external risks to the company through ESG assessments of its own operations. ESG also improves financial performance by creating legitimacy, which in turn increases stakeholder engagement and purchase commitment. (Li, H. et al., 2022; Velte, 2017). The ESG framework is crucial because it provides the foundation for this thesis, which aims to present ESG practices alongside financial performance.

To elaborate on this foundational framework, ESG refers to the integration of environmental, social, and governance practices, structured around three distinct pillars. Together, these dimensions form a comprehensive framework for assessing corporate sustainability performance. The term “ESG” emerged in 2004, when the UN Global Compact, together with the Swiss Federal Department of Foreign Affairs, introduced it in the report “Who cares to win”. Recommendations were formulated for companies to incorporate ESG practices into their financial analysis, reporting, and investment decisions. (Dathe et al., 2022, 119; UN Global Compact, 2025) The first implication of ESG has been its application in sustainable finance, which emerged following the 2008–2009 financial crisis (Lins et al., 2017). Since then, growing interest, even exponential investments in funds (Eccles et al., 2020, 578), to measure CSR practices and address the stakeholder expectations and value of a company´s strategy has made ESG a trending topic or even a daily common way to express nonfinancial or intangible assets (Edmans, 2023, 3). ESG has a double meaning, as it can be viewed as a social construction with a normative aim and a financially value-driven side. (Eccles et al., 2020). The non-financial aspects primarily address stakeholder pressure and lend legitimacy to the company. The financial side enhances companies' valuation and value through stock return (Gillan et al., 2022; Khan, 2020; Qureshi et al., 2020).

2.1.3 Linking reporting standards to ESG disclosure and performance assessment

The integration of the TBL and ESG frameworks provides the foundation for contemporary sustainability reporting. It has been argued that international accounting standards (IAS) enhance corporate responsibility on a global scale by helping to address persistent governance gaps. Moreover, IAS strengthens an organization's capacity to provide transparent explanations and justifications to relevant stakeholders regarding its decisions, actions, and omissions, when required. The introduction of the ESRS further institutionalizes TBL and ESG frameworks by embedding ESG disclosure requirements into a regulatory framework that advances transparency, accountability, and comparability across organizations. Reporting helps stakeholders evaluate companies' CSR practices, while simultaneously encouraging companies to conduct their business responsibly. (Gilbert et al., 2011; Gillan et al., 2022; Khan, 2020; Qureshi et al., 2020.)

According to Gilbert and colleagues (2011, 6), IAS can be divided into four hierarchical categories, as shown in table 1, where level 1 represents the highest hierarchy level, followed by levels 2, 3, and 4.

Table 1. Hierarchy of standards. (modified from Forest Stewardship Council, 2025; Gilbert et al., 2011; ISO 2025)

Hierarchy level	*Classification of the standard*	*Examples*	*Explanations*
Level 1	1. Principle-based	UN Global Compact	Broad guidelines, which offer companies social and environmental guidelines for their CSR initiatives
		OECD Guidelines for Multinational Enterprises	A general framework for business behaviors and practice. Focus on areas such as employment and industrial relations, human rights, environment, information disclosure, combating bribery, consumer interests, science and technology, and competition and taxation
Level 2	2. Certification	Forest Stewardship Council	Non-profit organization which unites individuals, businesses, governments, and non-governmental organizations under a common goal to protect forests.
		Sector specific: Marine Stewardship Council (MSC)	Sustainable fishing and responsible marine certification
		Social Accountability, SA800	focuses on labor rights and work conditions
Level 3	**3. Reporting**	**Global Reporting Initiative (GRI)**	**Framework for disclosing responsibility practices (social, environment and economic)**
		Carbon Disclosure Project (CDP)	Framework for disclosing carbon dioxide practices
Level 4	4. Process	The International standardization Organization (ISO)	Largest non-governmental international organization which provides practical solutions for real-life problems.

In Table 1, the first level is the broadest set of guiding principles, followed by level 2, the certification principles, which stem from level 1. Certification standards are non-governmental standards for an industry. Regulations rely on meeting established industry standards (Gilbert et al., 2011, 24). The third level is based on voluntarily followed initiatives, which is the scope of this thesis (bolded in the table); the ESRS are based on the GRI. The last group includes standards that guide companies in running their daily operational practices to achieve their sustainability goals (Qureshi et al., 2020, 1200).

The ESRS emphasizes the inclusion of sustainability reporting alongside financial information. The standard contains general requirements and general information about the company's operations. A total of 12 standards fall under the ESRS, enhancing uniformity within the EU and improving comparability. Table 2 presents the ESG dimensions within the TBL framework and their correspondence to the ESRS interdisciplinary and subject-specific standards.

Table 2. Connection of ESRS, ESG, and TBL. (modified from GRI, 2025; Galbin & de Vibe, 2024; EU-Lex 2022; Rantakari, 2024)

ESRS Interdisciplinary standards						
		ESRS 1		**ESRS 2**		
		General principles		General, strategy. Governance and materiality assessment		
Planet	**Environment**	**E1**	**E2**	**E3**	**E4**	**E5**
		Climate change	Pollution	Water and marine resources	Biodiversity and ecosystems	Resource use and circularity
People	**Social**	**S1**	**S2**	**S3**	**S4**	
		Equality of own workforce	Value chain workers	Affected communities	End users and community	
Profit	**Governance**	**G1**				
		Business conduct				

Next, as outlined in Table 2, the three scope areas, which can be referred to as pillars, are discussed. Firstly, the environmental pillar covers pollution, renewable energy use, climate change, and water and energy consumption. It addresses a company's impact on the natural environment, encompassing both organic and inorganic materials, including air, land, and water. It reflects the company's commitment and capacity to reduce environmental emissions, develop eco-efficient products and services, and ensure the efficient use of natural resources throughout its production processes. Secondly, the social pillar assesses a company's commitment and effectiveness in managing relationships with its stakeholders, reflecting its capacity to foster trust, loyalty, and a positive reputation. It encompasses the company's efforts to uphold human rights, promote diversity and equal opportunities within its workforce, ensure high-quality employment conditions and a safe and healthy work environment, and provide continuous training and development opportunities for its employees. Lastly, the governance pillar concerns a company's systems and processes designed to ensure sound corporate governance, reflecting management's commitment and effectiveness in adhering to best-practice governance principles. It also considers the efficiency and accountability of board independence, transparency, activities, and decision-making functions. (Billio et al., 2021; Dathe, 2024, 115; Galbreath, 2013; GRI, 2025; Sassen et al., 2016.)

Investments in one pillar may sometimes detract from others; therefore, it is essential to assess each pillar individually, as well as ESG as a whole, in this thesis (Agnese et al., 2025, 630). In a similar vein, the topics in the three areas serve as guiding themes for this thesis, which will use them to evaluate real-life practices observed in top-performing companies. Likewise, the distinctive roles of the three ESG pillars are crucial in performance assessment, particularly in ESG scoring, which will be discussed in the following section.

The standards have contributed to greater consistency in reporting practices; however, the absence of universally accepted frameworks and binding regulations for non-financial disclosures persists (Gilbert et al., 2011). Reporting helps stakeholders evaluate companies´ CSR practices, encouraging companies to execute their business responsibly. The ESRS guides reporting in several ways. First, the company conducts a dual materiality analysis to determine which content should be included in its report. This involves assessing the material impacts of its operations and identifying the key sustainability aspects most significant to its business. As a result, the report must address those sustainability factors and actions that are relevant and material to the company's activities. Second, ESRS1, ESRS2, and standards E1–E5, S1–S4, and G1 together constitute the minimum reporting framework the company must use, based on its materiality assessment. (EU-Lex, 2022; EU taxonomy, 2025; Rantakari, 2024.)

This section introduces ESG ratings, explaining the framework commonly used in corporate settings to evaluate and compare company behavior based on ESG scores. ESG practices are frequently assessed and communicated through these scores, which are operationalized in various ways across the literature. It is important to note that different rating agencies may apply distinct methodologies. ESG is challenging to implement, particularly when measuring the three different types of activities. Not relying entirely on monetary values, an index-based approach, as proposed by Slaper and Hall (2011), is a foundational method for measuring ESG practices within a company. However, measuring such practices has been voluntary, creating a dilemma for reporting and comparing ESG practices. (Billio et al., 2024; Tamimi & Sebastianelli, 2017.)

A widely used tool for evaluating a company´s sustainability practices through performance is the ESG score. ESG scores are a metric for assessing a company's sustainability performance. Although methodologies for assigning these metrics vary across rating agencies, the ESG score can serve as a measure of corporate social responsibility. The ESG scores are provided by sustainability rating agencies that are recognized as credible market participants. Researchers have used a handful of ESG score rating systems. (Billio et al., 2021.)

The rating agencies use different sources to assemble information on companies´ ESG performance. Sources include, among others, company disclosures, media sources, conventions, company websites and reports, non-governmental organization (NGO) websites or reports, news, stock exchange filings, publicly available information, interviews with stakeholders, direct contact with the company, and surveys. Rating scoring differs from numbers to letters, and the providers' headquarters are in Europe and North America. Regarding the number of indicators used in the assessment, risk factor criteria vary between the providers. According to the literature, industry weights differ similarly. In this regard, some agencies devalue the scores and focus on industry-specific factors, while others use universal ratings. Table 3 is organized by the number of criteria used by the provider, from the highest, Financial Times Stock Exchange Russell (FTSE Russell), to the lowest, Morgan Stanley Capital International (MSCI). The table also provides overall information about rating agencies, including the country where the agency's headquarters is located and the scoring type it uses, specifically whether it uses numbers or letters to rate companies. (Gillan et al., 2021.)

Table 3. Rating agencies and rating scene. (modified from Billio et al., 2021)

	FTSE Russell	**LSEG**	**Sustai-nalytics**	**Bloom-berg**	**ISS Oekom**	**ECPI**	**Robeco SAM**	**Vigeo-Eiris**	**MSCI**
Rating score type	0 to 5	0–100 and A to D-	0–100	0–100	A to D-	EEE to F	0–100	++ to - -	AAA to CCC
Since	2001	2002	1992	2008	1985	1997	1995	1983	1990
Count-ry	UK	UK	Nether-lands	USA	Germa-ny	Italy	Switzer-land	France	USA
Num-ber of asses-sed criteria	300	178	155	120	100	80/86	74	38	37

Based on the table 3, it can be concluded that several agencies provide ESG ratings, each with its own methodology, scoring scale, and focus areas. For instance, FTSE Russell and London Stock Exchange Group (LSEG) use numerical scales (0–5 and 0–100/A–D, respectively), while others, such as ISS Oekom and ECPI, apply letter grades. Robeco Sustainable Asset Management (RobecoSAM) and MSCI use combined alphanumeric scales (0–100 or AAA–CCC). These ratings systems have evolved over decades, with Institutional Shareholder Services Oekom (ISS Oekom) and Vigeo-Eiris among the earliest established in the 1980s, and Bloomberg and LSEG launching their services in the 2000s. The differing scopes between agencies highlight that ESG ratings are not standardized and that careful interpretation is necessary when comparing companies across rating providers. Rating agencies, as referred to here as the ESG score providers, differ in their understanding of criteria, assessment methods, benchmarking, and reported figures. Depending on the company´s possible reporting under each of the ESRS themes, this may influence the scoring.

Large companies report more extensively than smaller ones. Clearly, this depends on whether the company is required to report. Depending on a company's potential reporting obligations under each ESRS theme, this may influence its score. While large companies tend to report more thoroughly than smaller ones, this also depends on whether ESRS mandates reporting. Additionally, the resources allocated for reporting are greater in large companies than in smaller ones. This raises the question of whether large companies, often regarded as industry benchmarks due to their public visibility, might introduce bias. This concern is particularly relevant because such companies are considered top benchmarks within their industries due to their public profile. The issue of company size and potential bias is further discussed later in this thesis. (Billio et al., 2021, 1430; Drempetic et al., 2020, 335, 338.)

Given differences in rating agencies' protocols, it is worthwhile to consult previous studies and identify the most widely used agency to inform academic research. To illustrate how the rating system evaluates companies' ESG commitments based on their reports and industry, as well as compares them to industry peers, the London Stock Exchange Group (LSEG) rating system serves as an exemplary example. Baldini and colleagues (2018, 84) studied the validity of the LSEG database, which was found to be good. The LSEG database is widely used in academic research (among others, Barros et al., 2022; Caiazza et al., 2021; Huang et al., 2023; Nirino et al., 2021; Tampakoudis & Anagnostopoulou, 2020). LSEG has over 600 analysts who collect ESG data. The data is processed and independently audited. Data is gathered from annual reports, company webpages, NGO webpages, stock exchange filings, CSR reports, and news sources. According to LSEG data & analytics, the database is the most comprehensive of the data providers´ databases, covering over 90% of the global market. LSEG emphasizes transparency and a data-driven approach. ESG data is available for nearly 16,000 private and public companies since 2002. In the LSEG, one can access over 870 metrics, including 186 ESG-based scores. Figure 2 illustrates LSEG’s benchmarking approach, highlighting 10 main themes (categories) used for comparison within relevant industry groups. Additionally, this figure outlines the ESG and ESGC principles applied in the assessment.

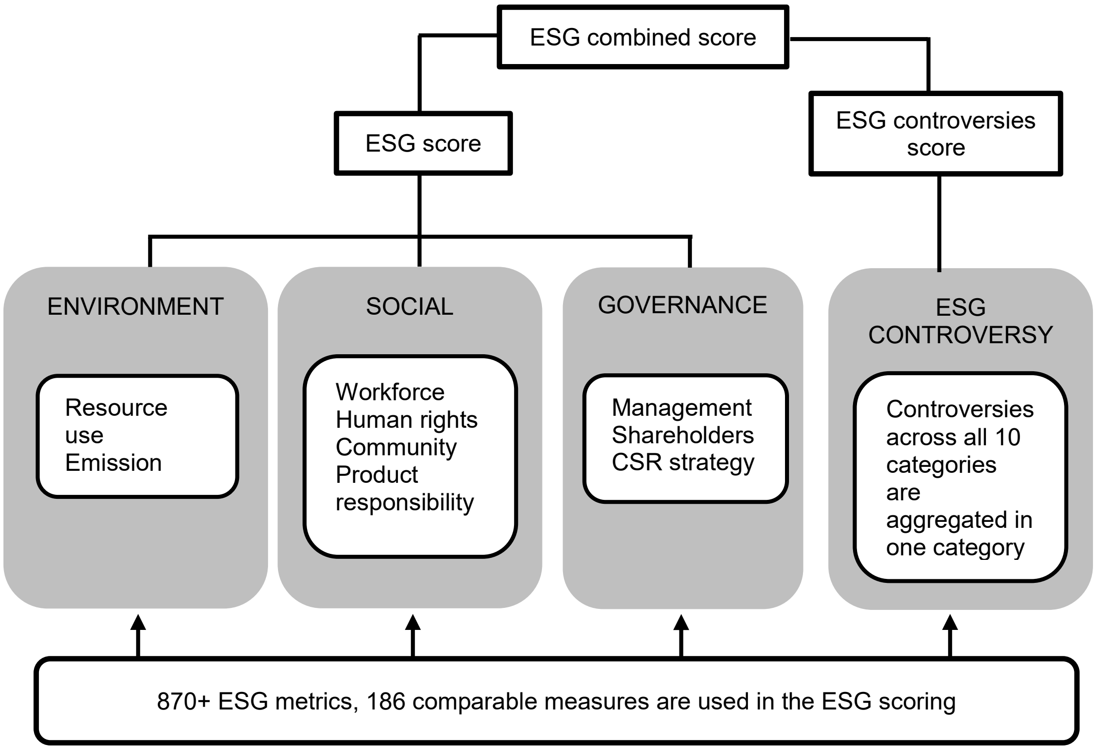

Figure 2. LSEG scoring categories (LSEG, 2024)

Figure 2 expresses the LSEG scoring system. The ESG basic rating is divided into three parts. The ESG scores run from 0 to 100. Each pillar´s category receives a score based on its weighting, determined by the themes within it. The total ESG score is the sum of each separate categorized score. The category weights vary per industry for the environmental and social pillar. For governance, the weight is the same across industries. For example, in the food and drug retail industry, which falls under non-sensitive industries, the standard weights for the environment, social, and governance categories are 23%, 47%, and 30%, respectively. In contrast, for the oil & gas industry, which is a sensitive industry, the weights are 34%, 42%, and 24%. (LSEG, 2024.) These reflect the components of ESG, presented in Table 2, and support the notion made by Garcia and colleagues (2017) that sensitive industries' environmental practices are weighted more than those of non-sensitive industries, since they pose elevated ecological risks.

The combined ESG score is the sum of the three separate scores, ENV, SOC, and GOV, with controversies deducted. ESG controversies are reflected in the ESG controversy score, which is calculated based on 23 ESG controversy topics. Community, human rights, product responsibility, management, resource use, shareholders, and workforce are the main categories into which the 23 controversial topics fall. The controversy score considers any scandal that occurs and penalizes the company involved, affecting their overall ESG combined (ESGC) score and grading. The controversy score can range from 0 to 100. Companies that have no controversies in the year of analysis will have a score of 100. The smaller the number, the more controversies or severe controversies have occurred. The ESGC score is the sum of the ESG score and the ESG controversy score. Letter grades are also provided, which makes their comparison to, for example, MSCI rating scores easier. (Billio et al., 2020; LSEG 2024.)

2.1.4 Implementing sustainability at the company level

Since sustainability and company ESG performance are highly complex, stemming from industrial, country, and company characteristics, it is reasonable to look beyond the measures and examine how underlying strategies enable companies to enhance sustainability performance without sacrificing financial outcomes. Drawing on principles emphasizing the interdependence between companies and their stakeholders, an ESG-oriented perspective is adopted to explore how companies align their strategies and business models to achieve strong ESG performance while delivering positive financial outcomes. It has become evident that incorporating ESG practices into their business models can lead to operational excellence. But how this is done in practice remains open. ESG strategies complement each other by establishing measurable indicators, governance mechanisms, and transparent reporting systems that ensure accountability and continuous improvement. Together, they form a cohesive pathway from strategic intent to quantifiable impact. (Chevrollier et al., 2020; De Falco et al., 2024; Garcia et al., 2017; Gillan et al., 2021.)

Sustainability strategies aim to prevent or at least reduce harm to the environment and society. Companies that integrate sustainability into their strategy should start by assessing their current ESG practices. Based on this assessment, they can establish the mission and goals of their sustainability efforts. Depending on organizational aims, available resources, and internal expertise, companies should choose the most suitable strategy to achieve sustainability objectives, supported by key performance indicators (KPIs) to evaluate ESG performance. (KPMG, 2017). Through strategic ESG practices, companies sustain stakeholder relationships, enhance knowledge and resource efficiency, and generate added value for the business. (Wang N. et al., 2024, 1163.)

Sustainability practices, in this context, are referred to as ESG practices, which operationalize and make visible a company's strategic commitment to sustainable development (Bocken et al., 2014). In many companies, sustainable values are integrated into corporate strategies; however, the depth of this integration often depends on the industry context and organizational priorities (Bhandari et al., 2022, 1526). In addition, companies may adopt strategies for sustainable practices for two main reasons: either because it is necessary due to the regulatory landscape or for an authentic reason that "it is the right thing to do" (Chevrollier et al., 2020, 127). Moreover, while many companies implement sustainability initiatives to meet regulatory or reputational expectations, those that prioritize sustainability often differentiate themselves by seeking a competitive advantage through sustainable practices. When companies pursue a competitive advantage in this manner, they have various opportunities to enhance both internal and external organizational operations, ultimately leading to a more sustainable future. (Chevrollier et al., 2020; Tohang et al., 2025.)

Strategies can include material and energy efficiency, circularity by closing resource loops, the use of renewable resources, and the use of artificial materials, such as substituting oil-based materials with renewable ones. The sustainability strategies can include functionality, such as non-ownership of a product, taking a stewardship role within the industry, encouraging less consumption behavior, repurposing products for societal or environmental benefit, broadening value creation to stakeholders who have not been reached, and scaling up solutions and technologies. These are conservative strategies that require innovation and often modification of the organizational structure. (Aldowaish et al., 2022, 4; Geissdoerfer et al., 2018, 408.)

Sustainability strategies encompass all three pillars and are embedded themes in sustainability reporting. From the literature, as an example of the environmental pillar in sustainability strategies, companies have positively impacted their financial performance by addressing environmental initiatives such as energy and waste management, carbon footprint reduction, awareness programs, and data management, which are highly visible to external stakeholders (Liao et al., 2024). Similarly, Wagner and Schaltegger (2004, 596) also found a positive correlation between environmental strategies and corporate financial performance. This encourages companies to actively pursue environmental strategy, raising the question of which strategic approaches lead to superior ESG performance. Integrating ESG practices into a company's strategy is no longer optional; it is central to earning trust, guiding operations, and ensuring that internal and external actions drive lasting performance. An internal strategic perspective is essential for the effectiveness of sustainable strategies, as achieving meaningful outcomes requires a strong organizational commitment to sustainability. (Boffa & Maffei, 2021.)

Strategies are company-specific, but overall frameworks can be used across industries. Each company should have a business model that is delivered by its strategy, as Teece noted (2010, 179), "A business model is more generic than a business strategy. Coupling strategy and business model analysis is needed to protect competitive advantage resulting from new business model design."

According to Teece (2010, 172–173), business models are “defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit. A business model articulates the logic and provides data and other evidence that demonstrates how a business creates and delivers value to customers.” To achieve a competitive advantage, a company’s business strategy and business model must be aligned, with the business model serving as a broader, more general framework than the business strategy (Teece, 2010, 179).

Extending the previous argument, the business model can be understood as the conceptual framework that explains how an organization creates, delivers, and captures value. Following this, SBM can be understood by Bocken and colleagues (2014, 484) as going beyond the creation of economic value to incorporate social and environmental value for a broader range of stakeholders. This view is consistent with the notion that companies can gain a competitive advantage by rethinking their business models and incorporating sustainability strategies. (Bocken et al., 2014; Osterwalder & Pigneur, 2009, 14.)

Sustainable business models promote the same issues as the strategies do: sufficiency, reuse, and scalable, eco-efficient solutions that enhance environmental performance, often without explicitly referring to the circular economy. They support sustainability objectives, including strategies such as durability, responsible resource use, and improved well-being through circular value creation, collaboration, and functionality over ownership. This approach maximizes material and energy efficiency and creates value from waste. Moreover, the circular economy is one of the most prominent forms of SBM adopted by companies. Lüdeke-Freund and colleagues (2018, 37) define the circular economy as “a regenerative system in which resource input and waste, emission, and energy leakage are minimized by slowing, closing, and narrowing material and energy loops.” Other recognized SBM types include product-as-a-service and social enterprise models. Geissdoerfer and colleagues (2016, 410) further argue that SBMs will likely replace conventional business models, becoming the new norm and turning competitive advantage into sustainable competitive advantage. (Bocken et al., 2014; Boffa & Maifai, 2021; Comin et al., 2019; Lüdeke-Freund et al., 2018; Schaltegger et al., 2016.)

As seen, sustainable strategies and business models are intertwined and share the same goals. These should not be separated. Connecting the notions of SBM and sustainable strategies, Schaltegger and colleagues (2016, 266) have evidenced that meaningful contributions to sustainable development require companies to achieve environmental and social goals through superior processes, products, or services. To do so, the strategies and business models must be sustainability-oriented. Building on this, the discussion moves toward linking the two distinct yet related concepts that help frame the types of superior practices that emerge.

Bocken and colleagues (2014, 47–54) introduced a comprehensive classification of archetypes, illustrating the various mechanisms through which sustainability can be achieved. The archetypes are categorized into three categories: technical, social, and organizational. The strategies follow ESG practices, as reflected in the ERSR reporting framework, with the environment, social, and governance practices aligning with the sustainability strategies. The categories, archetypes, and descriptions are presented in Table 4.

Table 4. Connecting SBM categories, archetypes, their description, and strategies. (adapted from Bocken et al., 2014, 49–54; Lin et al., 2024; Geissdoerfer et al., 2018; Rimmel, 2024)

Grouping	Archetype	Description	ESG practice
Techno-logical	Maximize material and energy efficiency	Do more with fewer resources, generating less waste, emissions and pollution	**E5:** Resource use and circularity *Efficient use of materials reduces resource extraction and waste.*
	Create value from waste	The concept of "waste" is eliminated by turning waste streams into useful and valuable input to other production and making better use of under-utilized capacity.	**E2:** Pollution **E5:** Resource use and circularity *Turning waste into resources reduces pollution and promotes circularity.*
	Substitute with renewables and natural process	Reduce environmental impacts and boost business resilience by addressing resource limits and reliance on non-renewable production systems.	**E1:** Climate change **E2:** Pollution *Using renewable energy and natural processes mitigates emissions and reduces environmental pollution.*
Social	Deliver functionality rather than ownership	Provide services that satisfy users' needs without having to own physical products.	**E5:** Resource use and circularity **S4:** End users and community *Efficient use of materials reduces resource extraction and waste.*
	Adopt a stewardship role	Proactively engaging with all stakeholders to ensure their long-term health and well-being	**E4:** Biodiversity & Ecosystem **S3:** Affected communities *Taking responsibility for environmental and social impact supports ecosystems and affected communities.*
	Encourage sufficiency	Solutions that actively seek to reduce consumption and production	**E1:** Climate change **E5:** Resource use and circularity *Promotes lower consumption and sustainable resource use, reducing emissions and pressure on resources.*
Organiza-tional	Repurpose for society/environment	Prioritizing delivery of social and environmental benefits rather than economic profit (i.e. shareholder value)	**E2:** Pollution **E4:** Biodiversity & Ecosystem **S3:** Affected communities *Repurposing materials can reduce pollution, protect ecosystems, and benefit communities.*
	Develop scale up solutions	Delivering sustainable solutions at a large scale to maximize benefits for society and the environment.	**E1:** Climate change **E2:** Pollution **E5:** Resource use and circularity **S4:** End users and community *Scaling sustainable solutions can reduce emissions, pollution, and resource use, while benefiting communities through wider access to innovations.*

Table 4 presents the archetypes, their descriptions, and how they are reflected in ESG practices. Technical archetypes encompass a production philosophy centered on eliminating waste, enhancing flow, and generating value through continuous improvement and employee engagement. This type of manufacturing method can significantly improve energy efficiency, material utilization, and productivity. It addresses maximizing material and energy efficiency. Another technical archetype is industrial symbiosis, a process-oriented solution that converts waste outputs from one process into feedstock for another or uses closed-loop processes—both of which generate value from waste. Another example is replacing materials with renewable alternatives, such as substituting metals with natural, non-finite resources. (Bocken et al., 2014; Lin et al., 2024; Geissdoerfer et al., 2018.)

Social archetypes include shifting toward a pure service model, offering functionality on a pay-per-use basis instead of selling product ownership, which highlights delivering functionality rather than ownership. Stewardship can take the form of upstream initiatives, such as practical environmental and social sustainability efforts through supplier accreditation, or downstream stewardship that actively addresses consumer health concerns. Promoting sufficiency involves redesigning products to extend replacement cycles or supporting secondhand marketplaces. Organizational archetypes are not limited to non-profits; they also encompass transforming organizations into social enterprises that prioritize environmental and societal concerns over maximizing shareholder value. Companies may employ franchising, licensing, or collaborative models to expand solutions, creating new businesses that significantly alter consumption or production models. Organizational archetypes are those that can adapt their core activities to focus on social and environmental value alongside economic profit. By creating scalable solutions, they can achieve a significant, sustainable impact on society and the environment. (Bocken et al., 2014; Lin et al., 2024; Geissdoerfer et al., 2018.)

Table 4 can be analyzed in terms of sustainable economy principles, and its alignment with ESG issues highlights how companies can incorporate sustainable practices across multiple areas. Principles such as maximizing material and energy efficiency, creating value from waste, and adopting a stewardship role primarily address environmental challenges, including climate change, pollution, biodiversity loss, and resource depletion. Social dimensions, such as the well-being of end users, affected communities, and workforce equality, are supported through practices such as delivering functionality rather than ownership, repurposing for societal benefit, and developing scalable solutions. Governance aspects, although less directly connected to operational sustainability practices, support responsible business conduct and ensure the effective implementation of ESG. The link between sustainability and a company's commitment shows that adopting sustainable strategies can reduce environmental impacts, create social value, and enhance governance, all while maintaining financial performance. Examining how leading companies align their strategy provides valuable insights into effective ESG practices. (Chevrollier et al., 2020; Evans et al., 2017; Geissdoerfer et al., 2018; Rimmel, 2024.)

The success of sustainable approaches is seen in the adoption of standardized methods and recognized sustainability reporting frameworks, especially those that address ESG. However, shifting from the TBL approach to ESG integration and a sustainability-oriented business model is challenging for many organizations (Evans et al., 2017, 599), especially when balancing social and environmental goals with profitability. According to Lee and colleagues (2024, 526), TBL can be enhanced when ESG practices are fully integrated into the business model. Geissdoerfer and colleagues (2016, 410) argue that sustainable business models may eventually replace traditional models, making sustainable competitive advantage the new norm.

2.2 Connecting sustainability practices with financial performance

Performance and success may be considered independently or in conjunction. Ultimately, companies aim to achieve successful outcomes from ESG practices, making it essential to define what constitutes success and from which perspective it is evaluated in this thesis. Here, success is conceptualized as a proxy for performance, with ESG performance operationalized through ESG scores. Performance is often distinguished between financial and operational outcomes, or between financial, product-market, and shareholder returns (Richard et al., 2009, 722), while success is more context-dependent, reflecting the degree to which strategic objectives are achieved. Moreover, many researchers use accounting-based metrics to determine whether sustainability performance enhances long-term financial performance. (Rennebook & Vansteenkiste, 2018, 650; Zollo & Meier, 2008.)

As a clearly defined and measurable framework for corporate sustainability, ESG factors are often used in financial decision-making, providing an overall perspective on a company's sustainability performance (Chevrollier et al., 2020, 127). Financial performance is "financial visibility, or the extent to which a company achieves its economic goals" (Price & Müller, 1986, cited by Orlitzky et al., 2003, 411). The literature presents conflicting evidence on the relationship between ESG and CFP, with some studies reporting positive, though sometimes mixed or insignificant, correlations. A consistent positive correlation over time, with mostly positive results, was found from studies made between 1980 and 2015. (Friede et al., 2015.) These conflicting findings may arise from the use of different company characteristics in the regression model variables, varying databases, and other time periods. These characteristics encompass the market context in which companies operate, including company structure, leadership, ownership, and risk and performance measures. Moreover, measuring ESG and CFP is not straightforward; underlying issues may remain unknown, the situation may be too complex to assess fully with current knowledge, and economic mechanisms may yield conflicting findings. A key consideration is the distinction between short-term and long-term measures. (Barros et al., 2022; Bocken et al., 2014; Garcia-Castro et al., 2010; Gillan et al., 2021; Zollo & Meier, 2008.)

Long-term operating performance is usually evaluated using accounting-based indicators such as return on assets (ROA), return on equity (ROE), sales growth, employee growth, operating margins, cash flow, company size (SIZE), leverage (LEV), and the market-to-book ratio (Caiazza et al., 2021, 8; Huang et al., 2023, 5; Renneboog & Vansteenkiste, 2018, 652). ROA can be employed to examine the impact of ESG on CFP, and research shows an association between ROA and ESG performance (Chen et al., 2023, 9), making ROA a useful metric for conveying a company's sustainability commitments. ROA is calculated by dividing the company's net profit by total assets (Salvi et al., 2018, 100). Likewise, Caiazza and colleagues (2021, 10) found that ROA aligns with sustainable strategies that build a competitive advantage, as such strategies are often difficult to replicate and can improve financial performance. Fischer and Sawczyn (2013, 34) identified ROA as a measure of a company’s stakeholder commitment, explained by the reputational benefits and cost savings achieved through more efficient resource utilization, which in turn lead to better financial performance. Conca and colleagues (2020, 1083) used ROA as a variable because it provides insight into a company's ability to generate returns.

Conca and colleagues (2022) and Velte (2017) observed positive changes in accounting-based ROA due to ESG performance, but not in the market-based Tobin's Q. Velte (2017, 176) instead suggested that Germany's long-standing legal history of governance practices affects ROA. Similarly, Agnese and colleagues (2025, 35) found that ESG commitment positively influences account-based metrics, including ROA, in the CFP context. Orlitzky and colleagues (2003) found that ESG correlates with ROA rather than with market-based Tobin´s Q. Besides these findings, Raimo and colleagues (2021) and Shaikh (2022, 233) found that market-based metrics are explained by the cost per capita or poor integration process. As seen by the researchers above, this implies that negative findings on the CFP are found when market-based metrics (Tobin´s Q) are used.

A study by De Lucia and colleagues (2020) examined whether ROA and ROE can be utilized to evaluate the ESG impact of European companies on their financial performance. They found a positive correlation. Their study is notable for the scope of this thesis, as it is among the first to consider the EU GD, ESG performance, financial outcomes, and strategies for enhancing ESG performance. As their research states, only a few green studies have examined the impact of ESG on financial performance in the EU.

While the influence of ESG performance on CFP has often been examined through overall ESG scores, the evidence generally points to positive effects on financial performance. More recent research, however, shows that the three ESG pillars do not contribute uniformly, revealing a mix of positive, negative, and conditional effects. Environmental initiatives tend to enhance profitability, particularly when supported by strong social performance, whereas their impact weakens when combined with governance-focused efforts (Agnese et al., 2025, 35–36). Social performance similarly displays positive associations with financial outcomes, especially when aligned with environmental engagement. These results were reflected in the work of Orlitzky and colleagues (2003), who found that social responsibility showed the strongest association between corporate sustainability performance and CFP. The environmental pillar also had a positive impact in their study.

In contrast, governance performance produced more mixed effects, contributing positively mainly when environmental investment remains relatively limited. These patterns suggest that resource allocation across pillars can create trade-offs, with improvements in one dimension coming at the expense of another. Since each pillar plays a distinct role in shaping corporate financial outcomes, analyzing them separately and in aggregate remains essential for identifying the specific drivers of the overall ESG–CFP relationship. (Agnese et al., 2025.)

After outlining the general relationship between ESG and CFP, the next step is to examine how this connection manifests across specific industries, where the importance and impact of ESG practices may vary. Studies have also examined how ESG influences financial performance across industries in the EU. Barros and colleagues (2022) emphasize that ESG strategies grounded in stakeholder theory contribute to broader sustainability goals and the TBL. They also note that these benefits tend to materialize with a lag, appearing in financial results in subsequent years, and that stakeholder expectations can vary substantially across different industries.

Studies have addressed the agri-market (Conca et al., 2020), the German market, and multiple industries within the German market (Velte, 2017), as well as an impact study across sensitive and non-sensitive industries in Europe (Qureshi et al., 2020). A study by Conca and colleagues (2021, 1085, 1090) on the European agricultural sector found positive associations between overall ESG performance and CFP, highlighting the environmental and social pillars as particularly significant drivers. Their findings imply that closing ESG gaps in these two pillars is crucial within agri-industry contexts, where financial performance appears to benefit directly from strong environmental strategies. Liao and colleagues (2024) suggest that industry classification and the effectiveness of ESG strategies mediate the relationship between ESG adoption and financial outcomes, with specific pillars, most notably environmental, playing larger roles in industries directly linked to natural resources, namely environmentally sensitive industries.

Research has distinguished between sensitive and non-sensitive industries, noting that environmentally sensitive industries, previously discussed, face stricter ESG requirements. Companies in these sensitive industries are generally expected to emphasize ESG performance more heavily, and, as a result, tend to achieve higher ESG scores than their non-sensitive counterparts (Miralles-Quirós et al., 2018). Qureshi and colleagues (2020) examined performance across industries and found that the social and governance pillars had exceptionally positive impacts on CFP in environmentally sensitive sectors, where companies are considered to face higher environmental risk and thus may prioritize environmental actions more than their non-sensitive counterparts. Notably, Velte (2017) identified contradictory results in Germany's manufacturing and service sectors, observing that governance was the strongest pillar for influencing CFP. This may reflect contextual factors, such as Germany's long-established legal frameworks around corporate governance.

With climate change mitigation becoming increasingly urgent and the EU committing to becoming the first climate-neutral continent by 2050, environmental concerns have taken center stage, especially following the introduction of the EU GD and the adoption of the CSRD. According to stakeholder theory, this significant shift should inspire more substantial support for environmental initiatives and greater appreciation for stakeholder interests, particularly in investments targeting the social aspects of ESG. Therefore, it is essential to consider sector-specific factors when analyzing the relationship between ESG performance and CFP (Conca et al., 2021, 1082).

Moreover, the CSRD has been opposed by the "Omnibus package", which addresses "the future of European competitiveness", and would bring essential changes to the CSRD. With this initiative, the Commission aims to ease the administrative burden on companies by simplifying and clarifying existing sustainability regulations. Moreover, prominent EU leaders and key industry representatives have collectively urged the current EU administration to uphold existing sustainability regulations, warning that proposed changes could undermine essential environmental and social governance standards and diminish the targets that have been achieved. (European Commission, 2025; King, 2025).

In summary, the divergent findings across studies and markets underscore the complex, often nonlinear interactions among ESG pillars and their cumulative impact on financial performance

(Agnese et al., 2025, 35). Following Rafi (2022), companies engage in CSR activities to respond to increasing stakeholder pressure, mitigate risks, and contribute, especially to social and environmental objectives that ultimately enhance economic value. Building on the previous, strong ESG performance can contribute to above-average financial performance by increasing efficiencies and improving access to capital. However, the effects may vary across pillars, industries, and contexts. Overall, ESG in connection with CFP has been studied, and mixed evidence has emerged. In a similar vein, there is mixed evidence on the separate pillars and CFP.

2.3 Research hypotheses development

As mentioned earlier, the primary objective of this thesis is to examine the relationship between ESG performance and CFP. ESG performance can be evaluated using the overall ESG score and each dimension individually. The ESG performance of top-performing companies vary across industries. There is mixed evidence regarding the correlation between ESG and CFP (Orlitzky et al., 2003). However, Friede and colleagues (2017, 225) found a consistently non-negative empirical relationship across all regions and asset classes. Similarly, De Lucia and colleagues (2022) analyzed the relationship between ESG performance and the financial results of publicly listed European companies and found a positive association. Consistent with previous research, Velte (2017, 169) presented results confirming a positive impact of ESG on ROA; therefore, the following hypothesis is proposed:

> *H1: There is a positive and significant relationship between a company´s ESG performance and their financial performance across all companies.*

Even though Friede and colleagues (2017, 226) argue that individual pillars show a somewhat positive relationship between the E and G pillars, they conclude that no single pillar has a significant positive link to CFP. Conversely, Agnese and colleagues (2025) found that ESG performance can either improve or hinder CFP, with evidence of synergy between social and environmental performance enhancing CFP. Similarly, Fischer and Sawczyn (2013, 42) identified a positive relationship between social and environmental performance and CFP. Orlitzky and colleagues (2003) also found that the social pillar positively influences CFP, particularly when using accounting-based measures as in this thesis. Agnese and colleagues (2025) argued that each pillar plays a distinct role, making it reasonable to evaluate them separately. Given findings indicating that the individual pillars contribute differently to positive impacts on CFP, it is logical to split hypothesis 1 into three parts, each examining a pillar separately.

H1a: *There is a positive and significant relationship between a company´s environmental performance and its financial performance across all companies.*

H1b: *There is a positive and significant relationship between a company´s social performance and its financial performance across all companies.*

H1c: *There is a positive and significant relationship between a company´s Governance performance and its financial performance across all companies.*

Larger size, stronger growth prospects, and higher returns on equity often characterize companies with strong corporate sustainability performance. Nonetheless, theory does not clearly predict that these companies should exhibit higher free cash flows or lower leverage, as sustainability initiatives may require ongoing investment and may be financed through conventional channels. (Artiach et al., 2010). Prior research further suggests that companies with stronger sustainability performance tend to achieve better financial outcomes. For example, Ademi and Klungseth (2022) found that high levels of sustainability performance positively correlate with corporate financial performance among U.S.-listed companies. Building on these theoretical considerations and empirical findings, the following hypothesis is proposed:

H1d. *The positive and significant effect is more potent in top-performing companies.*

Companies operating in environmentally sensitive industries face greater stakeholder pressure to address potential environmental risks compared to those in less sensitive industries. These companies must invest heavily in ESG practices, especially on the environmental front, as they face increased pressure to allocate resources to mitigating and managing environmental risks. This suggests that companies in sensitive industries tend to exhibit higher environmental performance, particularly in Brazil, Russia, India, China, and South Africa. (Garcia et al., 2017.) However, contradictory findings by Qureshi and colleagues (2019) suggest that social and governance performance in sensitive industries may surpass environmental performance among 812 listed European companies. Considering this context and the differences across regions, a second hypothesis is proposed:

H2: *There is a positive relationship between a company's ESG performance and its financial performance across sensitive and non-sensitive industries.*

Considering the findings by Qureshi and colleagues (2019) in Europe, and given the aim of this thesis to investigate different industries based on their environmental sensitivity and to take into consideration the EU GD, the following hypotheses are formulated in conjunction with H2.

> *H2a: There is a positive and significant relationship between ESG performance and CFP, which is more substantial in sensitive industries.*

Qureshi and colleagues (2019) observe that the companies in sensitive industries achieve superior social and governance performance. And, as Conca and colleagues (2021) found in a non-sensitive agri-market, environmental practices have a significant effect on CFP. The following hypothesis is formulated.

> H2b: *There is a positive and significant relationship between environmental performance and CFP in non-sensitive industries.*

To consider that industries play a mediating role, the final hypothesis was proposed:

> H2c: *The positive and significant relationship between environmental performance and CFP is more substantial in non-sensitive industries.*

The thesis conceptual model is presented in Figure 3.

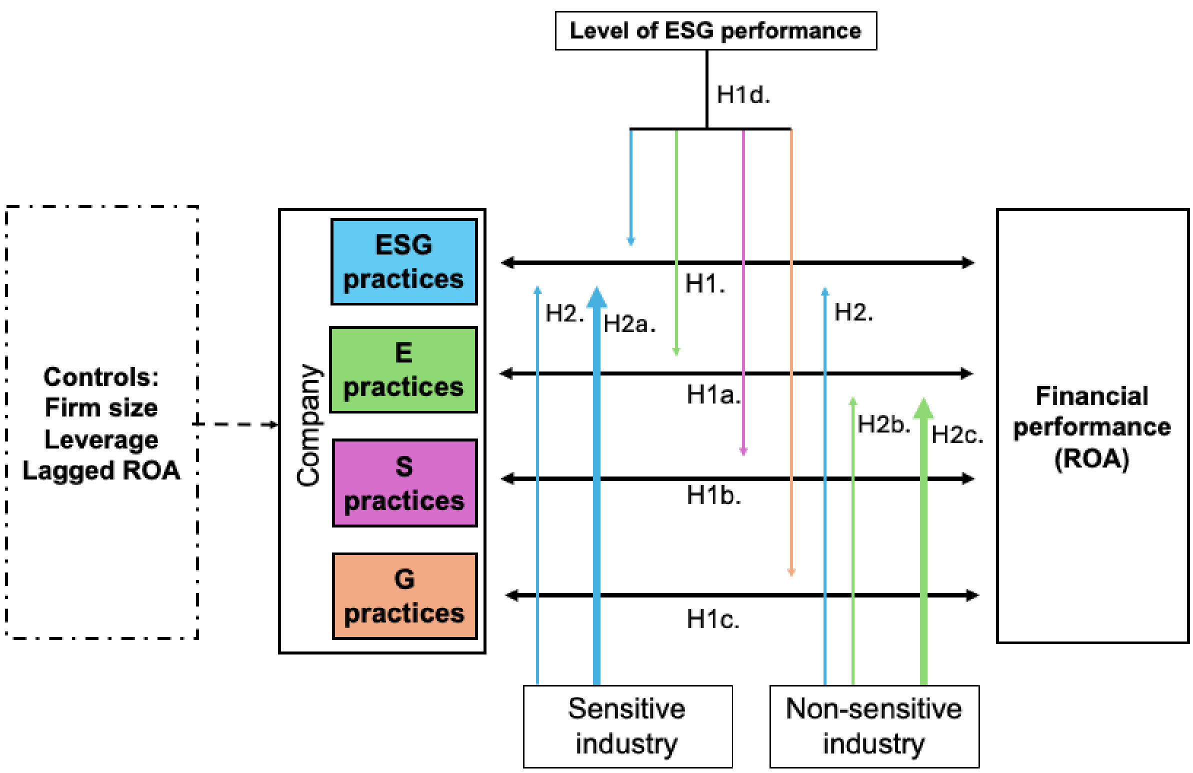

Figure 3. Conceptual model

The horizontal arrows imply hypotheses H1 and H1a-c. The upper vertical arrows (hypothesis H_{1d}) concern the level of ESG performance; in this thesis, they refer to the mediating role of high-ESG-score companies on the ESG-CFP axes. Hypotheses H2 and H2a-c are represented by the vertical arrows emanating from sensitive and non-sensitive industries, respectively. The width of the arrows (H2a and H2c) indicates whether the positive and significant relationship is especially evident in a sensitive or a non-sensitive group. Controls on the left side: Control variables are not the primary focus of the study. Instead, they are included as regressors because omitting them could lead to omitted-variable bias in the estimated causal effect (ESG–CFP) of interest (Lu et al., 2014).

3 Research methodology

3.1 Research design

A research design is crucial because it offers a structured framework for data collection and analysis, ensuring efficient research processes and reliable results (Williams et al., 2021). Research methods can be classified into quantitative and qualitative research. Qualitative research relies broadly speaking on narrative information, which cannot be analyzed with non-statistical research methods (Teddlie & Tashakkori, 2009, 6). Qualitative research can provide a broader understanding of the research topic, alongside quantitative research (Eriksson & Kovalainen, 2008, 5). Quantitative research emphasizes measuring variables numerically, making it ideal for studying phenomena that can be quantified. The use of numerical data and statistical analysis allows for objective measurement, enhances reliability, and supports generalization of the findings to a broader population. Quantitative research is usually “variable-based,” in which case it often includes several computational and statistical analysis models. A variable is a feature or aspect that can take on different values, typically a characteristic of a unit of analysis. (Williams et al., 2021.)

Quantitative research is rooted in the scientific tradition, emphasizing description and inference that can support causal explanation and prediction. It typically employs methods such as experiments, social surveys, and the analysis of official statistics or other naturally occurring data. (Williams et al., 2021, 3.) Quantitative research follows a positivist or post-positivist paradigm (assuming reality is objective and measurable). In contrast, qualitative research is grounded in interpretivist or constructivist paradigms (recognizing socially constructed, context-dependent realities). In terms of philosophical orientation and data acquisition method, this research falls within the scope of positivism, as it draws causal generalizations from measurement and observation. (Tashakkori et al., 2003).

This thesis aims to identify measurable patterns in ESG and CFP and to examine the contextual strategies that enable top-performing companies to achieve sustainability alongside financial success. To this end, a quantitative research method was selected to assess the relationship between variables and test specific hypotheses. ESG scores are used to evaluate the alignment between corporate sustainability performance, strategies, and business models, as they capture non-financial aspects not reflected in traditional financial metrics. Using them allows for a more holistic assessment of how sustainability is integrated into corporate strategy and operations.

Additionally, while quantitative methods provide valuable numerical insights into statistical trends, including example companies, help further contextualize and illustrate the measurable patterns identified, leading to a more comprehensive understanding of company sustainability strategies. The research questions outlined in Chapter 1.2 guide these methodological choices. The use of quantitative methods for data collection and analysis is supported both by the aims of this study, to examine the relationship between ESG classification and companies' financial performance, and by precedent in prior research on the topic. Having established the rationale for a quantitative study, the following details the specific quantitative methods and data collection procedures and presents the example companies used to address the research questions, on the premise that adding examples alongside the statistical analysis is likely to yield more robust and comprehensive research findings.

3.2 Data collection

The data used in this thesis includes ESG scores and financial data. The data used were secondary. Secondary data is defined as "data originally collected for a different purpose and reused for another research question" (Hox & Boeije, 2005, 593). While investors and funding institutions commonly use ESG scoring (Barros et al., 2022), this thesis explicitly applies it to evaluate the alignment of sustainability performance with strategies and business models. This approach is appropriate because ESG scores capture non-financial aspects of corporate behavior that traditional financial metrics cannot reflect. ESG scores and financial data are obtained from the LSEG data and analytics database [1] (hereinafter, the LSEG database). The LSEG database is one of the most comprehensive ESG databases available and is widely used, serving as a primary source for financial data as well. (LSEG, 2024; Qureshi et al., 2019.)

This empirical study examines whether there is a relationship between ESG and CFP in Europe. Specifically, the data were collected for EU countries[2], Norway, and Switzerland. Norway and Switzerland were included in the data for two reasons. First, they exhibit a regulatory landscape similar to that outlined by the CSRD and ESRS. Secondly, they belong to the European Free Trade Association (EFTA), a regional trade organization and free trade area comprising four European states: Iceland, Liechtenstein, Norway, and Switzerland. Iceland and Liechtenstein were excluded because they are not EU members; moreover, Iceland has a small number of companies, and

---

1 All the data is annual data with values measured at the end of each year.

2 Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden

Liechtenstein's corporate laws differ from those of the EU. (EFTA, 2025; ICLG, 2025; Johans et al., 2024; RFA, 2024.)

To decide on a suitable timeframe for the empirical part, the justification for the timeframe between 2016 and 2023 follows. The time frame allows for more recent figures while extending to a sufficiently long period to gather sufficient data points for statistical analysis, and adopting the Paris Agreement and the UN SDGs in 2015 marks the beginning of a more unified sustainability movement (EU Council, 2025; UN SDGs, 2025). Brooks and Oikonomou (2018) state that our understanding of the world changes over time. As companies have gained a greater understanding of CSR and ESG practices and have taken the time to consider the SDGs, the timeframe from 2016 is feasible, given the knowledge acquisition. Still, the ongoing development of the reporting framework evolved during the data collection period, particularly regarding the Non-Financial Reporting Directive (NFRD) and the EU Sustainable Finance Action Plan. The end year of the data collection is prudent, as it precedes the implementation of the CSRD and ESRS, which have a significant effect on ESG scores, since these scores are based on companies' sustainability reports, as previously introduced. Moreover, the EU GD has introduced additional policies and regulatory pressure on ESG disclosures in the EU. (EU, 2025a.)

In addition, the COVID-19 period was considered while justifying the timeframe. This type of unstable time was given considerable thought in the following way. The COVID-19 recession occurred in 2020, and was relatively short compared to, for example, financial recessions in the EU market in 2008 to 2009 and 2011 to 2013(€ABCN, 2025). COVID-19 had a dual effect: first, it exposed vulnerabilities in global supply chains, problems with risk mitigation within companies, and social inequalities; second, it accelerated the focus on sustainability and stakeholder responsibility (Chen et al., 2023; Hassan et al., 2021). ESG performance not only creates economic incentives but also promotes sustainable production through value-enhancing supply chain mechanisms, particularly among high-scoring companies. ESG disclosures have proven beneficial, alleviating financial risks, especially in top-performing companies. (Ding et al., 2021; Saini et al., 2022.)

Given this context, the COVID-19 period offers a natural experiment for analyzing ESG performance, providing insight into how companies maintained their ESG commitments during a global crisis. Since this thesis focuses on top-performing companies, the dataset specifically examines companies during the pandemic. In line with prior research (Ademi & Klungseth, 2022; Barros et al., 2022; Conca et al., 2020), this period is suitable for inclusion in the empirical analysis.

Nevertheless, only a limited number of studies have focused exclusively on the COVID-19 period, as Ademi and Klungseth (2022, 424) emphasize, underscoring the importance of investigating this timeframe in the current research.

The sample construction process is detailed below. First, every company in the LSEG data and analytics database with its headquarters in the EU economic area, Switzerland, or Norway, and listed in the STOXX Europe 600 index, was searched. The Industry Classification Benchmark (ICB) categorizes data by industry. The ICB is a globally recognized standard for categorizing companies and sectors, encompassing 11 industries: technology, telecommunications, healthcare, financials, real estate, consumer discretionary, consumer staples, industrials, basic materials, energy, and utilities (ICB Structure, 2019)[3]. The industry categorization was considered at the time the data were obtained. In line with previous literature, companies in the financial sector and real estate are excluded from the final sample due to their significant difference in balance sheets, which affects the financial figures derived from the database, as well as they have operations and specific regulations compared to other sectors (Petitjean, 2019; Velte, 2017). This resulted in 1359 companies.

Second, the obtained data were sorted to include companies with at least two years of ESG and financial records between 2016 and 2023. The remaining sample thus included ESG and financial data from 1254 companies for the period between 2016 and 2023, including the following 24 countries: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden and Switzerland. The distribution of countries in the final sample is illustrated in Table 5. The total sample is divided by country, with the number of companies (N) shown for each country. Percentages represent the proportion of N in the total sample of 1254 companies.

[3] ICB classification: Industry Classification Benchmark, otherwise known as ICB is a system that allows categorization and comparison of companies by their industry and sector. It is operated and managed by FTSE Russell, a wholly owned subsidiary of London Stock Exchange Group (LSEG). The system currently provides definitions for 173 subsectors. Companies (and securities in general) are then assigned to a subsector based on their source of revenue or the majority of it. The revenue source is determined by "audited accounts and directors' report". The ICB coding is an asset of LSEG and is present in the database. The distribution of the list is prohibited. This said, the total coding can be purchased from LSEG or looked up from the LSEG database. The subsector codes between 55101000 and 65103035 indicate sensitive industries, while 10101010 to 50206060 represent non-sensitive industries. (Classification codes, 2025.)

Table 5 The distribution of companies by countries in the final sample.

Country	Total sample (N)	(%)
Austria	27	2.15
Belgium	36	2.87
Bulgaria	1	0.08
Cyprus	4	0.32
Czech Republic	2	0.16
Denmark	43	3.43
Finland	64	5.10
France	149	11.88
Germany	200	15.95
Greece	15	1.20
Hungary	4	0.32
Ireland	39	3.11
Italy	92	7.34
Luxembourg	25	1.99
Malta	4	0.32
Netherlands	53	4.23
Norway	61	4.86
Poland	22	1.75
Portugal	12	0.96
Romania	6	0.48
Slovenia	1	0.08
Spain	54	4.31
Sweden	210	16.75
Switzerland	130	10.37
Total	**1254**	**100.0**

Non-EU countries, Switzerland, and Norway represent 15,2% of the companies, which yields 191 companies. The Nordic countries, Finland, Denmark, Norway, and Sweden, cover over a fourth of the total sample, 28,88% and when leaving Norway out as a non-EU country, the remaining three countries count almost a fourth of the sample, 24,65%. Despite their small populations, Nordic countries host many globally competitive, high-performing companies with substantial market capitalizations, thereby giving them greater representation in the STOXX Europe 600. Their robust business environments and history of strong value creation mean a disproportionate number of Nordic companies qualify for inclusion relative to the region's economic size. In particular, Sweden is represented by 16,75% of Swedish companies, the highest among all countries. Sweden has an exceptional equity-market culture and large-market-gap companies compared to its size of less than 11 000 inhabitants. (Baroudy et al., 2023; Eurostat, 2025.)

Notably, some countries, namely Germany and France, stand out in the table by accounting for 15,95% and 11,88% of the sample, respectively. These countries have the largest populations among the sample countries, and their number of publicly listed companies is higher than, for example, Italy, Spain, or Poland, which rank third, fourth, and fifth in terms of population (Eurostat, 2025). In total, Germany and France represent almost a third of the final sample (27,83%)

combined. This is similar to the size of the Nordic countries, making the Nordic countries, together with Germany and France, represent well over half of the sample (56,71%). Some countries' representation in the sample is minimal, under 0,5 %, namely Bulgaria, Cyprus, the Czech Republic, Hungary, Malta, Romania, and Slovenia.

The data collected for this thesis comprises panel data, in which ESG scores and financial data vary across companies over the 2016–2023 sample period, resulting in different numbers of data points per company (Croissant & Millo, 2008, 1–2). A total of 1254 companies were included in the whole panel data. The obtained unbalanced panel data is longitudinal, as it contains two or more observations from the same company (Mehmetoglu & Jakobsen, 2017, 228). Unbalanced panel data has been used in previous studies and is suitable for regression analysis, while the statistical software used in this thesis, SPSS, version 29, also accommodates unbalanced panel data. (Bai, 2009; Croissant & Millo, 2008; Garcia-Castro et al., 2010; Hoang & Wooldridge, 2024; Mehmetoglu & Jakobsen, 2017, 229.)

To test the hypothesis, the panel data obtained is divided into three panels. First, the two panels addressing industries are presented. Panel A_{S} is for sensitive industries and Panel B_{NS} for non-sensitive industries. This separation aims to prevent results from being distorted by differences in ESG scoring trends. Notably, Gangi and colleagues (2020) found that the correlation between ESG and CFP is stronger in sensitive industries. The two panels are based on the ICB classification presented in the sample construction process above. To specifically address the sensitive and non-sensitive industries. The final sample consists of 193 sensitive industry companies and 1061 non-sensitive companies.

Secondly, the third panel, Panel C_{TP}, represents the top-performing companies and reveals the nature of the relationship between ESG and CFP among them; these companies were identified from Corporate Knights' "Europe 50 Most Sustainable Companies Ranking" list. The whole list with industry codes is in Appendix 1. Called "Knights' inaugural Europe 50 list 2025". Corporate Knights Inc. is a leading sustainable-economy media and research organization that publishes Corporate Knights magazine. It was founded in 2002, and its commitment to both people and planet is its driving force. Since the focus is on EU companies, the "top 50 European list" is feasible. The list originally included 50 companies. However, only 40 of these were found in the LSEG database within the STOXX Europe 600 index, with at least 2 years of both ESG and financial records from 2016 to 2023, reducing the final count of top-performing companies to 40. (Corporate Knights, 2025a; Corporate Knights, 2025b.). The similar country representation of top-performing companies as the total sample data in table 5, is presented in table 6. The total sample is divided by country, with the number of top companies (N) shown for each country. Percentages represent the proportion of N in the total sample for the top-performing subgroup of 40 companies.

Table 6 The distribution of top-performing companies by countries in the final sample.

Country	Top performers (N)	(%)
Austria	1	2.5
Belgium	1	2.5
Bulgaria	-	-
Cyprus	-	-
Czech Republic	-	-
Denmark	7	17.5
Finland	5	12.5
France	5	12.5
Germany	6	15.0
Greece	-	-
Hungary	-	-
Ireland	2	5.0
Italy	3	7.5
Luxembourg	-	-
Malta	-	-
Netherlands	1	2.5
Norway	1	2.5
Poland	-	-
Portugal	-	-
Romania	-	-
Slovenia	-	-
Spain	5	12.5
Sweden	3	7.5
Switzerland	-	-
Total	**40**	**100**

The Nordic countries account for 40% of the origins of the top-performing companies. Interestingly, the smaller Nordic countries—particularly Denmark and Finland—account for a significant number of these top companies, despite having smaller populations than their Nordic peers. Conversely, Norway does not reach the same level as its neighboring countries, which may be due to its non-membership in the EU. This is not a surprise, since Nordic countries stand out among top-performing countries because their companies focus on high-margin, differentiated market segments and invest significantly in research and development. They support long-term business strategies, demonstrate strong resilience, and consistently achieve impressive market results. Furthermore, Nordic businesses lead the way in sustainability and climate-tech innovation, setting ambitious environmental targets and leveraging advanced technologies such as artificial intelligence and digital tools. Their robust supply chains, operational stability, and deep commitment to sustainability further reinforce their strong performance on the global stage. (Baroudy et al., 2023; Eurostat, 2025.)

The total sample is divided into Panels A_S, B_{NS}, and C_{TP}, as previously described. To summarize how the sample is distributed across the panels and to test the hypothesis, it is helpful to combine this information into a single table to provide context for the subsequent analysis. Table 7 presents the descriptive statistics for each panel, showing the final sample composition across industries and top-performing companies.

Table 7 Industries and top-performing companies in the final sample.

All companies	**Companies (N)**	**Companies (%)**
Sensitive	193	15.4
Non-sensitive	1061	84.6
Total	1254	100.0
Top performing companies	**Companies (N)**	**Companies (%)**
Sensitive	14	35.0
Non-sensitive	26	65.0
Total	40	100.0

The table shows that sensitive companies make up only 15,4% of all companies in the dataset but account for 35% of the top-performing companies, indicating that they are proportionally more likely to appear among top performers than their overall share would suggest. Although the full sample consists of 193 sensitive and 1,061 non-sensitive companies, the top-performing group includes 14 sensitive companies out of 40, meaning their representation is more than twice that of the total population. This aligns with previous literature, such as Garcia and colleagues (2017).

3.2.1 Panel data analysis

"Panel data analysis is the investigation of the development of variables over time" (Mehmetoglu & Jakobsen, 2017, 228). Panel data can be analyzed with statistical methods. Regression is a valuable tool for studying causal questions, as it allows independent variables to explain or predict variation in a dependent variable. To demonstrate, below is a simple regression model with one independent variable.

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_i + \epsilon_i, \qquad (1)$$

where i is the subscript for each company, t is the subscript for time, Yit is the dependent variable, β0 is the intercept, β1 and β2 are the regression coefficients, Xit is the independent variable, Zi is the unobserved variable that varies from one company to another and it is constant over time (as there is now subscript t), and ϵit is the error term. However, limitations and inconsistencies have been observed when using panel data in a simple regression model, namely ordinary least squares (OLS). The OLS basic assumption is that errors are independent and normally distributed

(Mehmetoglu & Jakobsen, 2017, 235; Woolridge, 2016, 435). This limitation can lead to issues with the error term, ϵit, which may correlate with one or more of the independent variables, Xit. (Mehmetoglu & Jakobsen, 2017, 240, 279). This was also framed by Ademi and Klungseth (2022), to which this thesis relates.

Two panel-data regression methods commonly used by other researchers are the fixed-effects (FE) and random-effects (RE) regressions. They differ in the distribution of the error term and in whether the explanatory variables are covariated. Covariance is the simultaneous variation of two continuous variables (Mehmetoglu & Jakobsen, 2017, 52). If a covariate is present between the error term and explanatory variables, FE regression is a suitable method; if not, RE regression is preferable. (Mehmetoglu & Jakobsen, 2017, 248–250). The SPSS software has limitations; it cannot run the Hausman test, which clearly specifies the suitable model. Turning to prior studies and considering the software limitation, it is reasonable to choose a similar regression equation that has been used in previous studies, the FE, by, among others, Ademi and Klungseth (2022), Garcia and colleagues (2017), Garcia and colleagues (2019), and Qureshi and colleagues (2019).

However, the FE model also has some limitations. One limitation, especially relevant to this thesis, is that the FE model is most effective for analyzing the impact of time-varying variables. In short, FE models are designed to analyze the causes of changes within an entity. (Garcia et al., 2019; Mehmetoglu and Jakobsen, 2017, 242.) By adding company fixed effects, α_i, to equation (1), the model allows for different intercepts for each company. The error term, ϵ_{it}, captures idiosyncratic shocks. This specification also permits the use of unbalanced panel data, as missing observations are ignored in the estimation. Time-fixed effects, λ_t, are included in equation (1) to control for unobserved factors that are constant across companies but vary over time, such as economic conditions, regulatory changes, or global events like the COVID-19 pandemic. These effects help isolate the impact of the explanatory variables by accounting for time-specific influences that could otherwise bias the results. (Woolridge, 2016, 435). It is worth noting that the FE cannot be used if key variables are constant over time. This thesis's key variables, namely ESG and its separate pillars and account-based variables, are time-varying, emphasizing the FE. However, since the industry classification between sensitive and non-sensitive industries remains constant over time and companies do not change industries within the data timeframe, the original sample needs two separate panels: Panel A_S for Panel B_{NS} to include industry specificity. Similarly, the top-performing and non-top-performing companies remain constant over time, and Panel C_{TP} is derived from all data to include both types of companies. The remaining data is classified as non-top-performing. Equation 1, with the addition of the effect terms described above, is as follows:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \alpha_i + \lambda_t + \epsilon_{it}. \quad (2)$$

The model presented in equation 2 is refined and applied in the empirical analysis to test the hypotheses developed in this thesis.

3.2.2 Variables

Building on the previously described panel dataset, the next step is to define the variables included in the empirical model, along with their measurement and expected roles. The regression models in this thesis examine the relationship between company financial performance and ESG performance, using dependent, independent, and control variables. ESG practices are integrated progressively and affect long-term performance. (Barros et al., 2022; Caiazza et al., 2021, 14; Eccles et al., 2014; Li, Y. et al., 2018, 64; Rennebook & Vansteenkiste, 2018.) Moreover, many researchers use accounting-based metrics to determine whether sustainability performance enhances long-term financial performance (Zollo & Meier, 2008).

A study by Conca and colleagues (2021, 1085, 1090) confirmed that Return on Assets (ROA), an accounting-based variable, positively impacts CFP. Similar findings were made by Orlitzky and colleagues (2003). The ROA has been used in multiple studies and is applied as a proxy for CFP in this thesis in the context of ESG (Chen et al., 2023, 9; Conca et al., 2021; Petitjean, 2019; Velte, 2017). ROA is defined as follows:

$$ROA = \frac{Net\ Income}{Total\ Asset}$$

Net income and total assets are observed for each company in each year between 2016 and 2023. To account for potential omitted variables that vary across companies and over time, a set of control variables is included in the panel regression model to minimize potential problems arising from the statistical method, such as biased coefficient estimates due to unobserved variables. The control variable explains variation in the dependent variable (Woolridge, 2016, 760). Following previous studies, a few control variables have been employed. The financial measures and control variables are used to unify industry results and avoid the company's size effect from distorting them. Multiple researchers have utilized the company's size and leverage in their studies of the ESG–CFP relationship (Conca et al., 2020; Fischer & Sawczyn, 2013; Qureshi et al., 2019; Velte, 2017). The two aforementioned control variables have been shown to impact company performance significantly. In conjunction with the previous point, a company´s financial risks can be assessed using a control variable, such as LEV, as suggested by multiple studies (Velte, 2017). A higher leverage ratio may indicate greater financial risk and, thus, worse financial performance (Wang & Sarkis, 2017, 1611). Given the importance of stakeholders, it is reasonable for companies to manage their risks through ESG practices (Rafi, 2022). LEV is as follows:

$$LEV = \frac{Total\ Liabilities}{Total\ Asset}$$

Total liabilities and total assets are reported for each company in each year from 2016 to 2023. The leverage measures a company´s proportion of assets financed by liabilities. Consequently, this is pertinent because, in the ESG context, if a company has high liabilities relative to its assets, it may face greater financial risk, which can affect its ability to allocate resources effectively to ESG practices. Strong ESG performance often requires sustained investment in long-term projects; additionally, companies with low leverage, meaning a low level of liabilities relative to assets, are likely to exhibit better ESG practices in the long term. (Gurung, 2025.)

Lagged values are used to control endogeneity, and ROA_L is included to account for the potential influence of a company's prior-year performance on its subsequent performance and strategic decisions. Incorporating the ROA_L value helps control for dynamic effects, such as adjustments in strategy or profitability responses, that may otherwise bias the estimated relationships between variables. This approach also mitigates endogeneity concerns by isolating the temporal impact of past performance on current outcomes. (Agnese et al., 2025, 31; Garcia-Castro et al., 2010, 117.) CSR is a strategic concept; the ROA_L is an appropriate model variable (Fischer & Sawczyn, 2013, 37). Because the effects of ESG performance often materialize with a delay and may not have an immediate financial impact, it is reasonable to control for potential endogeneity in the dependent variable by incorporating lagged values (Zollo & Meier, 2008). According to Velte (2017, 172), the justification for using the ROA_L variable is that improvements in ESG performance do not translate into immediate financial gains.

Although Orlitzky (2001) found that company size does not confound the relationship between corporate social and financial performance, it remains an important control variable. For example, Drempetic and colleagues (2020) found that a company's size influences the availability of data and resources for reporting ESG information, which, in turn, affects its ESG performance. Large companies are more likely to disclose non-financial information; further, company size affects a company's capacity to engage in CSR and its economic outcomes, primarily through operational scale, market access, and resource availability (Baldini et al., 2018; Fischer & Sawczyn, 2013; Velte, 2017). Controlling for company size allows for a more accurate estimation of the ESG-performance relationship by accounting for company-level heterogeneity. In the ESG context, company size is often dominant: larger companies can allocate more resources to ESG initiatives, face greater public scrutiny, and possess stronger capabilities to leverage their resources effectively, and, building on the previous, larger companies have better possibilities to implement sustainable business models (El Khoury et al., 2022, 6). In line with the earlier studies, the company size is used as a control variable. And it is calculated as the natural logarithm of total assets, ln(total assets).

As previously noted, the LSEG ESG score is an overall measure of a company's ESG performance, derived from its self-reported data across the environmental, social, and governance pillars. Because the effects of each ESG dimension are examined separately, the individual pillar scores serve as proxies for a company's environmental, social, and governance performance, respectively. (LSEG, 2024.) As noted by Fischer and Sawczyn (2013, 36–37), ESG performance varies by industry, which plays a pivotal role. As explained earlier, the FE regression model only takes into account time-variant variables. In this thesis, regression models were run separately for each of the three panels (A_{S}, B_{NS}, and C_{TP}) to control for whether companies belonged to sensitive or non-sensitive industries and to distinguish top-performing companies. Statistically, industry is a categorical variable and is considered constant in the models. It is assumed that none of the companies in the total sample changed their industry classification from 2016 to 2023. Table 7 lists all variables used in the regression models. The variables, including their types (independent, dependent, and control), are presented. All variables used in this thesis are based on those from previous studies, which are cited in the 'References' column of the table.

Table 8. Variables.

Variable	*Indicator of*	*Definition*	*References*
		Dependent variable	
Return on asset (ROA)	Corporate financial performance (CFP)	Net income / Total assets	Zollo & Meier, 2008 Chen et al., 2023 Conca et al., 2021
Independent variables			
ESG score (ESG)	Company´s overall ESG performance	LSEG ESG score	Ademi & Klungseth, 2022 Velte, 2017
Environmental score (ENV)	Company´s environmental performance	LSEG environmental pillar score	Ademi & Klungseth, 2022 Velte, 2017
Social score (SOC)	Company´s social performance	LSEG social pillar score	Ademi & Klungseth, 2022 Velte, 2017
Governance score (GOV)	Company´s governance performance	LSEG governance pillar score	Ademi & Klungseth, 2022 Velte, 2017
		Control variables	
One-year lagged Return on asset (ROA_L)	Profitability	Net income / Total assets	Zollo & Meier, 2008 Chen et al., 2023 Conca et al., 2021
Size (SIZE)	Company size	Natural logarithm (ln) of total assets	Garcia et al., 2017 Fischer & Sawczyn, 2013 Velte, 2017
Leverage (LEV)	Company risk	Total liabilities / Total assets	Fischer & Sawczyn, 2013 Qureshi et al., 2019 Wang & Sarkis, 2017

In line with previous literature, accounting measures are used as proxies for a company's financial performance (Ademi & Klungseth, 2022; Amor-Esteban et al., 2018; Chen et al., 2023; Conca et al., 2021; Fischer & Sawczyn, 2013; Garcia et al., 2017; Qureshi et al., 2019; Velte, 2017; Wang & Sarkis, 2017; Zollo & Meiler, 2008). ROA, an indicator of profitability, serves as the dependent variable. The independent variables are: 1) total ESG score (ESG), 2) environmental pillar score (ENV), 3) social pillar score (SOC), and 4) governance pillar score (GOV). The ESG score and its components, sourced from the LSEG database, have been widely used as independent variables, as highlighted by the authors referenced in Table 8.

Since financial performance from the previous year can impact current-year results (Garcia-Castro et al., 2010), the one-year lagged ROA (ROA_L) is included as a control variable, as done in previous studies (for example, Agnese et al., 2025; Fischer & Sawczyn, 2013; Garcia-Castro et al., 2010). Additionally, SIZE and LEV are included as control variables, facilitating robust statistical tests and regression analyses in the ESG–CFP context. These control variables are relevant in prior research (Lu et al., 2014). Given the complexity of the relationship between ESG and corporate financial performance (CFP), multiple variables are necessary (Nirino et al., 2020, 2).

3.2.3 Top-performing example companies

To complement the quantitative analysis, additional data were collected from a set of illustrative companies. These companies were used to provide context and interpretation of the quantitative results. To examine ESG, its constituent pillars, and their strategic alignment within the ESG–CFP context in greater detail, data were gathered from several example companies.

First, companies were selected according to their leadership in sustainability performance and represent the top four from Corporate Knights' inaugural Europe 50 list, published on June 9, 2025. Since the Europe 50 list was first published in 2025, and given the selected timeframe and the volatility of sustainability performance, it was reasonable to examine the past rankings of the sample companies based on their ESG performance. The 2025 Global 100 list was used as a reference. The 2025 rankings also reveal the previous year's ranking, namely 2024. The Global 100, 2025, served as the source for the global ranking information, which was published on January 22, 2025. (Corporate Knights, 2025c.)

Secondly, while the primary regression analysis uses the full dataset from the LSEG database, divided into three panels, supplementary information on the example companies' ESG scores and financial data was obtained from the final sample. Thirdly, to provide meaningful insights for regression evaluation and strategic alignment, information from company websites about business models and strategies, as well as ESRS commitments found in sustainability reports, forms the foundation for more comprehensive answers to the research questions.

The example companies chosen for this thesis represent two companies from both sensitive and non-sensitive industries, allowing for some degree of generalization. Their headquarters are in the EU, and they operate globally. The companies selected are: Schneider Electric, Vestas Wind Systems A/S, SMA Solar Technology AG, and Alstom SA. They come from two different industries: renewable energy equipment and electrical components. All example company information is based on information from company websites and sustainability reports, and the companies are presented next.

Schneider Electric is a global leader in industrial technology, specializing in electrification, automation, and digital transformation. It represents a non-sensitive industry of electrical components. The company was established in 1836 and has its headquarters in France. With 150 000 employees and over a million partners in more than 100 countries, Schneider Electric is committed to inclusion, care, and advancing a sustainable future for all. Their motto is "Our mission is to be the trusted partner in Sustainability and Efficiency," reflecting their commitment to sustainability. They have their own "Schneider Electric Sustainability" research institute. (Schneider Electric, 2025a.)

Schneider Electric demonstrates strong sustainability governance through integrated reporting dashboards, external assurance, and aligns its strategy with the UN SDGs, using its proprietary Schneider Sustainability Impact (SSI) score to monitor progress, assess ethical culture, and strengthen employee confidence in reporting misconduct. The SSI serves as a comprehensive measurement tool that tracks quantifiable sustainability performance beyond traditional KPIs, reflecting robust governance and accountability. Schneider's sustainability report follows the EU's CSRD and ESRS standards, as outlined in Chapter 2.1.3, Table 2 and Chapter 2.1.4, Table 4. (Schneider, 2025b.)

Schneider Electric has earned high recognition from leading ESG rating agencies, consistently ranking at the top of major indices and winning several global sustainability awards. For example, in 2024, the World Economic Forum recognized two Schneider factories as Lighthouses for circularity. Schneider's circular strategy, "Use better, use longer, use again", combines eco-design, renewable energy, and digital optimization to promote sufficiency and resource efficiency. It offers as-a-service solutions, access-to-energy initiatives (benefiting over 50 million people), and the Zero Carbon project, which reflects its leading role in stewardship, innovation, and long-term value creation. (Schneider, 2025b.)

The company promotes transparency through its *Green Premium program*, which certifies products that adhere to EcoDesign principles, limit hazardous substances, and provide life-cycle assessments and end-of-life guidance, thereby strengthening its circular economy approach. Through the *Zero Carbon Project*, Schneider engages its top 1,000 suppliers to cut operational greenhouse gas (GHG) emissions by 50% by 2025. Broader targets include achieving net-zero emissions across its entire value chain, reducing operational emissions by 50%, and achieving 80% renewable electricity. The company also aims for 100% plastic-free, recycled packaging and ensures that every new offer carries the Green Premium label. Social goals include training one million people in energy management and sustainability skills to support an energy transition. The company continues to redesign its operations to align with sustainability goals and strengthen its path toward a fully sustainable approach. Schneider emphasizes that this approach consistently drives strong financial results and delivers attractive returns for investors. (Schneider, 2025a; Schneider, 2025b.)

Vestas Wind Systems A/S is a global leader in sustainable energy solutions, dedicated to transforming the global energy system through wind power. It represents the sensitive industry of renewable energy equipment. The company was established in 1898 and has its headquarters in Denmark. With 30 000 employees operating across more than 80 countries, Vestas provides innovative technologies and reliable services that enable a more sustainable and resilient energy future. The company designs, manufactures, installs, and services wind turbines worldwide, driving the transition toward renewable energy. Their motto is “Wind. It means the world to us.” They also describe themselves as “The global leader in sustainable energy solutions.” (Vestas, 2025a.)

Vestas’ sustainability strategy is deeply integrated across its operations and value chain, emphasizing ambitious greenhouse gas emission-reduction targets and sustainability-linked bond KPIs that connect financial performance to environmental and social outcomes. Central to Vestas’s business model is its commitment to *innovation, circularity, and long-term value creation*. For example, the company’s 2024 turbines are projected to avoid approximately 455 million tonnes of CO_2 emissions over their lifetimes. Vestas invests in low-emission steel, recycling methods for epoxy-based blades, and material efficiency to advance its goal of producing zero-waste wind turbines. Through *life-cycle assessments* (LCA) and design optimization, the company maximizes material and energy efficiency. Vestas’s *service-based business model* extends beyond turbine sales to include long-term maintenance and performance contracts, reflecting a shift toward a *product-as-a-service* logic. This approach, coupled with circular design and repurposing initiatives, demonstrates its role as a steward in the global energy transition. Vestas’s sustainability report follows the EU’s CSRD and ESRS standards, as outlined in Chapter 2.1.3, Table 2 and Chapter 2.1.4, Table 4. (Vestas, 2025b.)

SMA Solar Technology AG is a global leader in photovoltaic system technology, setting new standards for decentralized, digital, and renewable energy solutions. It represents the sensitive industry of renewable energy equipment. The company was established in 1981 and has its headquarters in Denmark. With more than 4000 employees in 20 countries, SMA Solar Technology AG drives the global transition toward a self-sufficient and sustainable energy future through close collaboration with partners and customers. The company develops innovative technologies for all types of photovoltaic applications, enabling greater energy independence for individuals and businesses worldwide. Their motto is “Energy that changes”. (SMA, 2025a.)

SMA actively tackles climate change, viewing it as a key social, political, and economic challenge, and works to deliver renewable solutions that provide direct climate benefits. SMA anchors *sustainability in its core purpose* and makes it central to its *long-term plans* and stakeholder engagement. The leadership team reviews and adjusts its approach on a quarterly and annual basis to remain responsive and relevant. The company ensures integration with energy markets and takes actions that promote decarbonization. SMA manages sustainability through climate-friendly sourcing, resource-saving production, and efforts to close material loops. The company takes steps to reduce supply chain emissions, selects more secondary materials, and minimizes waste at its headquarters. During product design, it limits materials, lengthens lifespans, and improves repairability. Its repair service helps products stay in use longer and supports reuse. SMA's sustainability report follows the EU's CSRD and ESRS standards, as outlined in Chapter 2.1.3, Table 2 and Chapter 2.1.4, Table 4. (SMA, 2025b.)

Alstom SA is a global leader in sustainable mobility solutions, committed to advancing a low-carbon future through innovative and reliable transportation technologies. It represents a non-sensitive industry of electrical components. The company was established in 1924 and has its headquarters in France. With more than 70000 employees in 70 countries, the company offers one of the industry's most comprehensive portfolios, including high-speed trains, metros, monorails, trams, turnkey systems, services, infrastructure, signaling, and digital mobility solutions. Alstom SA continues to shape the future of smart, connected, and sustainable transport systems through expertise in design, innovation, and project management. Their motto is" Smart innovation for sustainable mobility". (Alstom, 2025a.)

Sustainability and CSR are fully embedded in Alstom's corporate strategy, guided by the principle of "One Alstom Team, Agile, Inclusive, and Responsible." The company positions *decarbonization* at the core of its mission, aiming to lead societies toward a low-carbon future. Alstom has already achieved a 40% reduction in its own emissions and is actively *engaging with suppliers* and customers to reduce their carbon footprint in line with a Net-Zero trajectory. Initiatives such as the partnership with SSAB to integrate green and recycled steel (SSAB Zero™) into new locomotives exemplify its commitment to *circularity and carbon reduction*. (Alstom, 2025a; Alstom, 2025b.)

Alstom's sustainability framework is structured around four pillars: decarbonizing mobility, caring for people, creating a positive societal impact, and acting as a responsible business partner—reflecting a comprehensive and integrated approach to sustainable value creation. The company's Alstom in Motion 2025 strategy sets social targets, including increasing women's representation in management and engineering roles to 28% by 2025. Alstom also emphasizes occupational safety, with 83% of employees working on ISO 14001-certified sites, and a growing number covered under

ISO 37001 anti-corruption certification. Its environmental achievements include 75% renewable electricity, 91% waste recovery, and 92% product recyclability. Alstom's *eco-design* approach ensures that 87% of newly developed products meet sustainability standards, contributing to the circular economy and improved energy efficiency. Alstom's sustainability report follows the EU's CSRD and ESRS standards, as outlined in Chapter 2.1.3, Table 2 and Chapter 2.1.4, Table 4. (Alstom, 2025b.)

3.3 Evaluation of the study

When conducting research, it is essential to evaluate the study's trustworthiness throughout the process to improve its quality. Research quality refers to the credibility and dependability of research findings. The concept of quality can also be extended to include objectivity. It is up to the researcher to assess the study and convince readers that the results, interpretations, and conclusions are valid, reliable, and objective. Evaluating research quality typically involves criteria such as reliability and validity, which are central in quantitative research in the social sciences. (Saunders et al., 2023, 214.) In the thesis, the evaluation criteria also employ triangulation, as it uses several types of data. Uncertainty of interpretation is reduced when two or more independent measures are used in conjunction. Data triangulation increases the study´s validity. Triangulation was employed to enhance the validity of this thesis, combining ESG score data, observing example companies' webpage information, and examining their ESG commitments. Consequently, the study's overall evaluation should be regarded as a carefully considered estimate. (Saunders et al., 2023; Teddlie & Tashakkori, 2009.)

The different terms, the questions the criteria answer, and the answers obtained in this thesis are presented in Table 9 to provide an overall view of the quality evaluated here. At the same time, the subsequent text discusses the criteria in more depth.

Table 9. Terminologies used to address the thesis's quality. (modified from Saunders et al., 2023; Teddlie & Tashakkori, 2009, 26-27, 209, 287)

Term	What question is answered?	Answer
Internal validity	Does the study measure what it intends to and are the results believable?	To ensure internal validity, Table 5 and the sample construction revealed the broad distribution of sample companies across industries. The data used and the resulting conclusions were presented as credible and valid.
External validity	Can findings apply to other contexts, setting, people, time period or population?	External validity was addressed with utmost transparency and detail. This is evident, for example, in Chapter 4.1, which compares the results to previous studies below Tables 11, 12 and 13.
Reliability	Are the results consistent if study were repeated?	Reliability is evident, for example, in the variable definitions provided in Chapter 3.2.2. The detailed description of sample construction also enables other researchers to replicate this study. Evidence on reliability in terms of robustness test, the Table 17 shows, the exclusion of Norway and Switzerland companies did not substantially alter the regression coefficients. The reliability of this thesis is relatively high, and a robustness check was performed.
Objectivity	Are the findings shaped by the data rather than researcher bias?	The objectivity was reached since the thesis's conclusions were clearly supported by and derived from the analytical results. The results were compared to previous literature in Chapter 4.2. to enhance the objectivity.

Quality, in addition to its criteria of validity and reliability, is associated with the transparency of the study and how empirical findings are synthesized into results and then into conclusions. The validity of a study is higher when more empirical data and content are available, which enhances quality and, consequently, the study's validity. (Newman et al., 2013, 244, 254.) In this thesis, transparency is provided in the most comprehensive manner, and all detailed information is thoroughly documented. Over 1000 sample companies and eight years of data were used, along with four top-performing example companies, which were compared. These examples represent both sensitive and non-sensitive industries, particularly relevant to the topic.

Validity is divided into internal and external validity. It answers the question "Do the measures being used in the research to assess the phenomenon being studied actually measure what they are intended to – are they appropriate for their intended purpose?" (Saunders et al., 2023, 215). Validity is 1) the extent to which a data collection procedure or procedures accurately measure what they were intended to measure, 2) the extent to which research findings are really about what they profess to be about (Saunders et al., 2023). Internal validity addresses the plausibility of the findings (Bryman, 2004, 30). It answers the question "Are the analyses of the results and the relationships being advanced accurate?" (Saunders et al., 2023, 215). Extended engagement was achieved through a meticulous literature review of relevant publications and by gaining insight into the European Union's and the Council's decisions on ESRS compliance. The literature review helps minimize the influence of the researcher's underlying philosophical assumptions, which may introduce subjectivity even when efforts are made to maintain objectivity. The thesis was prepared carefully to ensure the internal validity of the results. Internal validity was ensured through statistical methods and regression models, which other researchers commonly employ. This ensures that models accurately measure the intended constructs. The sample was large enough to be representative of the universe it was drawn from, given that the data included over 1000 companies and roughly 80000 data points. The interpretations and conclusions were based on multiple sources from diverse countries and industries, which highlights an important aspect of credibility.

A potential weakness of the internal validity is that the sample data were obtained from a single database rather than from multiple sources. Some of the databases listed in Table 3 could have been used as reference datasets. Although relying on a single database can introduce bias, Baldini and colleagues (2018) and Lu and colleagues (2023) justified the choice of the LSEG database. Notably, the LSEG database has minimal deviations in company size and transparency, and is widely used in academic research (for example, Barros et al., 2022; Caiazza et al., 2021; Huang et al., 2023; Nirino et al., 2021; Tampakoudis & Anagnostopoulou, 2020). These justifications help alleviate concerns about sample limitations associated with using a single data source. To demonstrate external validity, several specific approaches were employed. External validity answers the question "What do the research findings represent: does the claim about how generalizable they are stand up?" (Saunders et al., 2023, 215). Recognizing that external validity cannot be strictly ensured through naturalistic thinking alone, steps were taken to enhance the potential applicability of findings to other contexts, in line with Bryman's (2004, 30) perspective. Empirical data were rigorously collected and analyzed, with careful attention paid to linking interpretations with prior research. Results and analyses were clearly presented, enabling readers to assess the relevance of the findings to other settings. Throughout the research process, external validity was addressed with the utmost transparency and detail, facilitating a reasonable inference of transferability, as suggested by Teddlie & Tashakkori (2009). A potential limitation of external validity in this thesis is the industry specification, namely that the sensitive and non-sensitive industries encompass a wide range of industries. However, this was addressed by following previous studies (Garcia et al., 2017; Qureshi et al., 2019).

Reliability is the extent to which data collection procedures yield consistent findings, similar observations are made, conclusions reached by other researchers are identical, or there is transparency in how sense was made from the raw data (Saunders et al., 2023). In parallel, reliability refers to the likelihood that the findings would be consistent if the study were repeated

(Bryman, 2004, 30). The study's validity was adequate, providing a foundation for reliability. Procedures to ensure reliability included providing a detailed description of the research methods and findings. The thesis method relies on secondary data, which allows the same data sample to be collected and, importantly, the same study to be applied to a different concept, such as CSR disclosure practices. The given method and pre-coded categories allow this thesis to be repeated by another researcher. Reliability was increased because each selection and the defining of focus areas, for example, the time span and countries included in the thesis, have been justified, and each argument has been supported with previous literature. The literature used is cited adequately and easily followed, and each citation is included with a precise reference in the references list.

Threats to reliability in this thesis primarily relate to the quality and consistency of secondary ESG data and the replicability of results across different model specifications. To address these concerns, robustness checks were conducted to evaluate whether the main findings remain stable under alternative assumptions and variable configurations. Conducting robustness tests enhances the study's reliability by demonstrating that results remain consistent regardless of methodological choices. These checks test findings with limited data while employing the same regression models as in the original analysis. In statistics, robustness refers to the insensitivity of an estimator to the addition or removal of sample observations—usually extreme values. Sub-groups from the total sample are often analyzed to assess robustness. If the coefficient remains stable, this suggests that the model structure is valid. Robustness is crucial for valid causal inference, as coefficients of core variables should be insensitive to changes in included variables under proper conditions (Lu & White, 2013, 194, 205). To mitigate the effects of outliers and non-normal distributions, winsorizing all values at the 1st and 99th percentiles effectively limits the influence of extreme observations.

In this thesis, a sub-group was used to evaluate the robustness of the panel regression for panels A_S and B_{NS}. Panel C_{TP} includes only 40 companies (14 in sensitive industries, 26 in non-sensitive), making it impractical to further split the data into sensitive and non-sensitive panels without losing statistical power. Dividing a small sample reduces statistical power and increases estimation error, especially in panel regressions where the number of observations is already limited (Green, 1991, 499). In the robustness tests for panels A_S and B_{NS}, companies from non-EU countries, Norway, and Switzerland were excluded to represent the robustness sample. An additional robustness check included UK companies in the panels, and a third test examined pillar scores separately rather than within the same regression. A more detailed explanation of these robustness tests and their results can be found in Chapter 4.3. The results of the robustness tests display similar coefficients and comparable significance levels, reinforcing the reliability of this thesis. The credibility and validity of the data and findings were clearly demonstrated. Consistent coefficient signs and significance levels across tests suggest the results are not due to single-model dependence or random variation. By systematically testing for instability and confirming the reproducibility of estimates, the robustness analyses strengthen the study’s reliability and minimize the risk of inconsistent conclusions.

The third criterion under the quality of quantitative research in Table 9 is objectivity, which refers to the researcher’s recognition of their own values during the research process (Bryman, 2004, 30). Objectivity involves minimizing conscious bias and subjective choices in both conducting and reporting research. Some research philosophies acknowledge that researchers’ values influence interpretations and, therefore, that researchers should recognize and reflect on these influences (Saunders et al., 2023, 272 & 892).

Objectivity was assessed in this thesis by ensuring findings were based on data and that each finding was traceable. The data were handled logically, appropriate techniques were used, and their implications were justified. Triangulation was used, as explained at the start of this chapter, to avoid subjective bias and false interpretations. The thesis structure and the quality of interpretations were also ensured by relating them to findings and previous research. Alternative explanations were explored to offer a comprehensive perspective. Maintaining objectivity required transparent reporting of all relevant results, rather than selectively highlighting those that fit a preferred narrative. These steps were part of the audit process, supporting the confirmability and overall quality of the study, and demonstrating that the study meets the criteria outlined in Table 9.

In addition to quality, ethical considerations must also be taken into account when conducting a study. Ethical considerations are crucial for protecting the anonymity, privacy, and confidentiality of all possible participants in the study. Ethical considerations are essential in research, particularly in the EU, following the implementation of the General Data Protection Regulation (GDPR) in 2016. Research ethics also concern the ethical conduct of the researcher throughout the study. Plagiarism is entirely contrary to the values and morals of this thesis researcher. Equally important is accurately presenting the data’s statistical properties and avoiding any manipulation that could distort the findings. Research relies heavily on the integrity of the researcher, and any breach of honesty would constitute a serious ethical violation. Misreporting, manipulating, or selectively presenting data, findings, or conclusions amounts to falsification, which is entirely unacceptable and fundamentally unethical.

Standardized data collection methods were employed, with particular attention given to the accurate and unbiased collection of quantitative data to ensure the ethical integrity and reliability of the research. This said, data management has been considered. The data management plan is available in Appendix 2. The researcher’s personal values, morals, and beliefs inevitably influence the research process, from topic selection to data collection and analysis to the formulation of conclusions. In this thesis, the motivation for and relevance of the research topic were outlined in the introduction. Throughout the study, careful attention was given to maintaining ethical awareness and professional conduct in all stages of the research process. (Creswell & Plano Clark, 2011, 178–179; Silverman, 2006, 316.)

Given the rapid growth of artificial intelligence (AI) and its applications, the ethical implications of its use require careful consideration, as this thesis addresses. AI was used in this thesis primarily to enhance writing and word choice or to verify correct software use. It was not used to draw conclusions or report findings, as the researcher views this as unethical in academic research. The thesis showcases the researcher’s knowledge of an interesting topic and reflects the education received for this work. Based on the preceding points, this thesis is built on the researcher's individual knowledge and skills. Its originality has been verified using the University of Turku's quality assurance system through the Turnitin Originality Check. AI tools such as ChatGPT and Grammarly were employed to assist with wording, fluency, and grammatical structure. Appendix 3 provides a detailed report on AI usage in this thesis.

4 Data analysis and findings

4.1 Descriptive statistics, sample preparation, and conditions for analyses

Trends in ESG scores and their component pillars from 2015 to 2023 are presented to provide an overview of sustainability performance before the empirical analysis. Since unbalanced panel data is used, the number of observations per company per year varies. In total, 1254 companies are included in the sample, covering the period from 2016 to 2023. The 2015 ROA has been used to create a lagged ROA variable (ROA_L) for 2016. Hence, the data used in the estimations are from 2015 to 2023. Figure 4 shows the evolution of the ESG and separate pillars (ENV, SOC, GOV) scores within the total sample.

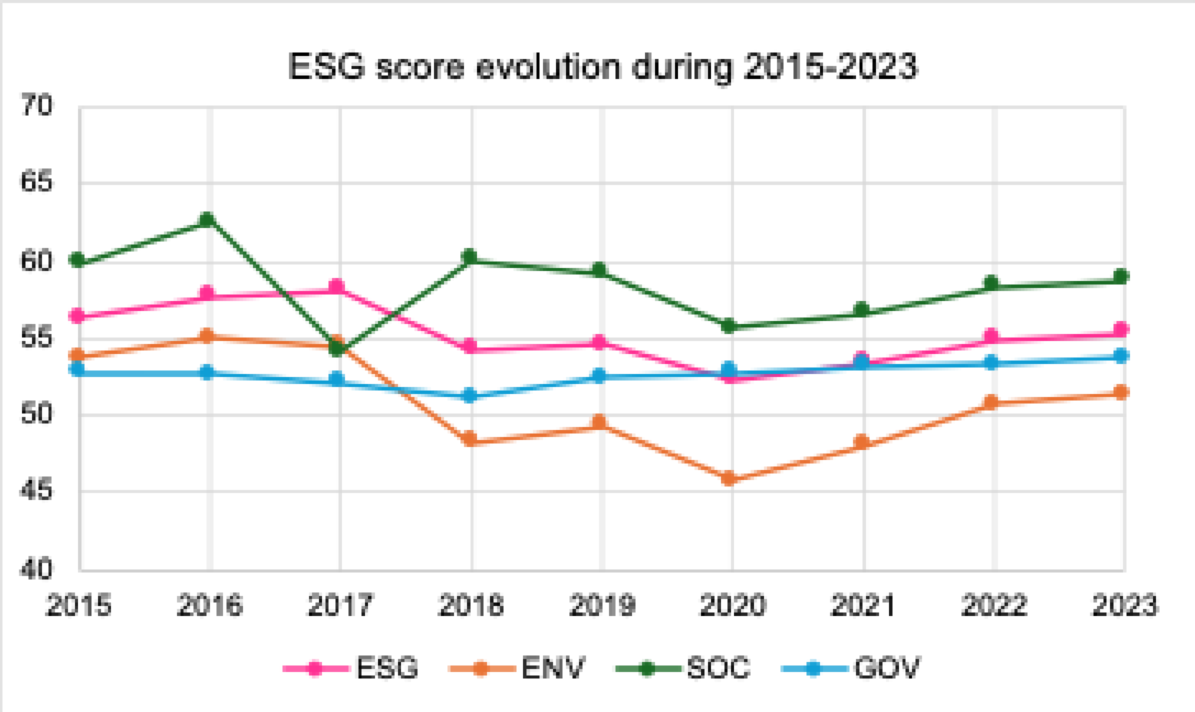

Figure 4. ESG and its pillars´ evolution during the sample period

The ESG score and its individual pillar scores fluctuate but tend to steadily increase over the years in the sample period, especially from 2018 and more clearly from 2020 forward. The increasing trend in the ENV and SOC scores can be attributed to companies' greater emphasis on environmental and social practices (Barros et al., 2022; Garcia et al., 2019). The year 2022 had the most companies present, as well as observations on ROA, SIZE, and LEV. The start year of the whole sample, 2015, had the fewest observations. In total, over 37 000 company-year observations of ROA, SIZE, and LEV are included in the sample, while over 39 000 company-year observations of ESG score, E score, S score, and G score comprise the entire sample. It is common in statistical analyses to exclude outlier values, which can introduce bias into the models (Field, 2018, 264).

It is sensible to present the purposes of the background analyses of the data first, to ensure they are in line with the assumptions of the regression analyses. The actual background analysis values provided by the data are presented at the appropriate points. To control for outliers and enhance statistical power, all continuous variables were winsorized at the 1st and 99th percentiles, thereby limiting the influence of extreme values and reducing excessive kurtosis (Aouadi & Marsat, 2018, 1031). Additionally, within (demeaned, centered) transformations were performed to remove time-invariant company effects and minimize cross-sectional heterogeneity, improving the normality of the data and ensuring the robustness of the FE estimations (Mehmetoglu & Jakobsen, 2017).

The normality of the errors was evaluated by analyzing *skewness* and *kurtosis v*alues. Skewness measures the asymmetry of a distribution, while kurtosis assesses the heaviness of its tails. These metrics help determine if the data are approximately symmetric and if the tail behavior is consistent with a normal distribution, which was checked before conducting the mean equality tests. A variable is considered to have acceptable skewness if its skewness value falls within the range of -1 to +1 (|skewness| < 1), indicating that its distribution does not deviate substantially from symmetry. (Fabozzi, 2014; Field, 2018; Mehmetoglu & Jakobsen, 2017.)

Building on the previous, it is important to understand why the normal distribution is often unnecessary. The assumption of normality is not strictly required due to the relatively large sample size. According to the central limit theorem, as the sample size increases, the sampling distribution of the mean approaches normality, even if the data are not perfectly normally distributed. Furthermore, since the degrees of freedom (df) increase with sample size, the t-distribution approximates the normal distribution when N is greater than 50 (Green, 1991, 499). Consequently, with the relatively large sample in this study, deviations from normality are unlikely to materially affect the validity of the parametric tests materially, as their sampling distributions are approximately normal due to the central limit theorem. Therefore, the applied parametric tests and panel regression models remain appropriate, as their estimators are consistent and reliable under large-sample conditions, for Panels A_S (N = 193, B_{NS} (N = 1061), and C_{TP} (N = 40). (Field, 2018; Mehmetoglu & Jakobsen, 2017.)

Multicollinearity is a phenomenon in regression analysis that occurs when predictor variables in the model are highly correlated with one another. The threshold value for multicollinearity is 0.800

(Field, 2018, 401–402). The aim is to explore the relationship between a company's sustainability performance and its financial performance. Hence, it is crucial to ensure that these independent variables maintain a balanced linear relationship. This can be assessed by examining their correlations and calculating variance inflation factors (VIF). VIFs were computed for all independent variables in both regression models and are presented in Table 10. The regression models are presented in more detail below, but to provide insight into the background analyses, a multicollinearity check is essential at this point. The regression models are derived from equation 2, chapter 3.2.1.

Table 10 Multicollinearity check. Variance inflation factors (VIFs) for all independent variables in models 1 and 2.

	Model 1	Model 2
ROA_{t-1}	1.084	1.098
Size	1.898	2.000
LEV	1.102	1.106
ESG	1.801	
ENV		2.556
SOC		2.350
GOV		1.266

The results indicated that the regression models used were appropriate. The variables ENV and SOC had the highest VIFs, at 2.556 and 2.350, respectively. All other values were also below 5, which is the threshold for multicollinearity concerns (Mehmetoglu & Jakobsen, 2017, 147). Thus, regression analysis is also reliable from this perspective. Notably, correlations between ESG and its individual pillars were stronger in this thesis than in the studies cited above. This suggests that ESG practices are more deeply integrated with, and valued alongside, financial performance among European companies, especially recently. The relatively higher environmental correlation indicates that environmental initiatives may be more embedded in European companies overall than in Velte's (2017) German sample. Overall, the results imply a stronger integration of ESG factors into corporate performance across Europe.

Homoscedasticity is a key assumption in statistical regression analysis, requiring that the variance of residuals remains constant across all levels of the predictor variables. Violations of this assumption can lead to biased parameter estimates and unreliable statistical inferences (Field 2018). One limitation of this study is that SPSS does not provide fully accurate clustered standard errors. Nevertheless, the results appear robust to time-varying variables, suggesting that this limitation does not significantly affect the main findings. Since panel data can still exhibit heteroskedasticity, the

Breusch-Pagan (BP) test was applied to both models, using the total dataset to test whether the variance of the regression residuals ε_{it} is constant.

SPSS does not have the BP test built in. The BP test was performed to assess whether the variance of the regression residuals depends on the independent variables. Residuals from the original regression were squared and regressed on the same predictors. The BP test statistic was calculated as the sample size multiplied by the R-squared from this auxiliary regression and compared to the chi-square distribution with degrees of freedom equal to the number of predictors. The results indicated no evidence of heteroscedasticity. For Model 1, the BP test statistic was 5.056 with 4 degrees of freedom. This value is below the chi-square critical value at the 0.05 significance level ($\chi^2_{0.05,4}$ = 9.488), so we fail to reject the null hypothesis of homoscedasticity. A similar finding was observed for model 2. (Breusch & Pagan, 1979.)

In regression analysis, the residuals for any two observations must be uncorrelated. This is called a lack of autocorrelation. The Durbin-Watson test assesses this assumption by examining serial correlation in the errors. Durbin-Watson takes values between 0 and 4. Values close to 2 indicate that residuals are uncorrelated. (Field, 2018, 1015.) To control for autocorrelation, the lagged ROA (ROA_L) was included in the model. The primary robustness assessment was conducted for the data and regressions as explained above. Before performing regression analyses, descriptive statistics of the sample are presented in Table 11, where the mean, median, standard deviation (SD), minimum, and maximum values for each variable are reported.

Table 11. Descriptive statistics of the total sample.

Table reports the descriptive statistics of the dependent, independent, and control variables. ROA is the return on assets, SIZE is the natural logarithm of total assets, and LEV is the leverage. ESG is the overall ESG score; ENV is the environmental pillar score; SOC is the social pillar score; and GOV is the governance pillar score. All variables are winsorized at the 1% and 99 % levels to deal with outliers.

	N	Mean	Minimum	Maximum	SD
ROA	9232	0.040	-0.660	0.346	0.107
ROA_L	8985	0.041	-0.660	0.346	0.103
SIZE	9906	20.961	15.276	25.718	2.020
LEV	9906	0.560	0.052	1.293	0.205
ESG	7636	54.650	7.419	91.062	19.884
ENV	7636	49.700	0.000	97.271	26.422
SOC	7636	58.732	3.750	96.942	22.771
GOV	7636	52.779	4.000	94.099	22.598

The means of ROA and ROA_L align, as expected, since ROA_L refers to the previous year's ROA, and their values, along with their standard deviations, are similar to findings from Chen and colleagues (2023) and Velte (2017). The average ESG score is 54.650, with ENV at 49.700, SOC at 58.732, and GOV at 52.779. Barros and colleagues (2022) reported comparable GOV scores but lower ENV and SOC scores, possibly due to regional differences and changes in practices. They also found that GOV peaked in 2019 and then declined, indicating its volatility. SOC scores are highest here, similar to Velte's (2017) findings for German companies, while Conca and colleagues (2021) found the highest score in GOV in EU agri-food companies, exceeding ESG overall.

Contrary to previous findings, Velte (2017) and Qureshi and colleagues (2019) found that the GOV score was the lowest among the ESG, SOC, and ENV scores. This differs from this thesis, where the ENV score is the lowest, as found by Conca and colleagues (2021). The time span and sample of Velte´s research differ from those of this thesis, which could explain the differences, as Velte concentrated on German companies. In contrast, Qureshi and colleagues (2019) included a broader range of sectors in their study. In line with previous research and considering that this thesis excluded financial-sector companies, the maximum LEV observed in the present sample was 1.293, compared to 3.811 reported by Qureshi and colleagues (2019). This difference supports the rationale for excluding the financial sector.

The high standard deviation of the ESG, ENV, SOC, and GOV mean values is attributed to variation in ESG performances, institutional pressure, and stakeholder environmental demands across the EU. Highlighting the EU's higher performance, the ESG score in this thesis had a lower standard deviation (18.823) than the worldwide study by Chen and colleagues (2023). In addition, the ESG score in this thesis was 42.642, which is over 10 points lower than in the global study. Similar findings have been proposed by Agnese and colleagues (2025) and Velte (2017). Furthermore, recalling Figure 4, which shows fluctuations in the scores over the study period, can explain the high standard deviation in the ESG and its separate pillar scores.

To provide a more detailed sectoral analysis, this thesis follows Garcia and colleagues (2017) and Qureshi and colleagues (2019, 1207) in classifying companies as sensitive or non-sensitive. Using descriptive statistics, a considerable variation was found among the top-performing and non-top-performing companies, underscoring this as an important aspect to study alongside sensitive and non-sensitive companies. The t-statistics are compared between Panels A_S and B_{NS}, with the results shown under Panel A_S. Similarly, the t-statistics are compared between Panel C_{TP} and the rest of the sample, and the results are shown under Panel C_{TP} in Table 12.

Table 12. Variables, mean, minimum, maximum, skewness, kurtosis, and t-test of the Panels A_S, B_{NS}, and C_{TP}. The table reports the values of skewness and Kurtosis, the test statistics for the two-sample t-test, and the p-value. The p-value is the probability of getting a result at least as extreme as observed, assuming the null hypothesis is true. All variables are winsorized at the 1% and 99% levels to mitigate the effect of outliers.

	ROA	ROA_L	SIZE	LEV	ESG	ENV	SOC	GOV
				Sensitive industries (Panel A_S)				
Mean	0.039	0.037	21.929	0.558	60.032	61.093	64.502	55.537
Min.	-0.484	-0.484	15.605	0.052	7.876	0.000	3.750	0.958
Max.	0.346	0.346	25.718	1.264	90.914	97.271	95.924	94.099
SD	0.071	0.071	1.967	0.196	19.222	23.327	21.525	22.667
Skew.	-0.534	-0.602	-0.536	-0.189	-0.639	-0.555	-0.774	-0.205
Kurt.	7.420	7.420	0.332	0.386	-0.312	-0.637	-0.046	-1.054
t-test	2.876	1.223	19.121	-0.821	11.488	16.995	7.762	6.711
p-value	0.004	0.222	0.001	0.412	0.001	0.001	0.001	0.001
				Non-sensitive industries (Panel B_{NS})				
Mean	0.030	0.035	20.861	0.563	54.161	48.822	59.399	50.859
Min.	-0.660	-0.660	15.276	0.052	7.419	0.000	3.750	4.000
Max.	0.346	0.346	25.718	1.293	91.062	97.271	96.942	94.099
SD	0.113	0.108	1.986	0.207	19.817	26.537	22.924	22.504
Skew.	-2.703	-2.588	-0.038	-0.037	-0.266	-0.173	-0.426	-0.092
Kurt.	12.070	11.848	-0.203	0.434	-0.688	-0.923	-0.681	-0.943
				Top-performing companies (Panel C_{TP})				
Mean	0.060	0.060	23.060	0.601	73.912	75.661	79.030	63.499
Min.	-0.096	-0.096	19.884	0.211	22.942	8.990	20.605	10.605
Max.	0.311	0.311	25.718	0.865	91.062	97.223	96.942	94.099
SD	0.060	0.060	1.189	0.123	12.172	15.900	13.886	20.35
Skew.	1.616	1.616	-0.052	-0.557	-1.237	-0.979	-1.509	-0.418
Kurt.	4.196	4.758	-0.112	0.695	2.713	1.267	3.264	-0.614
t-test	7.590	6.974	30.176	5.558	26.274	26.752	23.238	10.289
p-value	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

Garcia and colleagues (2017) and Qureshi and colleagues (2019) have argued that stakeholder expectations lead to differences in companies' scores, depending on their respective industries. A similar outcome was observed: ESG scores and pillar scores are higher in sensitive industries than in non-sensitive ones. Qureshi and colleagues (2019) reported similar overall ESG levels for sensitive industries; however, their results showed higher ENV and GOV scores than those presented in table 12. Similar trends were observed in non-sensitive industries, where the ENV score showed the most significant difference. In addition, the GOV scores were almost identical to those in the previous study.

In contrast, the ESG score differences grew in the non-sensitive compared to the sensitive group. The relatively lower ENV score in this thesis may reflect more recent data, as environmental practices are still evolving in sensitive sectors. The higher GOV score could indicate a stronger emphasis on corporate governance and compliance mechanisms in the post-2017 period, which is where Qureshi and colleagues' (2019) study ends. Differences in sample composition and the exclusion of financial companies may also contribute to these variations, as governance standards tend to be more prominent among non-financial corporations. As expected, top-performing companies exhibit higher ESG scores than companies in sensitive and non-sensitive industries. The mean differences reveal notable variation across ESG dimensions, with top performers exceeding others by approximately 9–22% in overall ESG performance and 17–36% across the individual environmental, social, and governance pillars.

Expanding upon the findings in Table 12, a more in-depth analysis of skewness and kurtosis is conducted to understand the distributional characteristics of the variables further. ROA and ROA_L exhibit skewness values exceeding 1 in Panel C_{TP}, indicating substantial positive skew in their distributions. This suggests that most companies report lower returns on assets, while a small number achieve exceptionally high ROA values. In Panel B_{NS}, the skewness is below -2, indicating substantial negative skew in their distributions, suggesting that while most companies report relatively high returns on assets, a small number of companies experience exceptionally low or negative ROA values. The remaining variables display acceptable skewness ($|skewness| < 1$), suggesting approximately symmetric distributions. Building on the previous point, the kurtosis values for all variables, which measure the pointiness of a distribution, are below 3 for every variable except ROA and ROA_L. This suggests that, except for ROA and ROA_L, the data are relatively flat rather than normally distributed. In other words, the variables exhibit variability; however, to mitigate the influence of outliers and non-normal distributions (high kurtosis), the winsorizing procedure applied to all variables effectively limits the influence of extreme observations. (Fabozzi, 2014; Field, 2018; Mehmetoglu & Jakobsen, 2017.)

To determine whether industry differences are significant, a mean equality test was conducted for Panels A_S and B_{NS}. Similarly, the same test was performed for Panel C_{TP} and the remaining companies in the total sample, referred to as non-top-performing companies. Specifically, independent-samples t-tests were conducted to compare the variables, with t-statistics reported. Levene's test was used to assess equality of variances in the FE regression. Assessing variance differences provides insight into the distributional properties of the variables. It supports the interpretation of descriptive comparisons between groups. When variances were unequal, Welch's t-test was reported. Most variables violated the assumption of equal variances; thus, the Welch t-test, which does not assume homogeneity of variances, was employed. This approach ensures robust testing of group differences, accounting for unequal variances, and allows for reliable interpretation of statistically significant differences between panels. (Field, 2018, 79-81, 380, 535-536.)

The results, comparing sensitive and non-sensitive industries, show no significant differences in current profitability, ROA_L, or LEV, while other variables show substantial differences. Company size is significantly higher among sensitive industries ($t = 19.121$, $p < 0.001$), indicating that larger companies tend to operate in more environmentally sensitive sectors. Regarding sustainability performance, sensitive industries show significantly higher scores across ESG and its individual pillars ($p < 0.001$). The most notable mean differences are observed in the ENV ($t = 16.995$) and overall ESG ($t = 11.488$) scores, indicating that companies in environmentally exposed sectors tend to have more advanced ESG practices, likely due to increased regulatory and stakeholder pressures, as previously explained. It also clearly distinguishes between environmentally sensitive and non-sensitive industries.

The results were consistent across all comparisons for Panel C_{TP}. Each variable exhibited statistically significant mean differences between groups at the 0.001 level, indicating strong evidence of group-level distinctions. In particular, SIZE, ESG, ENV, and SOC showed the highest t-values, suggesting that these variables account for the most pronounced differences between top- and non-top-performing companies. These results indicate that company size and overall ESG, along with the environmental and social dimensions of ESG performance, play a crucial role in distinguishing higher-performing companies from others. The findings further support the notion that stronger sustainability engagement tends to coincide with better company performance, reinforcing the positive association between ESG performance and CFP, and make the thesis Panel C_{TP} an interesting addition to the sustainability research. Interestingly, the highest ENV score for both non-sensitive and sensitive categories is higher than the top-performing score. The top-performing companies excel not because of a single pillar, but because of the combination of scores from the other pillars and ESG scores.

Before conducting regression and group comparison analyses, a correlation analysis was performed to examine the relationships among the variables. This provides an initial understanding of the strength and direction of associations between key constructs in the study. Previous studies have widely employed Pearson’s correlation matrix to examine the relationship between ESG performance and financial outcomes (Ademi & Klungseth, 2022; Fischer & Sawczyn, 2013; Garcia et al., 2017; Qureshi et al., 2019, to name a few). Table 13 provides the relationships among the variables tested using Pearson correlation analysis.

Table 13. Correlation matrix.

The table reports the correlation coefficients between the independent, dependent, and control variables for the whole sample. The corresponding p-value of all coefficients is 0.001. Correlation is significant at the 0.01 level, denoted with **.

	ROA	ROA_L	SIZE	LEV	ESG	ENV	SOC	GOV
ROA	1.000							
ROA_L	0.802**	1.000						
SIZE	0.244**	0.233**	1.000					
LEV	-0.078**	-0.084**	0.256**	1.000				
ESG	0.189**	0.189**	0.673**	0.174**	1.000			
ENV	0.235**	0.230**	0.666**	0.191**	0.863**	1.000		
SOC	0.177**	0.180**	0.626**	0.172**	0.894**	0.734**	1.000	
GOV	0.073**	0.072**	0.378**	0.091**	0.707**	0.415**	0.434**	1.000

Based on the Pearson correlation analysis, Table 13 presents the correlation coefficients for all study variables, along with their significance levels, allowing identification of potential multicollinearity issues and providing preliminary evidence of the expected relationships between independent and dependent variables. The correlation matrix illustrated relationships among SIZE, ESG, ENV, and SOC, as well as between ENV and SOC. All reported correlations are statistically significant at the 1% level, highlighting meaningful relationships among company characteristics, ESG performance, and profitability. Most correlations are below 0.5, indicating no correlation between the independent variables. Some correlations exceed 0.8, indicating multicollinearity. The analysis demonstrates that ROA is strongly positively correlated with ROA_L ($r = 0.801$, $p < 0.01$), suggesting that past profitability has a substantial predictive value for current performance. ROA shows small positive correlations with SIZE ($r = 0.244$) and ENV ($r = 0.235$) and a weak negative correlation with LEV ($r = -0.078$), indicating that larger companies and those with higher ENV scores tend to be slightly more profitable.

In contrast, higher LEV is associated with somewhat lower profitability, as indicated by a negative r-value. SIZE is positively correlated with ESG and its components, suggesting that larger companies tend to perform better on ESG metrics. Specifically, ESG, ENV, and SOC have a slight correlation exceeding 0.600. Several noteworthy relationships emerge when compared with previous studies. In line with previous literature, correlation analysis shows that LEV is negatively correlated with ROA (Conca et al., 2021; Garcia et al., 2017; Nirino et al., 2021; Velte, 2019). The association between LEV and ROA is less negative than Conca and colleagues (2021) found (-0.120, $p < 0.01$), whereas Garcia and colleagues (2017) found an even stronger negative link (-

0.331, $p < 0.05$). SIZE and ROA exhibit correlations comparable to those of Velte (2019). This indicates that larger companies tend to have higher profitability in terms of ROA and can pursue more ESG practices. Contrary findings have been reported, with SIZE showing a negative correlation with ROA (Conca et al., 2021). Larger companies tend to generate lower returns on assets, which may be due to their ability to acquire fixed assets, such as land and property, and to make long-term investments. Because the returns on these assets are often slower, the result is a lower return on assets. Additionally, as company size increases, the probability of an asset purchase increases (Warusawitharana, 2008, 478).

As can be inferred, since ESG comprises its individual pillars, the ESG score is closely related to them, with multicollinearity evident (ENV, $r = 0.863$; SOC, $r = 0.894$; GOV, $r = 0.707$). To address the high correlation among ESG components, components are analysed using separate regression models. This means that, instead of including all components as independent variables in a single model, ESG and its component is regressed in tandem in FE regressions, ensuring that multicollinearity does not compromise the reliability of parameter estimates. Notably, ENV and SOC have the highest correlation, with a correlation value of 0.734. It is closest to 0.800, which is kept as the level of multicollinearity (Field, 2018, 401–402). The finding between ENV and SOC has been observed, for example, by Conca and colleagues (2021), Barros and colleagues (2022), and Garcia and colleagues (2017). The former authors suggest that the higher correlation indicates that companies with high environmental performance also tend to emphasize their social performance.

After statistical confirmation and understanding of the variables' relationships and the mean comparison, this thesis turns to empirical estimation. Two FE regression models are estimated to check the hypotheses. The models are formed for three Panels: A_S, B_{NS}, and C_{TP}. The FE regression was estimated using the linear mixed models procedure in SPSS. Applying within-transformation in the fixed effects model removes all time-invariant company-specific effects, allowing the analysis to focus solely on within-company variation over time.

The first model, which addresses the H1, H1d, H2, and H2a examines whether there is a positive and significant relationship between a company´s ESG performance. For the H_{1d}, the results are compared against Panel C_{TP} to examine whether the top-performing companies have the strongest correlation. For the H_2, the results are compared against Panel A_S and B_{NS}. Whereas, for the H_{2a}, the results are compared with Panel A_S.

FE **model 1** is estimated as:

$$ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 ESG_{it} + \alpha_i + \lambda_t + \varepsilon_{it}$$

The second model, which addresses the H1a-c and H2b-c, examines whether there is a positive and significant relationship between the separate pillars (ENV, SOC, GOV) and CFP. The H1a emphasizes the ENV correlation, H1b the SOC correlation, and H1c the GOV correlation. For the H2b, the results are compared against Panel B_{NS}. Whereas, for the H2c, the results are compared against Panel A_S and B_{NS}.

FE **model 2** is estimated as:

$$ROA_{it} = \beta_0 + \beta_1 ROA_{it-1} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 E_{it} + \beta_5 S_{it} + \beta_6 G_{it} + \alpha_i + \lambda_t + \varepsilon_{it}$$

Models 1 and 2 are used to examine the hypotheses, and the results across panels are compared.

4.2 The ESG–CFP relationship: insights across industries and top performers

This section outlines the key theoretical and empirical premises that underpin the understanding of the relationship between ESG performance and CFP. Next, adapting Conca and colleagues (2021), Garcia and colleagues (2017), Qureshi and colleagues (2023), and Velte (2017), the FE regression analysis on the relationship between ESG scores, separate pillar scores (ENV, SOC, GOV), and the company´s ROA is discussed for each panel. The results are presented in Table 14, which shows data from two separate regression models: one based on the total ESG score (Model 1) and the other on its individual pillars (Model 2). Additionally, it displays the regression coefficients and statistical significance levels for each variable, with the standard errors of each coefficient in parentheses.

Table 14. Results, Panels A_S, B_{NS}, and C_{TP}.

The table presents the results of models 1 and 2 for each panel (A_S, B_{NS}, C_{TP}). CFP is measured as ROA. The coefficients and standard errors of ESG, ENV, SOC, and GOV are scaled by 1000. The symbols ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Adj. R^2 is transferred to percentages by multiplying its value by 100%. Standard errors (in parentheses) are adjusted for company-level clustering through the repeated-measures specification.

	Panel A_S		**Panel B_{NS}**		**Panel C_{TP}**	
	1	2	1	2	1	2
Constant	-0.005	-0.004	-0.001	-0.001	0.002	0.002
	(0.003)	(0.003)	(0.002)	(0.002)	(0.004)	(0.004)
ROA_{t-1}	0.078***	0.079***	0.130***	0.130***	0.370***	0.369***
	(0.028)	(0.029)	(0.012)	(0.012)	(0.055)	(0.055)
Size	0.000	0.000	0.001	0.0001	-0.007	-0.007
	(0.004)	(0.004)	(0.002)	(0.002)	(0.010)	(0.010)
LEV	-0.141***	-0.141***	-0.182***	-0.182***	-0.133***	-0.132***
	(0.014)	(0.015)	(0.007)	(0.007)	(0.030)	(0.030)
ESG x 10^3	0.000*		0.055		0.000	
	(0.000)		(0.000)		(0.000)	
ENV x 10^3		0.000		0.000†		0.030
		(0.000)		(0.081)		(0.000)
SOC x 10^3		0.000		0.000		-0.039
		(0.000)		(0.086)		(0.000)
GOV x 10^3		0.012		0.000		0.090
		(0.000)		(0.063)		(0.000)
Adj. R2	10.6%	10.3%	12.7%	12.7%	22.5%	22.0 %
F-statistic	38.205***	24.948***	221.813***	148.641***	22.577***	14.951***
Durbin-Watson	1.900	1.898	1.959	1.959	1.969	1.965

† The significance of the ENV in Panel B_{NS} is 0.110, almost giving the significance of 10 %.

Model fit was evaluated using the F-statistic. Due to limitations in SPSS, for comparison, the adjusted R^2 and Durbin–Watson statistics were obtained from the corresponding within-transformed OLS regression, indicating the model's explanatory power and the absence of serial correlation, respectively.

Furthermore, Table 14 presents the most important and commonly used tests for explaining the explanatory power of regression analysis, including the adjusted R-squared value and the F-statistic. The adjusted R-squared reflects the model's explanatory power, indicating how effectively the independent variables collectively account for the variation in the dependent variable. The adjusted R-squared can take values between 0 and 1 (Wooldridge, 2016). The F-statistics, in turn, describe whether the regression model variables can generally explain the variation in the dependent variable (Field, 2018, 1016).

First, the model fit, explanatory power, and whether the variables explain the variation of the dependent variable are discussed. Turning to adjusted R-squared, the models explain between 10.3% (the smallest, Model 2 for Panel A_S) and 22.5% (the highest, Model 1 for Panel C_{TP}) of the variance. Similar explanatory findings have been reported for the same size class in the model explanation of within-company variation in ROA, as noted by Velte (2017). Compared to previous studies, the model fit was lower; however, differences in the area, inclusion or exclusion of industry, interaction terms, and various control variables may explain this variation. The model presented in this thesis suggests that company time-invariant characteristics exist, which can be attributed to distinct strategic implications. Nonetheless, the F-statistics indicate that ESG, ENV, SOC, GOV, SIZE, and LEV collectively explain a significant portion of the within-company variation in ROA in each panel. This suggests that changes in these variables within companies over time are significantly associated with changes in ROA. The regression analysis models have Durbin-Watson values between 1.892 and 1.969, indicating no autocorrelation in the data and thereby confirming the models' reliability.

The FE regressions across all panels show that ROA_L is positively and statistically significantly related to ROA. In contrast, LEV shows a statistically significant but negative relationship with ROA in all models across each panel. These results align with other studies and suggest that the ROA of the previous year has a meaningful impact on the current year, as the company's assets affect its profitability. LEV has a negative, statistically significant association with company performance, indicating that higher debt levels are associated with lower profitability over time. (Chen et al., 2023; Conca et al., 2021; Velte, 2017.) Since the SIZE coefficient is statistically insignificant across all panels, it can be concluded that company size does not affect ROA, which is surprising given that other studies have found a positive correlation between the two variables (Lu et. al., 2023; Velte, 2017). Recalling the discussion following the correlation matrices, contrary findings have been reported, with SIZE exhibiting a negative correlation with ROA (Conca et al., 2021). This places the results of this thesis between those of previous studies, suggesting that different groupings and markets may influence whether size matters for profitability.

Furthermore, a possible explanation for this is that the sample is heterogeneous. The standard deviation of company size is around 2.0 in all panels. However, the SD is not as high as it is for the ESG and its components. The sign of the coefficient in Panel C_{TP} was negative on SIZE. That is not statistically significant, but it could imply that smaller top-performing companies have better CFP. The study by Minutolo and colleagues (2019) reported similar, non-significant relationships between the ROA and the control variables; however, they found that ESG has a positive effect on ROA. Taken together, these factors help contextualize the surprising result, but the interpretation remains exploratory. Having first established the key premises that inform the connection between ESG and financial performance, the subsequent section evaluates the thesis's findings by examining the empirical relationship between companies' ESG performance and their financial outcomes.

The analysis next examines how company-level ESG performance relates to financial performance in the overall sample, drawing on the regression results. First, attention is now focused on ESG

Model 1 across all panels to test H1, the hypothesis that there is a positive and significant relationship between a company´s ESG performance and financial performance. The relationship between ROA and ESG appears fairly weak; however, a 10% significance level was observed in Panel A_S. The regression analysis indicates a positive and statistically significant ($p < 0.10$) relationship between ESG performance and ROA ($\beta = 0.000$, SE = 0.000). The results of Model 1 are inconsistent with H1 and contradict the findings of previous studies (De Lucia et al., 2022; Velte, 2017). The differences may arise from the different timeframe, and Velte only had the German market. De Lucia and colleagues (2022) had a final sample of a similar number of companies as this thesis, analyzing 1,038 public companies operating in Europe. However, their data covers only the years 2018–2019. The timeframe of this thesis also includes those years but extends further, up to 2023. This additional four-year extension may make a difference; for example, as ESG practices become more commonplace, their direct effect on ROA might diminish. Consistent with the findings of Friede and colleagues (2017), the results at least did not show a negative relationship. While most relationships were nonsignificant, Panel A_S was an exception.

Secondly, to further disentangle the effects of the individual ESG pillars, the analysis proceeds by estimating Model 2 within each panel, isolating the environmental, social, and governance components. This model is used to test hypotheses H1a–H1c. The relationship between ROA and CFP in the separate pillars effect study was not statistically significant. ROA_L and LEV exhibited a similar statistically significant relationship with ROA as observed with Model 1 across each three panel. The SIZE variable was not statistically significant for ROA, and the coefficient magnitude was similar to that in Model 1. The individual pillars' relationships were weaker than the ESG relationship in Panels A_S and C_{TP}. The results of Model 2 are inconsistent with H1a, H1b, and H1c, However, in line with the findings of Friede and colleagues (2017), none of the individual pillars demonstrated a statistically significant positive relationship with CFP. However, their study suggested that a somewhat positive relationship might exist between the E and G pillars. Similarly, panel B_{NS} revealed a near-significant correlation between ENV and ROA. These findings contradict earlier studies (Agnese et al., 2025; Orlitzky et al., 2003) that identified positive relationships among individual pillars. The differing results in this thesis may be attributable to the distinct timeframe and sample composition. Furthermore, as noted by previous studies, variations in the strengthening or weakening effects of the separate pillars on one another may also affect the outcomes observed in model 2 of this thesis.

While these results describe the overall ESG–CFP relationship across the full sample, it is also relevant to examine whether this association differs among top-performing companies and across industry contexts. Thirdly, using Models 1 and 2 in Panel C_{TP}, the analysis now turns to Hypothesis 1d to assess the ESG–CFP relationship specifically among top-performing companies. No positive, significant effect of ESG on ROA was found in Panel C_{TP}, indicating that ESG performance among top-performing companies do not influence their CFP, and the effect in this way is not the most significant in Panel C_{TP}. The relationship between SOC and ROA in Panel C_{TP} is negative; however, it is not statistically significant, with a p-value of 0.851, which differs from the patterns observed in the other panels. Although these coefficients are not significant, the negative relationship may be explained by the possibility that investments in social initiatives incur short-term costs, temporarily reducing ROA. It remains unsolved whether, over time, such initiatives may lead to long-term financial benefits.

The H1d is inconsistent with previous findings. However, Agnese and colleagues (2025) found a significant positive relationship between high ESG performance and CFP in the U.S. market. The different findings may be due to the differences between the U.S. and EU markets and ESG regulation. In contrast to findings from U.S. markets, the ESG–CFP relationship among top-performing EU companies may appear weaker or statistically insignificant. This can be attributed to stricter regulatory baselines, higher compliance costs, more mature sustainability practices, and structural differences in industry composition. As a result, ESG initiatives in the EU generate less performance differentiation, whereas in the U.S. context, ESG remains a more distinctive and financially rewarded strategic choice. The increasing regulatory pressure in the EU is reinforced by recent directives and enhanced disclosure requirements (EU, 2025). Further contributes to this dynamic, as shown in Table 11, the standard deviations of the ESG and pillar scores are markedly lower in Panel C_{TP} than in Panels A_S and B_{NS}, indicating lower cross-company variation in ESG performance among top performers, which can weaken the observed ESG–CFP relationship.

Fourthly, turning to the industry context helps resolve the hypotheses H2 and H2a-c. Model 1 provides results indicating whether a positive and significant relationship exists between ESG performance and CFP in sensitive and non-sensitive industries, as shown in Panels A_S and B_{NS}, respectively. The comparison highlights the sensitive industry to illustrate a stronger relationship, as a significant and positive correlation was found between ESG and ROA. In the same vein, H2a is confirmed, as there was a significant, positive correlation in Panel A_S but not in Panel B_{NS}. These results follow the previous study by Qureshi and colleagues (2019) in the EU context. And the companies' ESG and their separate pillar scores have higher standard deviation in Panel A_S, which can be the reason behind the correlation, as well as the emphasis explained earlier that sensitive industries must pay closer attention to their ESG practices to receive legitimacy from their stakeholders and to mitigate the risk they may impose.

Turning to H2b and H2c, the results of regression model 2 in Panel B_{NS} show an almost significant correlation between ENV and ROA. This aligns with Qureshi and colleagues (2019), who argued that in sensitive industries, the GOV and SOC pillars are more significant, and with Conca and colleagues (2021), who found that environmental performance is positively correlated with ROA in non-sensitive industries. However, it is important to note that the hypothesis cannot be confirmed with this 'almost non-significant' result, though it does demonstrate a direction consistent between Panels A_S and B_{NS}. Since there is no, or only a nearly significant, correlation between ENV and ROA in Panel A_S, the last hypothesis is only partially confirmed: non-sensitive industries show a stronger correlation, but it is not significant across industries. Building on the previous, the higher commitment towards environmental practices was not found in the regressions for sensitive industries, which addresses H2b. The lack of significance of environmental performance in sensitive industries may be due to several factors. First, companies in sensitive industries often face high regulatory and compliance obligations, which require substantial ESG-related investments that may not translate immediately into higher ROA. Second, the baseline level of environmental performance is already high among these companies, leaving little room for additional improvements to affect financial performance. Third, implementation costs of environmental initiatives may temporarily depress short-term profitability, offsetting potential gains.

Before continuing to the summary of the hypothesis testing, it is essential to review the ESG performance of the top-performing example companies. Given the high interest in providing in-depth information and answering the research question as meticulously as possible, the ESG performance of these selected companies will be presented.

The ESG scores of all example companies, including the score for each pillar, as well as their profitability, company size, and leverage, were extracted from the overall 2023 data. The data for the example companies were included in Panel C_{TP} and, depending on their industry classification, either in Panel A_S or Panel B_{NS}. To set the scene, Table 15 provides detailed information about the companies. The rankings were obtained from Corporate Knights' inaugural Europe 50 and Global 100 lists for 2025, as presented in the data collection chapter. The table includes the country of origin (CoO) of the headquarters, the company´s industry, and which industry subgroup it belongs to. Presenting these characteristics at the outset clarifies the sample composition and the criteria used to compare the companies in the subsequent analysis.

Table 15. Example companies' ESG commitment. (Corporate Knights, 2025a; Corporate Knights, 2025c)

Company name	**Schneider Electric**	**Vestas Wind Systems A/S**	**SMA Solar Technology AG**	**Alstom SA**
CoO	France	Denmark	Germany	France
Ranking in top 50 EU list in 2025	1	2	3	4
Ranking in top 100 list in 2025	1	3	6	7
Ranking in top 100 list in 2024	7	3	10	18
Sensitive (S) / non-sensitive (NS)	NS	S	S	NS
Industry subgroup	Electrical Components	Renewable Energy Equipment	Renewable Energy Equipment	Electrical Components
ROA	0.073	0.002	0.134	0.015
ROA_L	0.687	-0.500	0.032	0.012
Size	24.800	23.837	21.207	24.170
LEV	0.538	0.865	0.577	0.710
ESG score	82.396	68.951	71.740	88.257
E score	70.228	75.767	78.119	96.478
S score	93.358	66.605	71.693	87.226
G score	82.626	63.104	64.163	78.105

The Global 100 ranking reveals the company's shift in its global position. Notably, only Vestas has maintained its third-place position for consecutive years, while the other example companies have improved their sustainability rankings. Alstom's commitment has seen the most significant increase in position, rising 11 positions from 2024 to 2025. Vestas was the only company to have a negative ROA_L, which can reflect temporary financial downturns. Although the evidence is limited, the figures in the table suggest that Vestas has made the least progress in its ESG efforts in recent years.

When summarizing the example companies' ESG performance and other variables, the comparison is made against the mean value of either sensitive or non-sensitive industries, depending on the example company's classification. Additionally, the comparison is made against the top-performing companies (Panel C_{TP}). To note, none of the companies have the highest overall ESG score within their industry, even though they are the four top-performing companies when compared to Table 12. Schneider has the highest in social performance, while the other companies score higher on environmental perfromance. When comparing ROA and ROA_L, the most significant variation occurred among the examples. The variation may be due to company characteristics and whether they made significant investments in that particular year. Larger and faster-growing companies typically undergo continuous investment cycles, which can temporarily reduce asset efficiency and lower current ROA, even when their long-term performance potential is substantial. Meanwhile, companies with higher equity returns may experience greater fluctuations in profitability in response to strategic sustainability investments (Artiach et al., 2010).

While Schneider and SMA, both from non-sensitive industries (Panel B_{NS}), had significantly higher ROA and ROA_L than the comparison group from sensitive industries (Panel A_S), Vestas and Alstom showed much lower profitability, with Vestas even reporting a negative ROA_L. Vestas is based in Denmark, where the economy differs from other parts of Europe and the Western world. Approximately 60% of Denmark's stock market capitalization is controlled by industrial foundations that hold majority stakes in companies with goals beyond profit maximization. These organizations prioritize societal progress, innovation, and long-term sustainability. They operate with longer time horizons, reflecting stakeholder theory and Denmark's distinct institutional characteristics. While the traditional Western model has often favored shareholder returns over broader social and environmental issues, companies like Vestas demonstrate that it is possible to achieve financial success while maintaining a commitment to sustainability and the interests of all stakeholders (Bronca, 2025).

Notably, the company sizes vary across the examples, with SMA being the smallest. Each example company was larger than the respective industry average, but not by a significant margin. Although size has been one of the most commonly used control variables and is expected to be associated with ROA and ESG perfromance, this study did not find such a link, as neither model 1 nor model 2 showed size as a statistically significant factor for profitability. As expected, leverage varied among the examples. Vestas had the highest leverage, followed by Alstom. The economic differences in Denmark help explain this to some degree, but investments and potential market changes may have negatively affected Vestas's results. Alstom has made substantial investments in its overall business practices and ESG initiatives, as evidenced by its ranking change in Table 13 from 18th to 7th within a year. This clearly requires investment, as reflected in the higher leverage, which indicates an increase in total liabilities relative to net income. Further exploring Alstom´s ESG performance, a relatively low ROA of 0.015 is consistent with companies that have undertaken substantial investment, as these expenditures increase the asset base more quickly than short-term earnings. This effect is particularly plausible for sustainability leader Alstom in this case, which has gained a higher ranking, likely due to high investment. The leverage ratio of 0.710 further supports this interpretation, suggesting that part of the investment may be financed through conventional debt.

Regarding ESG performance, the examples show higher scores than their respective industry groups in ESG and its individual pillars. Comparing the examples, Alstom has the highest ESG score among all companies, which again highlights improvements in its ESG performance, as reflected in its ranking. Environmental performance stands out, with Vestas, SMA, and Alstom achieving the highest scores in this pillar and overall ESG. Specifically, Alstom had the highest ENV score among the example companies, reflecting a commitment level similar to that in overall ESG performance. Social and governance aspects are primarily highlighted by Schneider, which scores highest on these pillars within the examples and shows above-average scores in Panel C_{TP}. Vestas scored the lowest in social commitment; however, in Denmark, other forms of social engagement, such as foundations dedicated to societal well-being, complicate the interpretation of SOC scores. Except for Schneider, all companies have lower SOC scores than GOV scores. The GOV score is the lowest among the ESG pillars for Vestas, SMA, and Alstom. Therefore, these three companies could improve both their social and especially their governance practices, while Schneider should focus on enhancing its environmental practices. Following the preceding regression results and the demonstration of the example companies' sustainability commitments, the following section summarizes how these findings align with the proposed hypotheses.

Based on the regression results, the findings from Model 1 are inconsistent with H1, as not all panels demonstrated a positive and significant correlation between ESG and ROA. Similarly, the findings from Model 1 are inconsistent with H2, since neither panel A_S nor panel B_{NS} showed a positive and significant relationship between ESG and ROA. Likewise, H1d can be rejected, since Panel C_{TP} did not have the strongest relationship between ROA and ESG. However, H2a can be confirmed, as Panel A_S showed a positive and statistically significant result at the 10% significance level. Turning to model 2 to find whether any of the individual pillars exhibit positive and significant correlation with ROA. Findings are inconsistent with H1a-c, as none of the panels showed a positive and significant correlation between any of the separate pillars and ROA. However, H2b and H2c were close to being confirmed, since the ENV and ROA had a near-significant, positive relationship in the non-sensitive group (Panel B_{NS}). This suggests that these hypotheses may be valid in different settings or time frames. Table 16 summarizes the hypothesis results, and Figure 5 presents the hypothesis-testing results within the conceptual model framework, which has been reconfigured based on the hypothesis results and the conceptual model laid out in Chapter 2.2.1, Figure 3.

Table 16 Hypotheses testing summary.

	Hypothesis	Conclusion	Summary of Finding
H_1	*There is a positive and significant relationship between company´s ESG performance and their financial performance across all companies*	Rejected	All companies did not demonstrate a positive and significant correlation between sustainability performance and profitability. Only sensitive companies ‘sustainability performance correlates with company´s financial performance.
H_{1a}	*There is a positive and significant relationship between company´s environmental performance and their financial performance across all companies*	Rejected	None of the companies showed correlation between environmental performance and profitability.
H_{1b}	*There is a positive and significant relationship between company´s social performance and their financial performance across all companies*	Rejected	None of the companies showed correlation between social performance and profitability.
H_{1c}	*There is a positive and significant relationship between company´s governance performance and their financial performance across all companies*	Rejected	None of the companies showed correlation between governance performance and profitability.
H_{1d}	*The positive and significant effect is more potent in top-performing companies.*	Rejected	Top-performing companies did not show correlation between their sustainability commitment and profitability, nor did they demonstrate significantly better sustainability performance.
H_2	*There is a positive relationship between a company's ESG performance and its financial performance across sensitive and non-sensitive industries.*	Rejected	Sensitive nor non-sensitive companies did not show correlation between their sustainability commitment and profitability.
H_{2a}	*There is positive and significant relationship between ESG performance and CFP is more substantial in sensitive industries*	Confirmed	Sensitive companies showed a positive and statistically significant result at the 10% significance level, confirming that in sensitive industry sustainability correlates with company´s financial performance.
H_{2b}	*There is positive and significant relationship between environmental performance and CFP in non-sensitive industries*	Rejected	Non-sensitive companies did not show correlation between their environmental commitment and profitability.
H_{2c}	*The positive and significant relationship between environmental performance and CFP is more substantial in non-sensitive industries.*	Rejected	Non-sensitive companies showed no correlation between their environmental commitment and profitability, nor did they demonstrate significantly better environmental performance.

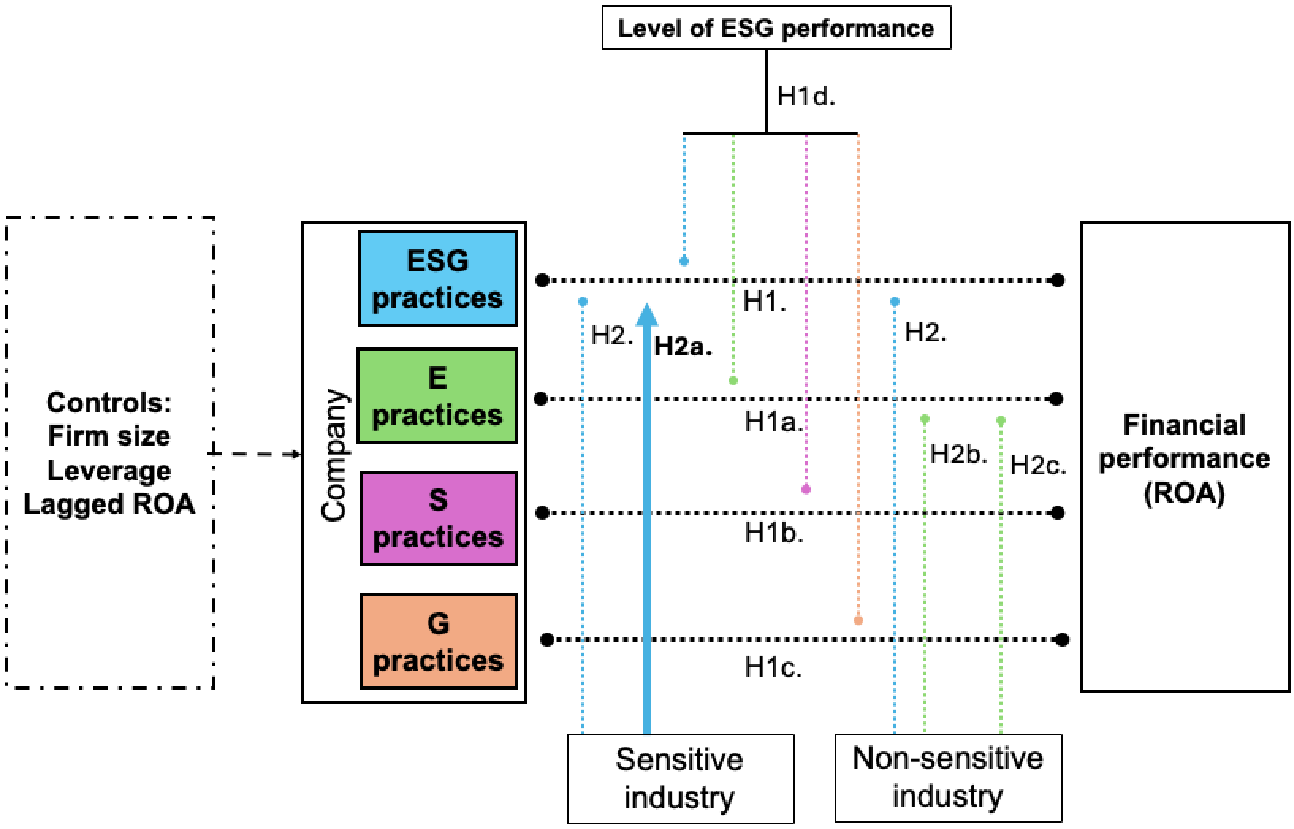

Figure 5 Conceptual model modified according to the hypotheses results

In the figure above, dashed lines with rounded ends represent hypotheses that were not confirmed. A solid line with an arrow indicates a confirmed hypothesis, with the corresponding hypothesis number displayed in bold. One of the most insightful findings was that, in sensitive industries, improved sustainability performance enhances financial performance. It can be concluded that non-sensitive companies also have some potential to enhance financial results by engaging in at least environmental activities. However, since neither ESG as a whole nor its separate pillars showed a negative and significant correlation with profitability, investing in sustainability performance does not appear to harm long-term financial performance.To ensure the reliability of these results and to account for potential sources of error, the next section outlines the steps taken to verify the soundness of the quantitative analysis. This includes measures implemented to reduce biases and confirm the validity of the findings.

4.3 Robustness check

Unbalanced panels may experience biases, and the potential limitations of panel regression need to be assessed (Wooldridge, 2016). Robustness checks are conducted to validate the reliability of the results. The outcomes of these checks, along with a discussion of whether the core findings hold under alternative assumptions and methodological variations, are presented below. To ensure the robustness of the baseline findings, two additional sensitivity analyses were conducted. First, the estimations were repeated after excluding selected countries from the sample to examine whether specific national contexts or outliers drove the results. In this thesis, the non-EU countries, Norway and Switzerland, were excluded from the data in Panels A_S, B_{NS}, and C_{TP}. The sample consisted of 191 companies from these countries. The country's cut-off point is set at 15.11%, resulting in a sub-sample of 84.89%, which aligns with previous studies (Danso et al., 2019, 892). Table 17 presents the regression analysis of the sub-sample.

Table 17 Robustness check, including only EU companies.

	Panel A_S		Panel B_{NS}		Panel C_{TP}	
	1	2	1	2	1	2
Constant	-0.004	-0.003	-0.001	-0.001	0.002	0.002
	(0.003)	(0.003)	(0.002)	(0.002)	(0.004)	(0.004)
ROA_{t-1}	0.090***	0.089***	0.154***	0.153***	0.371***	0.369***
	(0.031)	(0.031)	(0.014)	(0.014)	(0.056)	(0.056)
Size	-0.002	-0.001	0.000	0.000	-0.007	-0.007
	(0.004)	(0.004)	(0.002)	(0.002)	(0.010)	(0.010)
LEV	-0.151***	-0.150***	-0.186***	-0.187***	-0.133***	-0.124***
	(0.016)	(0.016)	(0.008)	(0.008)	(0.030)	(0.009)
ESG x 10^3	0.000**		0.098		0.000	
	(0.000)		(0.000)		(0.000)	
ENV x 10^3		0.012		0.000*		0.025
		(0.000)		(0.091)		(0.000)
SOC x 10^3		0.078		-0.080		-0.043
		(0.000)		(0.097)		(0.000)
GOV x 10^3		0.000		0.016		0.088
		(0.000)		(0.068)		(0.000)
Adj. R2	12.7%	12.4%	14.2%	14.2%	22.5%	21.9%
F-statistic	38.689***	24.981***	205.920***	137.808***	22.085***	14.626***
Durbin-Watson	1.942	1.940	1.933	1.934	1.968	1.964

The two distinct models were estimated using the same control variables and FE structure. The results remained substantially consistent with the baseline models, indicating that the main findings are not influenced by correlations among the control variables, independent variables, or even the separate ESG pillars. Despite the similarities between the baseline, some interesting findings emerged. First, when excluding Norway and Switzerland from the data, the significance level of Panel A_S increased. Secondly, Panel B_{NS}, the correlation between ROA and environmental performance became statistically significant, indicating that EU companies are achieving better financial performance when emphasizing environmental performance than when companies from Norway and Switzerland are presented.

Secondly, an additional robustness test was conducted for each ESG pillar score, ENV, SOC, and GOV, by introducing each score into the model separately rather than jointly. In the separate regressions, the original Panel A_S, B_{NS}, and C_{TP} data were used. This approach isolates the individual contribution of each dimension to company performance, helping to mitigate potential multicollinearity among the ESG components. This procedure ensures that the effect of each ESG pillar on company financial performance can be assessed independently. Table 18 presents the regression analysis of the separate regressions for the individual pillars.

Table 18 Robustness check for each individual pillar across all panels.

	ENV pillar		
	Panel A_S, model 2a	Panel B_{NS}, model 2a	Panel C_{TP}, model 2a
Constant	-0.004	-0.001	0.002
	(0.003)	(0.002)	(0.004)
ROA_{t-1}	0.079***	0.130***	0.370***
	(0.029)	(0.012)	(0.055)
Size	0.000	0.001	-0.007
	(0.004)	(0.002)	(0.010)
LEV	-0.141***	-0.182***	-0.132***
	(0.015)	(0.007)	(0.030)
ENV x 10^3	0.000	0.094	0.040
	(0.000)	(0.073)	(0.000)
Adj. R2	10.4%	12.7%	22.3%
F-statistic	37.262***	221.856***	22.327***
Durbin-Watson	1.897	1.959	1.956

	SOC pillar		
	Panel A_S, model 2b	Panel B_{NS}, model 2b	Panel C_{TP}, model 2b
Constant	-0.004	0.000	0.003
	(0.003)	(0.002)	(0.004)
ROA_{t-1}	0.080***	0.130***	0.370***
	(0.029)	(0.012)	(0.055)
Size	0.001	0.001	0.007
	(0.004)	(0.002)	(0.010)
LEV	-0.142***	-0.181***	-0.132***
	(0.015)	(0.007)	(0.030)
SOC x 10^3	0.000	-0.045	-0.013
	(0.000)	(0.078)	(0.000)
Adj. R2	10.2%	12.7%	22.3%
F-statistic	36.829***	222.014***	22.313***
Durbin-Watson	1.893	1.959	1.959

	GOV pillar		
	Panel A_S, model 2c	Panel B_{NS}, model 2c	Panel C_{TP}, model 2c
Constant	-0.004	-0.001	0.002
	(0.003)	(0.002)	(0.004)
ROA_{t-1}	0.079***	0.130***	0.369***
	(0.029)	(0.012)	(0.055)
Size	0.001	0.001	0.007
	(0.003)	(0.002)	(0.010)
LEV	-0.141***	-0.181***	-0.132***
	(0.015)	(0.007)	(0.030)
GOV x 10^3	0.082	0.041	0.089
	(0.000)	(0.061)	(0.000)
Adj. R2	10.1%	12.7%	22.5%
F-statistic	36.360***	221.824***	22.557***
Durbin-Watson	1.895	1.959	1.963

Model 2 was split into three models (Model 2a, 2b, and 2c) to evaluate the individual pillar effects, while maintaining the same control variables and FE structure. The results remained substantially consistent with the baseline models, indicating that the main findings are not influenced by correlations among the control variables, independent variables, or even the separate ESG pillars. These findings confirm that multicollinearity is not present in the tests and that the results are neither driven by multicollinearity between the ESG components nor by model specification issues. Thirdly, following Qureshi and colleagues (2019), who included European-listed companies in their study, the United Kingdom data were included in Panels A_S, B_{NS}, and C_{TP}. Table 19 presents the regression analysis of the regression of both models when UK was added to the sample.

Table 19 Robustness check where UK companies were added to the sample.

	Panel A_S		Panel B_{NS}		Panel C_{TP}	
	1	2	1	2	1	2
Constant	-0.008	-0.008	-0.001	-0.001	0.001	0.001
	(0.003)	(0.003)	(0.001)	(0.001)	(0.004)	(0.004)
ROA_{t-1}	0.104***	0.104***	0.153***	0.153***	0.380***	0.379***
	(0.026)	(0.026)	(0.011)	(0.011)	(0.051)	(0.051)
Size	0.000	0.000	0.000	0.000	-0.008	-0.008
	(0.003)	(0.003)	(0.002)	(0.002)	(0.008)	(0.008)
LEV	-0.118***	-0.119***	-0.156***	-0.156***	-0.124***	-0.124***
	(0.014)	(0.014)	(0.006)	(0.006)	(0.026)	(0.026)
ESG x 10^3	0.000		0.051		0.000	
	(0.000)		(0.090)		(0.000)	
ENV x 10^3		0.018		0.000*		0.030
		(0.000)		(0.071)		(0.000)
SOC x 10^3		0.000		-0.084		0.015
		(0.000)		(0.078)		(0.000)
GOV x 10^3		0.012		0.016		0.086
		(0.000)		(0.055)		(0.000)
Adj. R2	8.0%	7.8%	11.6%	11.6%	23.0%	21.9%
F-statistic	34.225***	22.461***	248.580***	166.170***	26.174***	14.626***
Durbin-Watson	1.991	1.998	1.960	1.960	1.993	1.964

The model's explanatory power remains broadly consistent, with the adjusted R-squared decreasing slightly from 10.3% to 8%. Overall, these results suggest that the main relationships remain similar, albeit with a modest reduction in fit. An interesting finding involves including the UK in the sample. The ESG in Panel A_S were not significant when UK companies were added to the sample. This suggests that sustainability practices in the UK are heterogeneous compared to those in the panel countries examined in this thesis, and that the impact of ESG perfomance on profitability in the UK is less pronounced than in the original sample countries. Recalling the primary regression analyses, the environmental pillar was already close to statistical significance ($p = 0.110$) in the sample, indicating a potentially meaningful relationship. When UK companies were added to Panel B_{NS}, the environmental performance correlated statistically significantly with profitability. This shift is likely because UK companies may generally exhibit stronger and more consistently reported environmental practices, which increases variation and improves the precision of the estimates. The expanded sample, therefore, enhances statistical power, allowing an effect that was nearly significant in the EU subset to become fully detectable.

The robustness test results highlight that the European Union is a forerunner in ESG practices, and its commitments are more aligned with profitability than those of non-EU countries. The coefficients of the key explanatory variables remained consistent in sign and significance, indicating that the main results are not unduly influenced by country composition. Both models' robustness is supported by key control variables that remained unchanged across data sets. Thus, it can be concluded that the results are robust across different institutional settings in Europe.

4.4 Discussion

Based on empirical analysis, integrating findings from European publicly listed companies with previous academic literature and theoretical frameworks clarifies how companies across industries implement their ESG practices and strive to achieve financial success. Hypothesis testing revealed nuanced relationships, particularly in the overall ESG performance of sensitive industries and in the environmental performance of non-sensitive industries.

The analysis examined the interplay among company size, leverage, ESG performance, and CFP. Based on prior literature, it was expected that larger companies, as measured by size, exhibit higher ROA and are more likely to adopt advanced ESG practices (Velte, 2019) and perform better in ESG (Orlitzky et al., 2003). Nevertheless, this relationship was not found in the sample data. The regression results did not indicate a positive, statistically significant relationship between size and ROA. Furthermore, previous research suggests that larger companies benefit from economies of scale, stronger market positions, and resource advantages (Drempetic et al., 2020). The top-performing companies in this context were slightly larger, enabling a more significant commitment to ESG practices. Each example company exceeded the industry average in size; however, the difference was minimal, indicating that company size alone does not account for their superior ESG performance. Moreover, while company size can shape the resources available for sustainability initiatives, leverage reflects the extent to which a company’s assets are financed by debt, both factors exerting important but distinct influences on financial performance.

Perhaps surprisingly, top-performing companies (Panel C_{TP}) had higher leverage and significantly higher leverage (Table 12) than the rest of the sample (Panels A_S and B_{NS}) companies. ESG top-performing companies have a leverage ratio of 0.601 (Panel C_{TP}), compared to 0.558 (Panel A_S) and 0.563 (Panel B_{NS}). This indicates that they use substantially more debt financing. This difference may reflect their stronger ESG performance, which often enhances transparency, reduces perceived risk, and increases lender confidence. As a result, such companies may benefit from easier access to capital and lower borrowing costs. These conditions can support investment, improve operational efficiency, and ultimately contribute to better financial performance. (Rafi, 2022.)

To further investigate the relationship between leverage and profitability, fixed-effects regression analyses revealed that leverage was statistically significant across all panels with ROA, consistently showing a negative relationship. This indicates that higher debt increases interest expenses and financial risk, thereby reducing net income and asset profitability. Additionally, heavily leveraged companies often experience reduced strategic flexibility and greater financial constraints, which can further diminish operational performance and result in lower ROA. (Che et al., 2024; Chen et al., 2023.)

The most pronounced negative effect of leverage on ROA was observed in the non-sensitive industry group, followed by sensitive industries and top-performing companies. This is likely because non-sensitive industries face less ESG-driven stakeholder pressure and have risk assessed more traditionally. In contrast, top-performing companies tend to have better debt terms and therefore lower leverage ratios. Sensitive industries, influenced by stakeholder theory, are compelled to invest in ESG practices and often resort to debt financing on less favorable terms due to perceived environmental risks (Garcia et al., 2017; Wang N. et al., 2024). Turning to the findings expressed in Table 14, the LEV coefficients range from −0.133 to −0.182, indicating that higher debt levels are consistently associated with lower operating profitability. For example, a 10-percentage-point increase in leverage corresponds to a reduction in ROA of approximately 1.3% to 1.8%. Standard errors are minor, particularly in Panel B_{NS} (0.007), suggesting that the estimates are precise. The significance at the 1% level across all specifications confirms the robustness of this negative relationship.

The leverage among the example companies varied. For instance, Alstom's strategic commitment to improving its sustainability performance may be demonstrated by its higher leverage, as improving ESG performance often requires financial investment. Notably, Alstom's ROA increased from 0.012 in 2022 to 0.015 in 2023, indicating a modest improvement in asset profitability. This suggests the company became slightly more efficient at generating earnings from its assets, while its leverage remained the second-highest among the example companies (0.710). However, since ROA is a relative measure, this rise could be due to increased net income, reduced total assets, or both. Ultimately, the improvement may reflect better efficiency and operational performance, potentially linked to enhanced sustainability efforts. Improved sustainability practices can reduce operational costs, strengthen governance, and mitigate risks, providing mechanisms that enable

ESG improvements to support better financial outcomes. Nevertheless, no causal inference can be drawn from this observation alone. (Gurung, 2025; Wang & Sarkis, 2017; Warusawitharana, 2008.) However, according to Table 13, Alstom's ESG commitment rose from 18th to 7th globally. This may indicate that the investment has created high leverage while improving ROA and ESG performance.

To answer the first sub-question, What kind of relationship exists between ESG and CFP, the hypothesis testing showed statistical significance to some extent. Across all companies, ESG performance did not have a positive influence on CFP, contradicting, for example, earlier studies such as De Lucia and colleagues (2022) and Velte (2017), possibly due to differences in time frame and sample composition. Nonetheless, industry-level results are heterogeneous. Notably, in sensitive industries, regression analyses (Panel A_S) indicate that higher ESG scores are positively and significantly associated with higher ROA. This aligns with Chen and colleagues (2023), Garcia and colleagues (2017), and Qureshi and colleagues (2019), who posited that industry context mediates the influence of stakeholder pressure and ESG engagement. As noted in previous studies, companies in environmentally sensitive sectors, under more stringent regulatory and stakeholder demands, typically report elevated ESG scores, reinforcing the integration of ESG into core business operations.

Disaggregation of the three ESG pillars shows that the environmental pillar drives profitability most in non-sensitive industries across Europe, unlike Velte (2017), who found governance most influential in Germany. In these industries (Panel B_{NS}), the link between environmental performance and profitability is close to, but not statistically significant. Similarly, Agnese and colleagues (2025) found that environmental performance positively affects ROA in Canadian companies; however, their study included companies from all industries. Conca and colleagues (2021) affirm that the impact of ESG pillars on financial performance is context-dependent. Although their agri-market study relates to the environmental sector, it is not classified as sensitive in this study's taxonomy. Still, they identified a positive relationship between environmental scores and profitability

To compare the results with relevant literature, the outcomes of Models 1 and 2 align with some previous studies; however, they mostly contradict those studies. Chen and colleagues (2023), Minutolo and colleagues (2019), and Velte (2017) found significant results for ESG-CFP nexus. Contradicting separate pillar results were found by Agnese and colleagues (2025). Similarly, Qureshi and colleagues (2017) found that European companies in the sensitive industry exhibited superior social and governance performance, a finding that the regression model (Model 2) in this thesis cannot verify.

The differing results between sensitive and non-sensitive industries may be explained by the higher standard deviations in ESG and pillar scores observed in Panel A_S. Sensitive industries, facing stricter regulatory requirements and higher baseline ESG performance, tend to prioritize holistic ESG practices to maintain stakeholder legitimacy, rather than focusing on individual ESG pillars. In these industries, the lack of significant financial benefits from environmental performance may result from these high ESG baselines, regulatory demands, and upfront implementation costs. Nevertheless, improved sustainability continues to drive financial performance. In comparison, non-sensitive sectors can also enhance financial outcomes by engaging in environmental initiatives. Importantly, sustainability efforts do not harm long-term profitability, as neither ESG overall nor its components showed a significant negative correlation with profitability.

The examination of example companies supports this diversity: SMA Solar Technology AG from Germany scored highest in governance rather than in the environmental pillar, but, as Velte (2017) found, it is prominent in the German regulatory landscape. At the same time, the French company, Alstom SA, achieved the highest governance sector score among all example companies. Schneider, from a non-sensitive industry and based on the quantitative analysis, exhibits that the environmental pillar has a nearly significant association with ROA (just over 10% significance). Improving environmental performance could improve Schneider's profitability. In sensitive industries, the ESG score was significantly associated with ROA. For example, Vestas and SMA are in sensitive industries and have lower ESG scores than the two other example companies in non-sensitive industries. Based on this observation and the correlation identified in the quantitative analysis, Vestas and SMA could enhance profitability by strengthening their ESG performance, particularly by emphasizing governance and social scores, while maintaining attention to environmental performance to improve overall ESG performance and, consequently, profitability.

In summary, the differing results across previous studies and this thesis may be attributed to distinct timeframes, sample compositions, and, as previous studies note, the varying influence of the ESG pillars on one another, particularly evident in model 2. Notably, improved sustainability performance enhances financial results in sensitive industries, while non-sensitive companies may also improve financial outcomes through environmental initiatives. Since neither overall ESG nor its separate pillars showed a significant negative impact on profitability, investing in sustainability performance does not appear to harm long-term financial performance.

While conducting the robustness check, interesting results were obtained. This further adds information to the ESG-CFP nexus. The checks reveal notable cross-national variation; when Norway and Switzerland companies are removed from the original panels, ESG's predictive strength increased in Panel A_S. In Panel B_{NS}, the correlation between ROA and environmental performance became statistically significant, indicating that EU companies achieved better financial performance when prioritizing environmental performance compared to companies from Norway and Switzerland.

The inclusion of the UK further decreases the significance in Panel B_{NS} for environmental performance, and the ESG in Panel A_S was no longer significant. Changes in the strength of the correlations between ESG and profitability, and between environmental performance and profitability, highlight heterogeneous ESG effects across Europe. These findings suggest that, within the EU, environmental performance is a stronger driver of financial outcomes in non-sensitive industries. In contrast, overall sustainability performance has a greater impact within sensitive industries. This reinforces the idea that companies operating under more ambitious sustainability frameworks gain greater financial benefits from both environmental initiatives and overall sustainability efforts. The EU is recognized as a responsible leader in global sustainable development, setting high ESG standards that also shape practices in neighboring countries.

Answering the second sub-question, *which strategies lead to superior ESG practices*, it is noteworthy that strategically, all example companies align with the EU's CSRD and ESRS standards, since their sustainability reports reflected the required structure as indicated in the table 2. As ESG is a strategic choice, the company's commitment is visible in its ESG scores. While top ESG performers may not consistently achieve the highest scores on individual ESG pillars, they consistently demonstrate a holistic and balanced approach to ESG. Tangible financial gains are most evident when ESG is thoroughly embedded in corporate strategy, rather than pursued as isolated initiatives. (Cheng et al., 2023; Chevrollier et al., 2020.) Based on the quantitative findings, environmental practices should be integrated into the strategies of non-sensitive industries. Schneider and Alstom could further enhance their environmental practices to improve financial performance. In sensitive industries, companies should strive for overall improvement in ESG performance, aiming not only for competitive advantage but also to mitigate risks. That said, Vestas and SMA could enhance their financial performance by strategically focusing on each ESG area. Although even top-performing companies still have progress to make, they are significantly ahead in addressing the growing pressures of climate change. They are better positioned to meet the ambitions of the EU Green Deal.

5 Conclusions

In light of the primary research question—which explores how top-performing companies in both sensitive and non-sensitive industries align their strategies to achieve ESG performance without compromising financial results—the thesis's findings offer valuable insights into the complex phenomenon of corporate sustainability. It is clear, when examining high-ESG performers, that investments in sustainability have paid off, as evidenced by their top rankings not only in the European market but also globally. The sustainability strategies and business models include stewardship, circularity, product-as-a-service, life-cycle assessment, decarbonization, embedding sustainability in the core purpose, and maintaining a long-term perspective (Bocken et al., 2014; Lin et al., 2024; Geissdoerfer et al., 2018).

The data were from companies in the EU, Norway, and Switzerland. Resulting in 1254 companies. This thesis found that the relationship between ESG and CFP remains unclear. Previous literature assumed that companies generally have a positive relationship between ESG and CFP (Friede et al. 2015; Velte, 2017). And the link would be strongest among the top-performing companies (Ademi & Klungseth, 2022). However, when examining the sensitive and non-sensitive industries more closely, the relationship between ESG and CFP was found to be industry-specific. Firstly, it was found that, especially in environmentally sensitive industries, investing in overall ESG performance also improves financial performance. The link between the ESG-CFP was significant and positive. Secondly, regarding the individual pillars, the expected relationship was partially confirmed by the results. For non-sensitive industries, emphasizing environmental practices is particularly important, as evidence suggests a possible positive impact on profitability. In the robustness checks, when Switzerland and Norway were excluded, companies in non-sensitive industries from the remaining EU countries showed a positive and significant relationship between environmental and financial performance. The European Union is a forerunner in ESG performance, and its commitments are more aligned with profitability than those of non-EU countries in Europe.

For top-performing companies, no evidence was found to support the assumption that their ESG performance improves financial performance. As ESG practices have evolved, it is possible that, within Europe, ESG has matured to a stage where sustainability is embedded in business models and therefore no longer produces distinct financial effects nor can be used as a competitive advantage. Conversely, companies with weaker ESG performance may have more substantial incentives to improve it, not only for economic reasons but also for broader social responsibility.

A considerable amount of research has examined whether larger companies perform better in ESG terms (Ademi & Klungseth, 2022; Drempetic et al., 2020; Velte, 2017). Although prior studies often report a positive relationship, the present thesis found no association between company size and profitability in the context of ESG performance. This suggests that, within the sample, a larger asset base does not inherently translate into superior financial outcomes. Such findings may reflect industry-specific dynamics, variations in operational efficiency, or the limitations of relying solely on profitability as a performance indicator. While larger companies typically have more resources to invest in sustainability initiatives, the results indicate that smaller companies can achieve positive financial outcomes through ESG activities. Indeed, smaller companies may benefit even more from strategic alignment with sustainability.

Although embedding sustainability across all companies is ideal, some argue that top-performing companies excel at ESG because they have more financial and organizational resources, leaving smaller companies struggling to meet rising expectations in the EU (Ademi & Klungseth, 2022). However, the European context shows that sustainability can be economically viable, even under strict regulations. The strategic traits of leading companies, stewardship, circularity, and a deliberate prioritization of sustainability, demonstrate how ESG can be integrated into core business models to drive long-term value and societal benefit. Notably, the EU shows strong engagement in ESG, making such activities a condition for operation and incorporating them into company strategies to enhance performance. This progress offers hope that the ambitious EU Green Deal goals are within reach.

5.1 Theoretical contributions

Organizations nowadays face growing pressure to adapt their practices to address concerns about our planet and social well-being. At the same time, companies are expected to act with the most viable governance practices possible. The interplay between sustainability and its role as a tool for better financial performance or a must-have has increasingly attracted the attention of academia. The attention is broad, encompassing the concept and the evidence of its complex nature.

There has been an unclear impact of new EU ESG regulations and of companies' readiness to meet expectations (Chen et al., 2023; Deloitte, 2024; EU, 2025b; Friede et al., 2015; Qureshi et al., 2019). This thesis delivered concrete insights into the readiness of companies, as it was found that, especially in sensitive industries, companies that improve their overall ESG performance also gain financial performance. Further supporting the EU´s readiness view, companies in non-sensitive industries benefit from environmental performance, which also resembles their financial performance. With these results, this thesis also addressed the noticeable research gap in the industry context (Qureshi et al., 2020; Sassen et al., 2016), as differences across industries were evident. The EU's readiness in the context of the sector has sparked interest in a more in-depth examination of the European market, which has received less attention in previous studies.

While the thesis initially hypothesized that all companies in the EU, as well as in Switzerland and Norway, would show a positive and significant relationship between their ESG performance and profitability, this relationship was not observed across all industries or among the top-performing companies. When focusing only on EU companies, industry specification became more significant. This shows that the EU regulatory landscape, CSRD, and ESRS frameworks are justified as good variables in academic research within the EU context or in studies that use the regulatory landscape as a mediating factor. Moreover, when all publicly listed European companies in the STOXX Europe 600 index, including the UK, were included, the analysis showed that when the UK was in the sample, ESG performance and financial performance were unrelated. The underexplored European market was found to be interesting and to show differences, suggesting, for example, that the regulatory landscape plays a pivotal role. A key factor is the regulatory environment: the rules requiring the disclosure of sustainability performance are far more stringent in Europe than elsewhere, which likely contributes to these findings.

Focusing on the top-performing European companies, their global ranking speaks to their forerunner status in ESG performance. Unfortunately, this thesis could not address ESG integration in sustainable strategies (Nirino et al., 2021) in the most comprehensive way. Still, the top-performing example companies overall and the ESRS and business model archetype presentations shed some light on how top-performing companies organize their ESG practices to achieve top performance. Top-performing companies fulfill their CSRD requirements through the ESRS, indicating that ESG strategies are well embedded in the example companies' practices and that, along with their ESG scores, they align with the strategies that guide their business model execution.

5.2 Managerial implications

The findings of this thesis have significant implications for managers aiming to enhance ESG practices without sacrificing long-term financial performance. This study highlights the strategic decisions necessary to advance sustainability efforts and transition to a sustainable business model. By applying these insights, organizations can achieve better sustainability outcomes and remain competitive. Additionally, strong sustainability performance can create a substantial competitive advantage. Policymakers can also use these findings to inform new regulations that support companies on their sustainability journey.

Company leaders, sustainability managers, and other relevant personnel can utilize the findings of this thesis in their work. They can apply strategic knowledge by considering ways to improve sustainability performance, such as adopting a stewardship role, engaging with circularity, improving life cycle assessment, or adopting a product-as-a-service business model. Managers should first identify the characteristics of their industry. In sensitive industries, it is important for managers to enhance organizational practices and operations by adhering to comprehensive ESG strategies. The strategies inherent to environmental performance, like using less non-renewable materials and considering the product's life-cycle. They should also pay closer attention to social performance and engage internal and external stakeholders more broadly in the company's practices, such as taking employees' representatives' or community representatives' opinions into account when making decisions that relate to employees or broader society. And at the end of the day, the managers and other key personnel should comply with high governance practices to deliver meaningful sustainability performance for all stakeholders, not just for the stakeholders. In non-sensitive industries, environmental initiatives should at least be appealing to promote a more sustainable future and achieve better financial performance. These environmental practices can include eco-design and enhancing efficiency through circularity.

Along the EU–non-EU axis, MNEs should align their sustainability efforts with the marketplace. In the UK, there is a lack of consensus on ESG and on the performance of its separate sections. However, looking at the EU landscape, the UK market could benefit from the lessons learned from its EU counterparts. Managers in the UK can adopt the EU's best practices for ESG. Especially, Norway and Switzerland seem to be at a similar level to the EU. Strengthening environmental practices in Norway and Switzerland could also improve companies' financial performance, as when Norway and Switzerland were excluded from the sample, the significance of environmental practices became clearer. In contrast, it was almost significant in the overall sample when these two countries were included.

Companies entering the European market through foreign direct investment should carefully assess the regulatory landscape. Managers of "newcomer" companies can leverage the results of strategic alignment analyses to guide their approach. Depending on their industry and resource constraints, companies in non-sensitive industries may initially focus on integrating environmental considerations into their business model and gradually expand their sustainability initiatives over time. In contrast, newcomers operating in sensitive industries should, based on the strategic results, develop a comprehensive sustainability strategy that addresses all three ESG dimensions from the outset.

Other important managerial implications stem from the evidence provided by top-performing companies. By following the example set by these companies, it becomes clear that integrating ESG into core operations, through taking a stewardship role, applying circular-economy principles, and conducting life-cycle assessments, supports strong sustainability performance. However, top-performing companies can still improve their ESG performance and enhance their financial performance by placing greater emphasis on the weaker ESG pillar. For example, in the renewable energy equipment industry, which is considered a sensitive industry, improving governance and social performance could lead to better ESG and financial results if environmental performance is already high. Since overall ESG performance is especially critical in sensitive industries, focusing on these areas can be beneficial. Conversely, in the electrical components industry, which is classified as non-sensitive, excelling in environmental performance, if not yet at a high level, can still boost financial performance. Lastly, even when ESG practices are strong, top-performing companies should aim to improve their lowest-scoring pillar, taking industry-specific factors into account. Managers of small companies are also encouraged to enhance certain ESG areas based on their resources, as size does not necessarily determine success in the ESG-CFP context.

For policymakers, the results provide background on which sustainability metrics are relevant to a specific industry. The policymaker's initiatives can have a broader impact and help meet EU Green Deal targets if industry differences are taken into account. Most importantly, the results indicate that companies in the EU have shown strong engagement in ESG activities, thereby contributing to a landscape well-positioned to support the objectives of the EU Green Deal. Policymakers should note that the evidence presented in this thesis does not support easing current CSRD requirements. EU companies have already invested substantial effort in meeting CSRD obligations, and if the Omnibus initiative were to move forward, there is a risk that the progress achieved in ESG performance could be weakened. Such a shift might undermine momentum rather than encourage companies to continue advancing toward a more sustainable future.

5.3 Limitations of the study and suggestions for future research

The study´s sample comprises over 1,000 companies, but when divided into panels A_S, B_{NS}, and C_{TP}, only 40 companies were in panel C_{TP}. The number of companies, N, is relatively small and can introduce bias into the results. Similarly, correlations among variables can introduce bias into the results, even when justification tests, such as multicollinearity checks and VIF tests, are performed. The use of SPSS also has some limitations, such as not performing the Hauman test or not allowing exact clustered standard errors in the regressions. Additionally, the use of control variables is limited, and no interaction terms were used in the regression models. To overcome these limitations, the multicollinearity checks and VIF tests indicated that there is no multicollinearity. The limitation of not being able to perform the Hausman test was overcome by relying on prior studies, and it was reasonable to choose a similar regression equation that has been used in previous studies, the FE (Ademi & Klungseth, 2022; Garcia et al., 2017; Garcia et al., 2019; Qureshi et al., 2019). Clustered standard errors were not a concern since the results appear robust to time-varying variables. To avoid heteroscedasticity affecting the results, the Breusch-Pagan (BP) test was applied to both models, which indicated that heteroscedasticity does not bias the thesis. Although Green (1991, 499) recommends a sample size of 50 or more entities for panel-data models, this guideline is intended as a guideline rather than a strict threshold. Panel-data research frequently relies on smaller samples when the data structure, model specification, and diagnostics support reliability.

For further research on the relationship between ESG and CFP, and industry selection should be explored in greater depth. A more intensive focus on diverse industries is recommended, as the current sample includes only four example companies across two sub-industries. This broader approach would help reveal a wider range of ESG practices. Additionally, given the limited sample size of top-performing companies (N=40) in this thesis, future studies could include the top 100 companies to enhance the analysis's statistical power. Strategic alignment could also be examined in more detail using quantitative methods, introducing new variables such as business strategy, which can be measured by factors like the ratio of R&D expenses to sales, the ratio of employees to sales, or plant and equipment investment relative to total assets (Tohang et al., 2025). Since business strategies are often complex and not directly measurable, a qualitative study focused specifically on ESG practices could provide valuable insights into which strategies are most effective in delivering financial value through sustainability commitments.

As the European Commission advances new sustainability regulations, future research should assess whether differences in companies' sustainability performance stem primarily from regulatory compliance, stakeholder pressure, or voluntary strategic commitments to CSR and stewardship. Similarly, as ESG has evolved over the years and become more regulated and standardized, studies examining recent ESG practices in an industry context are particularly valuable to enhance the findings of this thesis. The European market is particularly relevant to the Green Deal, making it an essential setting for future research. Investigating European companies in a more recent timeframe would provide up-to-date insights, building on knowledge gained from studies from 2000 to the 2020s. A particularly compelling avenue for future research would be to analyze the impact of the CSRD on ESG practices, comparing outcomes before and after its 2024 implementation. An especially interesting approach would be a difference-in-differences study examining the same companies' ESG practices before and after the implementation of CSRD in 2024.

This thesis included only the listed large companies due to limited access to the data of small and medium-sized companies. Small and medium-sized companies could benefit more from future studies on the CSR performance of companies of similar size than large companies, given their scarcer resources. Further, applying these study results to small- and medium-sized companies would shed light on the long-term growth in building competitive advantage through ESG practices and in becoming a recognized company in the eyes of stakeholders. Another theoretical lens that could be explored is the resource-based view, which could enhance understanding of how resources can be efficiently located to deliver the most from the chosen strategies, especially when monetary resources are scarce.

6 Summary

This thesis explored the relationship between companies' sustainability commitments, as reflected in ESG performance, and their corporate financial performance (CFP). It is evident, in the era of the climate crisis we face, that we must address environmental destruction and the social impacts we generate. However, as companies tend to prioritize profit over people and the planet, the significance of this study becomes more apparent. The thesis carefully examines the link between ESG performance, a measure of sustainability, and companies' financial performance. Additionally, it discussed strategies for addressing sustainability initiatives. Top-performing companies' public information served as a more concise basis for the strategy layout on a small scale. Integrating sustainability into core business strategies can help to achieve high ESG performance. By employing a quantitative approach to analyze the relationship between ESG and CFP and identify top-performers, the study concludes that its objectives have been met.

The link between ESG and a company's financial performance has been studied quite extensively in recent years, but the research results have been conflicting. Employing a thorough fixed-effect regression analysis of publicly listed companies in the EU, Norway, and Switzerland between 2016 and 2023, the results suggest that ESG performance is related to a company´s financial performance in a distinctive setting. This thesis provided robust evidence in the markets mentioned above by finding a relationship between ESG and CFP, especially in a sensitive industry. As the ESG is composed of three distinctive areas, environment, social, and governance, it was reasonable to explore the individual themes. Moreover, robust finding was observed within the non-sensitive industry. Environmental performance and the CFP have a positive relationship. Unique findings were the EU context, which showed that, when only EU companies were included in the regressions, the significance of sensitive industries’ overall ESG performance and non-sensitive industries’ environmental performance increased. This is positive, given the ambitious EU Green Deal agenda and the EU's potential not only to be a pioneer but also to take a guiding role in other markets.

From a theoretical standpoint, this thesis contributes to the literature in several ways. First, it shows that shareholder theory helps explain corporate behavior on sustainability issues, as companies must balance ESG initiatives with the need to maintain financial performance. As such, sustainability is no longer viewed as a trade-off with profitability. Second, by shifting the focus from the U.S. and global markets to Europe, the thesis highlights the regional dynamics of sustainability efforts. Finally, it provides evidence that industry characteristics play a significant role in shaping ESG performance. Moving forward, company managers and policy makers must consider their practices and new regulatory initiatives based on the results. Managers can improve their organization's sustainability performance by internalizing industry-specific findings into their daily practices and elaborating on the results when entering new territories. Policymakers should give careful consideration to whether to ease the regulatory landscape in the EU. In light of the results, the EU is a forerunner, and the already made commitments will pay off in the long term and enable, at least, European companies to address the ongoing climate crisis with careful consideration.

References

€ABCN, *Euro area business cycle network*. <https://eabcn.org/dbc/graphs>, retrieved 12.09.2025.

Ademi, B. – Klungseth, N. J. (2022) Does it pay to deliver superior ESG performance? Evidence from US S&P 500 companies. *Journal of global responsibility*. Vol. 13(4), 421–449.

Agnese, P. – Caré, R. – Cerciello, M. – Taddeo, S. (2025) Reconsidering the impact of environmental, social and governance practices on firm profitability. *Management Decision*, Vol. 63(1), 25–48.

Ahmad, N. – Mobarek, A. – Roni, N. N. (2021) Revisiting the impact of ESG on financial performance of FTSE350 UK firms: Static and dynamic panel data analysis. *Cogent Business & Management*, Vol. 8(1), Article 1900500.

Aldowaish, A. – Kokuryo, J. – Almazyad, O. – Goi, H. C. (2022) Environmental, Social, and Governance Integration into the Business Model: Literature Review and Research Agenda. *Sustainability*, Vol. 14, 2959.

Almnadheh, Y. – Samara, H. – Alqudah, M. Z. (2025) Enhancing ESG integration in corporate strategy: a bibliometric study and content analysis. *International Journal of Law and Management.* 1754-243X. Online before print.

Alstom (2025a) *A global leader in the transportation sector in the digital age*. <https://www.alstom.com/company>, retrieved 01.11.2025.

Alstom (2025b) *Universal registration document 2024/25 including the annual financial report*. <https://www.alstom.com/sites/alstom.com/files/2025/06/23/20250528_ Universal_Registration_Document_EN.pdf>, retrieved 25.10.2025.

Amor-Esteban, V. – Galindo-Villardón, M. – García-Sánchez, I. (2018) Useful information for stakeholder engagement: A multivariate proposal of an Industrial Corporate Social Responsibility Practices Index. *Sustainable Development*, Vol. 26(6), 620–637.

Andersson S. – Svensson G. – Otero-Neira C. – Laurell H. – Lindberg J. – Karlsson N. P. E. (2023) Sustainable development considerations in supply chains: Firms' relationships with stakeholders in their business sustainability practices—A triangular comparison. *Business strategy and the environment*, Vol. 32, 1885–1899.

Aouadi, A. – Marsat, S. (2018) Do ESG Controversies Matter for Firm Value? Evidence from International Data. *Journal of Business Ethics*, Vol. 151(4), 1027–1047.

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

Bai, J. (2009) Panel Data Models With Interactive Fixed Effects. *Econometrica*, Vol. 77, 229–1279.

Baldini, M. – Maso, L. D. – Liberatore, G. – Mazzi, F. – Terzani, S. (2018) Role of Country- and Firm-Level Determinants in Environmental, Social, and Governance Disclosure. *Journal of Business Ethics*, Vol. 150(1), 79–98.

Barros, V. – Matos, P. V. – Sarmento, J. M. – Vieira, P. R. (2022) M&A activity as a driver for better ESG performance. *Technological Forecasting & Social Change*, Vol. 175, 21338, 1–9.

Baumgartner, R. J. – Ebner, D. (2010) Corporate sustainability strategies: sustainability profiles and maturity levels. *Sustainable Development*, Vol. 18(2), 76–89.

Behl, A. – Kumari, P. S. R. – Makhija, H. – Sharma, D. (2022) Exploring the relationship of ESG score and firm value using cross-lagged panel analyses: case of the Indian energy sector. *Annals of operations research*, Vol. 313(1), 231–256.

Bhandari, K. R. –Ranta, M. – Salo, J. (2022) The resource-based view, stakeholder capitalism, ESG, and sustainable competitive advantage: The firm's embeddedness into ecology, society, and governance. *Business Strategy and the Environment*, Vol. 31(4), 1525–1537.

Billio, M. – Costola, M. – Hristova, I. – Latino, C. – Pelizzon, L. (2021) Inside the ESG ratings: (Dis)agreement and performance. *Corporate Social-Responsibility and Environmental Management*, Vol. 28(5), 1426–1445.

Blot, C. – Creel, J. – Geerolf, F. – Ricco, G. – Romelli, D. (2025) The ECB's monetary policy stance in an uncertain environment, Economic Governance and EMU Scrutiny Unit (EGOV) Directorate-General for Economy, *Transformation and Industry*, PE 764.390 - June 2025.

Bocken, N. M. P. – Short, S. W. – Rana, P. – Evans, S. (2014) A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, Vol. 65, 42–56.

Bocken, N. M. P. – Geradts, T. H. J. (2020) Barriers and drivers to sustainable business model innovation: Organization design and dynamic capabilities. *Long Range Planning*, Vol. 53(4), Article 101950.

Boffa, E. – Maffei, A. (2021) Classification of Sustainable Business Models: A literature review and a map of their impact on the Sustainable Development Goals. *FME Transactions*, Vol. 49(4), 784–794.

Boeije, H. – Hox, J. (2005) Data Collection, Primary vs. Secondary. *In Encyclopedia of Social Measurement*, Vol. 1, 593–599.

Baroudy K. – Andersen, J. R. – Lauritsen, G. V. (2023) Nordic champions: The value creation formula at the cusp of a new era Nordic companies can tap into their understated strengths to spur growth in an increasingly uncertain world. McKinsey & Company, December 2023.

Branco, M. C. – Rodrigues, L. L. (2006) Corporate Social Responsibility and Resource-Based Perspectives. *Journal of business ethics*. Vol. 69(2), 111–132.

Breusch, T. S. – Pagan, A. R. (1979) A Simple Test for Heteroscedasticity and Random Coefficient Variation. *Econometrica*, Vol. 47(5), 1287–1294.

Brooks, C. – Oikonomou, I. (2018) The effects of environmental, social and governance disclosures and performance on firm value: A review of the literature in accounting and finance. *The British Accounting Review*, Vol. 50(1), 1–15.

Bronca T. (2025) Corporate Knights, *Europe is setting the standard for sustainable business – and earning the rewards* (9.6.2025). <https://www.corporateknights.com/rankings/other-rankings-reports/2025-europe-50-ranking/europe-setting-standard-for-sustainable-business-and-earning-the-rewards/,> retrieved 10.07.2025.

Brown, N. – Deegan, C. (1998) The public disclosure of environmental performance information-a dual test of media agenda setting theory and legitimacy theory. *Accounting and Business Research*, Vol. 29(1), 21–41.

Bryman, A. (2008) Why do Researchers Integrate/Combine/Mesh/Blend/Mix/Merge/Fuse Quantitative and Qualitative Research? In M. M. Bergman (Ed.), *Advances in Mixed Methods Research*, 86–100. Sage, UK.

Caiazza, S. – Galloppo, G. – Paimanova, V. (2021) The role of sustainability performance after merger and acquisition deals in short and long-term, *Journal of Cleaner Production*, Vol. 314, 127982, 1–17.

Campbell, D. E. – Kelly, J. S. (1994) Trade-off Theory. *The American economic review*. Vol. 84(2), 422–426.

Carroll, A. B. (1991) The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, Vol. 34(4), 39–48.

Caroll A. B (2015) Corporate social responsibility: The centerpiece of competing and complementary frameworks. *Organizational dynamics*, Vol. 44, 87–96.

Carter, C. R. – Rogers, D. S. (2008) A framework of sustainable supply chain management: moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, Vol. 38(5), 360–387.

Cek, K. – Eyupoglu, S. (2020) Does environmental, social and governance performance influence economic performance*? Journal of Business Economics and Management*. Vol. 21(4), 1165–1184.

Che, X. – Song, C. – Li, J. (2024) How Do Corporate Environmental, Social, and Governance (ESG) Factors Affect Financial Performance? *Sustainability*, Vol. 16, 10347, 1–23.

Chen, S. – Song, Y. – Gao, P. (2023) Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. *Journal of Environmental Management*, Vol. 345, Article 118829.

Chevrollier, N. – Zhang, J. – van Leeuwen, T. – Nijhof, A. (2020) The predictive value of strategic orientation for ESG performance over time. *Corporate Governance* (Bradford), Vol. 20(1), 123–142.

Classification codes (2025) *ICB: FTSE Russel Industry Classification Benchmark*. <https://classification.codes/classifications/industry/icb/#version _1_industry-classification-benchmark-icb-2019-v2>, retrieved 11.11.2025

Comin, L. C.– Aguiar, C. C. – Sehnem, S. – Yusliza, M.-Y. – Cazella, C. F. – Julkovski, D. J. (2020) Sustainable business models: a literature review. *Benchmarking: An International Journal*, Vol. 27(7), 2028–2047.

Conca, L. – Manta, F. – Morrone, D. – Toma, P. (2021) The impact of direct environmental, social, and governance reporting: Empirical evidence in European-listed companies in the agri-food sector. *Business strategy and the environment*, Vol. 30(2), 1080–1093.

Corporate Knights (2025a) Europe is setting the standard for sustainable business – and earning the rewards. < https://www.corporateknights.com/rankings/other-rankings-reports/2025-europe-50-ranking/europe-setting-standard-for-sustainable-business-and-earning-the-rewards/>, retrieved, 01.07.2025.

Corporate Knights (2025b) *About us*. < https://corporateknights.com/about-us/ >, retrieved 19.07.2025.

Corporate Knights (2025c), *2025 Global 100 list: World's most sustainable companies are still betting on a greener world*. <https://corporateknights.com/issues/2025-01-global-100-issue/100-most-sustainable-companies-still-betting-greener-world/>, retrieved 08.11.2025.

Creswell, J. W. – Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). Sage, UK.

Croissant, Y. – Millo, G. (2008) Panel data econometrics in R : The plm Package. *Journal of Statistical Software*, Vol. 27(2), 1–43.

Dakhli, A. (2021) Does financial performance moderate the relationship between board attributes and corporate social responsibility in French firms? *Journal of Global Responsibility*, Vol. 12 (4), 373–399.

Danso, A. – Adomako, S. – Amankwah-Amoah, J. – Owusu-Agyei, S., & Konadu, R. (2019) Environmental sustainability orientation, competitive strategy and financial performance. *Business Strategy and the Environment*, Vol. 28(5), 885–895.

Dathe, T. (2022) *Corporate social responsibility (CSR), sustainability and environmental social governance (ESG): approaches to ethical management.* Springer, Switzerland.

Deloitte, (2024), *Sustainability Action Report Survey findings on ESG disclosure and preparedness.* <https://www2.deloitte.com/content/dam/Deloitte/ us/Documents/audit/2024-sustainability-action-report.pdf> retrieved 31.01.2025.

Ding, W. – Levine, R. – Lin, C. – Xie, W. (2021) Corporate immunity to the COVID-19 pandemic. *Journal of Financial Economics*, Vol. 141(2), 802–830.

Drempetic, S. – Klein, C. – Zwergel, B. (2020) The Influence of Firm Size on the ESG Score: Corporate Sustainability Ratings Under Review. *Journal of Business Ethics*, Vol. 167(2), 333–360.

Eccles, R. G. – Ioannou, I. – Serafeim, G. (2014) The Impact of Corporate Sustainability on Organizational Processes and Performance. *Management Science*, Vol 60(11), 2835–2857.

Eccles, R. G. – Lee, L-E. – Stroehle, J. C. (2020) The Social Origins of ESG: An Analysis of Innovest and KLD. *Organization & environment*, Vol. 33(4), 575–596.

Edmans, A. (2023) The end of ESG, *Financial Management*. Vol. 52, 3–17.

Egan, M. (2025) CNN, 11.03.2025, *How the US economy went from booming to a recession scare in only 20 days*. < https://edition.cnn.com/2025/03/11/business/recession-economy-trump-dow-stocks>, retrieved 17.07.2025.

Elkington, J. (1999) *Cannibals with forks: the triple bottom line of 21st century business*. Capstone, UK.

Engert, S.– Rauter, R. – Baumgartner, R. J. (2016) Exploring the integration of corporate sustainability into strategic management: a literature review. *Journal of Cleaner Production*, Vol. 112, 2833–2850.

Eriksson, P. – Kovalainen, A. (2008) *Qualitative methods in business research*. Sage, UK.

Estevez-Mendoza, C. – Infante, J. (2025) Evolution and relevance of research on Environmental, Social, and Governance factors. *Corporate Social-Responsibility and Environmental Management*, Vol. 32(2), 1545–1566.

European Commission (2025) "Omnibus" (2025) Directive (EU) 2024/794 of the European parliament and of the council, 14.04.2025. Amending Directives (EU) 2022/2464 and (EU) 2024/1760 as regards the dates from which Member States are to apply certain corporate sustainability reporting and due diligence requirements. *Official Journal of the European Union.*

European Commission (2001) Green paper, *Promoting a European framework for corporate social responsibility.* Brussels 18.7.2001, COM (2001), 366 final.

European Commission (2011) Communication from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions. *A renewed EU strategy 2011–2014 for corporate social responsibility*. Brussels 25.10.2011, Com. (2011) 681 final.

European Council (2025) *Paris Agreement on climate change, 21.02.2025*. <https://www.consilium.europa.eu/en/policies/paris-agreement-climate/>, retrieved 05.05.2025.

EU, (2025a) *Corporate sustainability reporting 04.12.2025*. <https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en>, retrieved 31.01.2025.

EU, (2025b) *The European Green Deal, Striving to be the first climate-neutral continent*. < https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en>, retrieved 05.05.2025.

EU-Lex (2022) Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting.

Eurostat (2025) *Population on 1 January*. <https://ec.europa.eu/eurostat/databrowser/view/t ps00001/default/table?lang=en&category=t_demo.t_demo_pop>, retrieved 04.12.2025.

EU Taxonomy (2025) *EU Taxonomy for sustainable business*. < https://finance.ec.europa.eu/ sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en>, retrieved 09.04.2025.

EU Union, (2025) *EU countries*. < https://european-union.europa.eu/principles-countries-history/eu-countries_en#header_countries_list>, retrieved 16.02.2025.

EFTA (2025) *About us* <https://www.efta.int/about-efta>, retrieved 14.11.2025.

Evans S. – Vladimirova D. – Holdago M. – Van Fossen K. – Yang M. – Silva E. A. – Barlow C. Y. (2017) Business Model Innovation for Sustainability: Towards a Unified Perspective for Creation of Sustainable Business Models. *Business strategy and the environment*, Vol. 26, 597–608.

Fabozzi, F. J. (2014) The basics of financial econometrics: tools, concepts, and asset management applications (1st edition). John Wiley & Sons, USA.

Ferlito, R. – Faraci, R. (2921) Business model innovation for sustainability: a new framework. *Innovation & Management Review*, Vol. 19(3), 222-236.

Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th edition.). Sage, UK.

Fischer, T. M. – Sawczyn, A. A. (2013) The relationship between corporate social performance and corporate financial performance and the role of innovation: evidence from German listed firms. *Journal of Management Control*, Vol. 24(1), 27–52.

Forest Stewardship Council (2025) *The future of forests is in our hands*. < https://fsc.org/en>, retrieved 18.06.2025.

Freeman, R. E. (1984) *Strategic management: a stakeholder approach.* Pitman, UK.

Freeman, R. E. – Harrison, J. S. – Wicks, A. C. (2007) *Managing for stakeholders: survival, reputation, and success* (1st ed.). Yale University Press, USA.

Freeman, R. E. (2010) *Strategic Management: a stakeholder approach*. Cambridge University Press, USA.

Friede, G. –Busch, T. – Bassen, A. (2015) ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, Vol. 5(4), 210–233.

Friedman, M. (1970) The responsibility of business is to increase its profits. In: *Corporate ethics and Corporate Governance*, ed. by Walther Ch. Zimmerli – Klaus Richter – Markus Holzinger, 173–178. Springer-Verlag, Berlin 2007, Germany.

Galbreath, J. (2013) ESG in Focus: The Australian Evidence. *Journal of Business Ethics*, Vol. *118*(3), 529–541.

Gangi, F. – Meles, A. – Monferrà, S. – Mustilli, M. (2020) Does corporate social responsibility help the survivorship of SMEs and large firms? *Global Finance Journal*, Vol. 43, Article 100402.

Gauthier, J. – Zhang, Z. (2020) Green knowledge management and strategic renewal: a discursive perspective on corporate sustainability. *International journal of productivity and performance management*. Vol. 69(8), 1797–1811.

Garcia, A. S. – Mendes-Da-Silva, W. – Orsato, R. (2017) Sensitive industries produce better ESG performance: Evidence from emerging markets. *Journal of Cleaner Production*, Vol. 150, 135–147.

Garcia, A. S. – Mendes-Da-Silva, W. – Orsato, R. J. (2019) *Corporate Sustainability, Capital Markets, and ESG Performance*. In W. Mendes-Da-Silva (Ed.), Individual Behaviors and Technologies for Financial Innovations (pp. 287–309). Springer International Publishing, USA.

Garcia-Castro, R. – Ariño, M. A. – Canela, M. A. (2010) Does Social Performance Really Lead to Financial Performance? Accounting for Endogeneity. *Journal of Business Ethics*, Vol. 92(1), 107–126.

Geissdoerfer, M. – Vladimirova, D. – Evans, S. (2018) Sustainable business model innovation: A review. *Journal of Cleaner Production*, Vol. 198, 401–416.

Gilbert, D. U. – Rasche, A. – Waddock, S. (2011) Accountability in a Global Economy: The Emergence of International Accountability Standards. *Business Ethics Quarterly*, Vol. 21(1), 23–44.

Gillan, S. L. – Koch, A. – Starks, L. T. (2021) Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, Vol 66, 101889.

Global Reporting Initiative, GRI (2025) *The global leader for sustainability reporting*. < https://www.globalreporting.org/> retrieved 09.04.2025.

Green, S. B. (1991) How many subjects does it take to do a regression analysis? *Multivariate Behavioral Research*, Vol. 26(3), 499–510.

Gurun, M. (2025) *Total Liabilities / Total Assets: What Is It, Calculation, Importance & More*. < https://www.investing.com/academy/analysis/total-liabilities-to-total-assets-definition/#why-is-total-liabilities-total-assets-important>, retrieved 19.09.2025.

Hassan, A. – Elamer, A. A. – Lodh, S. – Roberts, L. – Nandy, M. (2021) The future of non-financial businesses reporting: Learning from the Covid-19 pandemic. *Corporate Social-Responsibility and Environmental Management*, Vol. 28(4), 1231–1240.

Hoang, T. – Wooldridge, J. M. (2024) Consistency of the fixed effects Poisson estimator with multiplicative measurement error and unbalanced panels. *Economics Letters*, Vol. 234, Article 111436.

Huang, C-J – Ke, W-C. – Chiang, R. P-Y. – Jhong, Y-C. (2023) Which of environmental, social, and governance pillars can improve merger and acquisition performance? *Journal of Cleaner Production*. Vol. 398, 136475.

ICB Structure (2019) *ICB Structure, Solution overview, FTSE Russell, (2019), Taxonomy overview*. < https://www.lseg.com/content/dam/ftse-russell/en_us/documents/other/icb-taxonomy-overview-cut-sheet.pdf>, retrieved, 10.07.2025.

ICLG (2025) *Corporate Governance Laws and Regulations Liechtenstein 2025*. <https://iclg.com/practice-areas/corporate-governance-laws-and-regulations/liechtenstein>, retrieved 14.11.2025.

ISO (2025) *ISO: Global standards for trusted goods and services*. < https://www.iso.org/home.html>, retrieved 18.06.2025.

Johans E. – Hagen Geiran T. –Haugse M. K. (2024) *EU Corporate Sustainability Reporting Directive (CSRD) Implemented into Norwegian Law*. <https://www.wr.no/en/news/eu-

corporate-sustainability-reporting-directive-csrd-implemented-into-norwegian-law>, retrieved 14.11.2025.

Khan, M. (2019) Corporate Governance, ESG, and Stock Returns around the World. *Financial analysts journal*, Vol. 75(4), 103–123.

King, C. (2025) *About the Former EU Leaders Omnibus Plea, Sustainability magazine 11.10.2025.* < http://sustainabilitymag.com/news/former-eu-leaders-sign-joint-plea-ahead-of-eu-omnibus-vote>, retrieved 23.10.2025

KPMG (2017) *ESG Strategy, and long view. A framework for board oversight*. <https://assets.kpmg.com/content/dam/kpmgsites/ch/pdf/esg-strategy-and-the-long-view.pdf>, retrieved 22.10.2025.

El Khoury, R. – Nasrallah, N. – Harb, E. – Hussainey, K. (2022) Exploring the performance of responsible companies in G20 during the COVID-19 outbreak. *Journal of Cleaner Production*, Vol. 354, Article 131693.

Lee, M. – Pak, A. – Roh, T. (2024) The interplay of institutional pressures, digitalization capability, environmental, social, and governance strategy, and triple bottom line performance: A moderated mediation model. *Business Strategy and the Environment*, Vol. 33(6), 5247–5268.

Li, H. – Zhang, X. – Zhao, Y. (2022) ESG and Firm's Default Risk. *Finance Research Letters*, Vol. 47, Article 102713.

Li, J. – Haider, Z. A. – Jin, X. – Yuan, W. (2019) Corporate controversy, social responsibility and market performance: International evidence. *Journal of International Financial Markets, Institutions & Money*, Vol. 60, 1–18.

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

Liao, H. – Su, L. – Tang, T. – Shang, Z. (2024) Green initiatives and stakeholder engagement: Unveiling the impact of green strategies and CSR on financial performance from descriptive-normative perspectives of stakeholder theory. *Sustainable development*, Vol. 32(5), 4800–4811.

Lin, Y. – Shen, R. – Wang, J. – Julia Yu, Y. (2024) Global Evolution of Environmental and Social Disclosure in Annual Reports. *Journal of Accounting Research*, 62(5), 1941–1988.

Lins, K. V. – Servaes, H. –Tamayo, A. (2017) Social Capital, Trust, and Firm Performance: The Value of Corporate Social Responsibility during the Financial Crisis. *The Journal of Finance*, Vol. 72(4), 1785–1823.

de Long, A. (2025) *Leveraging ESG Advisory for Long-Term Business Growth, Isometrix*. <https://www.isometrix.com/leveraging-esg-advisory-for-long-term-business-growth/>, retrieved 24.09.2025.

Lozano, R. (2018) Sustainable business models: Providing a more holistic perspective. *Business Strategy and the Environment*, Vol. 27(8), 1159–1166.

LSEG (2024) LSEG data & analytics, *Environmental, social and Governance scores from LSEG*, October 2024.

Lu, X. – White, H. (2014) Robustness checks and robustness tests in applied economics. *Journal of Econometrics*, Vol. 178, 194–206.

De Lucia, C. – Pazienza, P. – Bartlett, M. (2020) Does good ESG lead to better financial performances by firms? Machine learning and logistic regression models of public enterprises in Europe. *Sustainability,* Vol. 12(13), 5317-.

Lüdeke-Freund, F. – Gold, S. – Bocken, N. M. P. (2019) A Review and Typology of Circular Economy Business Model Patterns. *Journal of Industrial Ecology*, Vol. 23(1), 36–61.

Narula, R. – Rao, P. – Kumar, S. – Paltrinieri, A. (2025) ESG investing & firm performance: Retrospections of past & reflections of future. *Corporate social-responsibility and environmental management*, Vol. 32(1), 1096–1121.

Nirino, N. – Miglietta, N. – Salvi, A. (2020) The impact of corporate social responsibility on firms' financial performance, evidence from the food and beverage industry. *British food journal (1966)*, Vol. 122(1), 1–13.

Nirino, N. – Santoro, G. – Miglietta, N. – Quaglia, R. (2021) Corporate controversies and company's financial performance: Exploring the moderating role of ESG practices. *Technological Forecasting & Social Change*, Vol. 162, Article 120341.

Macassa G. – McGrath G. – Tomaselli G. – Buttigieg S. C. (2021) Corporate social responsibility and internal stakeholders' health and well-being in Europe: a systematic descriptive review. *Health Promotion International*, Vol. 36, 866–883.

Madhok, A. (2021) Globalization, de-globalization, and re-globalization: Some historical context and the impact of the pandemic. *Business Research Quarterly*, Vol. 24(3), 199–203.

van Marrewijk, M. (2003) Concepts and Definitions of CSR and Corporate Sustainability: Between Agency and Communion. *Journal of Business Ethics*, Vol. 44(2/3), 95–105.

Mehmetoglu, M. – Jakobsen, T. G. (2022) *Applied statistics using stata: a guide for the social sciences* (Second edition.). Sage, UK.

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

Newman, I. – Lim, J. – Pineda, F. (2013) Content validity using a mixed methods approach: its application and development through the use of a table of specifications methodology. *Journal of Mixed Methods Research*, Vol. 7(3), 243–260.

Nirino, N. – Miglietta, N. – Salvi, A. (2020) The impact of corporate social responsibility on firms' financial performance, evidence from the food and beverage industry. *British food journal (1966)*, Vol. 122(1), 1–13.

Orlitzky, M. (2001) Does Firm Size Confound the Relationship between Corporate Social Performance and Firm Financial Performance? *Journal of Business Ethics*, Vol. 33(2), 167–180.

Orlitzky, M. – Schmidt, F. L. – Rynes, S. L. (2003) Corporate Social and Financial Performance: A Meta-Analysis. *Organization Studies*, Vol. 24(3), 403–441.

Osterwalder, A. – Pigneur, Y. – Clark, T. (2010) *Business model generation: a handbook for visionaries, game changers, and challengers*. John Wiley & Sons, USA.

Petitjean, M. (2019) Eco-friendly policies and financial performance: Was the financial crisis a game changer for large US companies? *Energy Economics*, Vol. 80, 502–511.

Qureshi, M. A. – Kirkerud, S. – Theresa, K. – Ahsan, T. (2020) The impact of sustainability (environmental, social, and governance) disclosure and board diversity on firm value: The moderating role of industry sensitivity. *Business strategy and the environment*, Vol. 29(3), 1199–1214.

Rafi T. (2022) World Economic Forum, WEF, Stakeholder capitalism, *Why sustainability is crucial for corporate strategy*. <https://www.weforum.org/agenda/2022/06/why-sustainability-is-crucial-for-corporate-strategy/>, retrieved 06.04.2025.

Raimo, N. – de Nuccio, E. – Giakoumelou, A. – Petruzzella, F. – Vitolla, F. (2021) Non-financial information and cost of equity capital: an empirical analysis in the food and beverage industry. *British food journal* (1966), Vol. 123(1), 49–65.

Rantakari, R. (2024) *Regulaatio ja raportointi, Vastuullisuus ja viestintä 2024 luentosarja*, ProCom – Viestinnän ammattialiset ry, Finland.

Renneboog, L. – Vansteenkiste, C. (2019) Failure and success in mergers and acquisitions. *Journal of Corporate Finance*, Vol. 58, 650–699.

RFA (2024) *RFA zum Nachvollzug der EU Richtlinie zur unternehmerischen Nachhaltigkeitsberichterstattung*. <https://www.seco.admin.ch/seco/de/home/

Publikationen_Dienstleistungen/Publikationen_und_Formulare/Regulierung/regulierungsfolgenabschaetzung/vertiefte-rfa/rfa-nachvollzug-csrd/rfa-csrd.html>, retrieved 24.11.2025.

Richard, P. J. – Devinney, T. M. – Yip, G. S. – Johnson, G. (2009) Measuring Organizational Performance: Towards Methodological Best Practice. *Journal of Management*, Vol. 35(3), 718–804.

Richardson, A. J. – Welker, M. (2001) Social disclosure, financial disclosure and the cost of equity capital. *Accounting, Organizations and Society*, Vol. 26(7–8), 597–616.

Rimmel, G., Edward Elgar Publishing, publisher, & Rimmel, G. (2024). *Research Handbook on Sustainability Reporting* (G. Rimmel, Ed.). Edward Elgar Publishing Limited.

Saini, N. – Antil, A. – Gunasekaran, A. – Malik, K. – Balakumar, S. (2022) Environment-Social-Governance Disclosures nexus between Financial Performance: A Sustainable Value Chain Approach. *Resources, Conservation and Recycling*, Vol. 186, Article 106571.

Salvi, A. – Petruzzella, F. – Giakoumelou, A. (2018) Green M&A Deals and Bidders' Value Creation: The Role of Sustainability in Post-Acquisition Performance. *International Business Research*, Vol. 11(7), 96-105.

Saunders, M. N. K. – Lewis, P. – Thornhill, A. (2023) *Research methods for business students* (Ninth edition.). Pearson Education Limited, UK.

Schaltegger, S. – Bennett, M. – Burritt, R. (2006) *Sustainability accounting and reporting*. Springer, the Netherlands.

Schaltegger, S. – Lüdeke-Freund, F. – Hansen, E. G. (2016) Business Models for Sustainability: A Co-Evolutionary Analysis of Sustainable Entrepreneurship, Innovation, and Transformation. *Organization & Environment*, Vol. 29(3), 264–289.

Schneider Electric (2025a) *Company Profile. We are our energy technology partner*. < https://www.se.com/ww/en/about-us/company-profile/>, retrieved 20.10 2025.

Schneider Electric (2025b) *Sustainability development report 2024. Technology for impact*. < https://www.se.com/ww/en/Images/2024-sustainability-report_tcm564-513141.pdf >, retrieved 20.10.2025.

Segal, M. ESG Today (2024) *Green Economy Outperforms Global Market Over Past 10 Years, Second Only to Tech: LSEG*, 11.07.2024, retrieved 12.10.2025.

Shaikh, I. (2022) Environmental, social, and governance (ESG) practice and firm performance: an international evidence. *Journal of business economics and management*, Vol. 23(1), 218–237.

Silverman, D. (2006) *Interpreting qualitative data: methods for analyzing talk, text and interaction* (3rd ed.). Sage, UK.

Slaper, T. F. – Hall, T. J. (2011) The triple bottom line: what is it and how does it work? Indiana business review, Vol. 86(1), 1-8.

SMA (2025a) *SMA Solar Technology AG Energy That Changes*. < https://www.sma.de/en/>, retrieved 20.10.2025.

SMA (2025b) *Annual Report 2024*. < https://d3yvy865gav9f.cloudfront.net/asset/851725204959/document_363lv03oih48l8kk8djd16iv42/Annual-Financial-Report-SMA-Group-2024.pdf?content-disposition=inline>, retrieved 25.09.2025.

Stockholm Resilience Centre (2025) *Planetary boundaries(24.09.2025)*. <https://www.stockholmresilience.org/research/planetary-boundaries.html>, retrieved 12.10 2025.

Tamimi, N. – Sebastianelli, R. (2017) Transparency among S&P 500 companies: an analysis of ESG disclosure scores. *Management Decision*, Vol. 55(8), 1660–1680.

Tampakoudis, I. – Anagnostopoulou, E. (2020) The effect of mergers and acquisitions on environmental, social and governance performance and market value: Evidence from EU acquirers. *Bus Strat Env*, Vol. 29, 1865–1875.

Teddlie, C. – Tashakkori, A. (2009) *Foundations of mixed methods research: integrating quantitative and qualitative approaches in the social and behavioral sciences*. Sage, UK.

Teece, D. J. (2010) Business Models, Business Strategy and Innovation. *Long Range Planning*. Vol. 43, 172-194.

Tashakkori, A. – Teddlie, C. – Maxcy, S. J. – Greene, J. C. – Caracelli, V. J. – Moghaddam, F. M.– Walker, B. R. – Harré, R. – Mertens, D. M. – Newman, I. – Ridenour, C. S. – Newman, C. – DeMarco, G. M. P. – Morse, J. M.– Creswell, J. W. –Plano Clark, V. L. – Gutman, M. L. – Hanson, W. E. – Maxwell, J. A. – Shulha, L. M. (2003) *Handbook of mixed methods in social & behavioral research*. Sage, UK.

Tohang, V. – Adhariani, D. – Violita, E. S. (2025) Environmental, Social, and Governance (ESG) Strategies for Driving Business Performance: Evidence From the Communication Services Industry in Asia. *Business Strategy & Development*, Vol. 8(2), Article e70106.

UN Global Compact (2025) *Real companies. Real actions. Real results*. <https://unglobalcompact.org/>, retrieved 24.06.2025.

UN SDG, (2025), *17 Goals*. <https://sdgs.un.org/goals>, retrieved 18.01.2025.

Velte, P. (2017) Does ESG Performance Have an Impact on Financial Performance? Evidence from Germany. *Journal of Global Responsibility*, Vol. 8(2), 169–78.

Vestas (2025a) *The global leader in sustainable energy solutions*. < https://www.vestas.com/en>, retrieved 20.10.2025.

Vestas (2025b) *Annual report 2024*. < https://www.vestas.com/content/dam/vestas-com/global/en/investor/reports-and-presentations/financial/2024/fy-2024/Vestas%20Annual%20Report%202024.pdf.coredownload.inline.pdf >, retrieved 25.10.2025.

Wagner, M. – Schaltegger, S. (2004) The effect of corporate environmental strategy choice and environmental performance on competitiveness and economic performance: An empirical study of EU manufacturing. *European Management Journal*, Vol. 22(5), 557–572.

Wang, H. – Jiao, S. – Ma, C. (2024) The impact of ESG responsibility performance on corporate resilience. *International Review of Economics and Finance*, Vol. 93, 1115–1129.

Wang, N. – Pan, H. – Feng, Y. – Du, S. (2024) How do ESG practices create value for businesses? Research review and prospects, Sustainability Accounting, *Management and Policy Journal*, Vol. 15(5), 1155-1177.

Wang, Z. – Sarkis, J. (2017) Corporate social responsibility governance, outcomes, and financial performance. *Journal of Cleaner Production*, Vol. 162, 1607–1616.

Warusawitharana, M. (2008) Corporate asset purchases and sales: Theory and evidence. *Journal of Financial Economics*, Vol. 87(2), 471–497.

WECD, UN, (1987) Report of the World Commission on Environment and Development, Our Common Future; Brundtland Report 1987.

Williams, M., Wiggins, R. D., & Vogt, P. R. (2021). *Beginning quantitative research*. SAGE Publications Ltd.

Wooldridge, J. M. (2016) *Introductory econometrics: a modern approach* (Sixth edition.). Cengage Learning, USA.

Zollo, M. – Meier, D. (2008) What Is M&A Performance? *Academy of Management Perspectives*, Vol. 22(3), 55–77.

Appendices

Appendix 1. Corporate Knights' inaugural Europe 50 list 2025

Table A: Top 50 European companies' sustainability ranking and industry sectors.

#	Company name	Country	Sustainable revenue	Sustainable investment	Overall grade	ICB Subsector code
1	Schneider Electric SE	France	74.0%	79.4%	A+	50202010
2	Vestas Wind Systems A/S	Denmark	100.0%	100.0%	A	60102020
3	SMA Solar Technology AG	Germany	100.0%	100.0%	A	60102020
4	Alstom SA	France	98.7%	83.6%	A-	50202010
5	Oersted A/S	Denmark	76.0%	97.2%	A-	65101010
6	Signify NV	Netherlands	85.0%	61.7%	A-	50101035
7	ERG SpA	Italy	83.4%	100.0%	B+	65101010
8	United Utilities Group PLC	United Kingdom	50.8%	100.0%	B+	65102030
9	Nordex SE	Germany	100.0%	100.0%	B	60102020
10	Trane Technologies PLC	Ireland	45.0%	17.8%	B	50101025
11	Dassault Systemes SE	France	70.1%	32.1%	B	10101015
12	Neste Oyj	Finland	67.3%	0.0%	B	60101020
13	Severn Trent PLC	United Kingdom	34.0%	87.7%	B	65102030
14	Kone Oyj	Finland	78.9%	80.4%	B	50204000
15	Getlink SE	France	49.3%	30.9%	B	50206020
16	Nokia Oyj	Finland	70.4%	97.4%	B	15101010
17	Nkt A/S	Denmark	47.3%	38.5%	B	50202010
18	Kesko Oyj	Finland	68.0%	66.1%	B	45201010
19	Acciona SA	Spain	4.7%	13.5%	B	50101010
20	Johnson Controls International PLC	Ireland	58.7%	89.3%	B	50202020
21	Essity AB (publ)	Sweden	57.4%	32.8%	B	45201020
22	Kering SA	France	66.7%	15.0%	B	40204020

#	Company name	Country	Sustainable revenue	Sustainable investment	Overall grade	ICB Subsector code
23	Verbund AG	Austria	39.6%	9.6%	B-	65101010
24	Outokumpu Oyj	Finland	56.1%	91.7%	B-	55102010
25	Novozymes A/S	Denmark	87.3%	76.8%	B-	20103010
26	Atea ASA	Norway	81.4%	52.9%	B-	10101010
27	EDP Renovaveis SA	Spain	56.6%	21.7%	B-	65101010
28	Pandora A/S	Denmark	52.8%	0.5%	B-	40204030
29	Corporacion Acciona Energias Renovables SA	Spain	99.8%	99.8%	B-	65101010
30	SAP SE	Germany	97.0%	0.1%	B-	10101015
31	Pirelli & C SpA	Italy	54.5%	96.4%	B-	40101015
32	Prysmian SpA	Italy	21.4%	0.7%	B-	50202010
33	PNE AG	Germany	22.5%	12.1%	B-	65101010
34	Novo Nordisk A/S	Denmark	39.7%	65.5%	B-	20103015
35	Tele2 AB	Sweden	72.6%	100.0%	B-	15102015
36	Iberdrola SA	Spain	3.5%	42.5%	B-	65101015
37	Umicore SA	Belgium	8.6%	90.5%	B-	55201020
38	Rockwool A/S	Denmark	30.3%	89.2%	B-	50101035
39	Telefonaktiebolaget LM Ericsson	Sweden	11.1%	Not given	B-	15101010
40	Acerinox SA	Spain	13.6%	67.4%	B-	55102010
41	Unilever PLC	United Kingdom	57.4%	75.3%	B-	45201020
42	FirstGroup PLC	United Kingdom	44.6%	49.1%	B-	50206060
43	Mercedes-Benz Group AG	Germany	23.1%	95.0%	C+	40101020
44	Puma SE	Germany	60.2%	36.5%	C+	40204025
45	Pentair PLC	United Kingdom	3.4%	0.5%	C+	50202030

Sustainable revenue: Each company's sustainable revenue ratio is calculated by dividing sustainable revenue by total revenue. Sustainable investment: Each company's sustainable investment ratio is calculated by dividing sustainable investment by total investment. The percentages are ranked against all peer groups. (detailed information: https://corporateknights.com/wp-content/uploads/2025/08/2025-07-09-2026-Global-100-Ranking-Methodology.pdf)

Appendix 2. Data management plan

A data management plan outlines the details of the collected data, who can access it, how it is stored, and what happens to the data after the study concludes. The table below displays all the research data used in this study.

Table B. Research data

Research data type	Contains personal details/information	I will gather/produce the data myself	Someone else has gathered/produced the data	Other notes
Data type 1: *ESG scores and financial data*	No	Yes, compile based on the previously defined information	Yes, the scoring has been compiled by LSEG experts. The financial data has been gathered by the LSEG experts.	Derived to excel from the LSEG Data & Analytics database
Data type 2: *Sustainable reports*	No	Yes, download the reports	Yes, example companies have compiled the reports and verified their webpage information	
Data type 3: *Webpages*	No	No	Yes, example companies have verified their webpage information	

1. Storing the data during the research process

I will store my data during the research process into

In the university's network drive ☒

In the university-provided Seafile Cloud Service ☐

Other location, please specify: ☒ To my own computer and external hard drive.

2. Documenting the data and metadata

Data documentation

My research data was presented in table above. I can describe what has happened to my research data during the research process. Data documentation is essential for tracking changes to data.
To document the data, I will use:
A field/research journal ☐
A separate document where I will record the main points of the data, such as changes made, phases of analysis, and significance of variables ☐
A readme file linked to the data that describes the main points of the data ☐
Other, please specify: ☒
I include the date in the name when I make a new revision; this also applies to the report. The documents are organized into folders on my computer to be easily found.

Data arrangement and integrity

I store the data only on my computer. For backup, it is stored on an external hard drive and in cloud-based storage provided by Turku University, which requires a password and is under my individual account. Accidental changes to my recording are not possible.

I will keep the original data files separate from the data I use in the research process, so I can always revert to the original if needed. ☒

Version control: I will plan before starting the research how I will name the different data versions, and I will adhere to the plan consistently. ☒

I recognize the life span of the data from the beginning of the research, and I am already prepared for situations where the data can alter unnoticed, for example, while recording, transcribing, downloading, or in data conversions from one file format to another, etc. ☒

Metadata

Metadata is a description of your research data. Based on metadata, someone unfamiliar with your data will understand what it consists of. Metadata should include, among other things, the file name, location, file size, and information about the data producer. Will you require metadata?

I will save my data in an archive or repository that will handle the metadata for me. ☐

I will have to create the metadata myself because the archive/repository where I am uploading the data requires it. ☐

I will not store my data in a public archive/repository, and therefore I will not need to create any metadata. ☒

3. Data after completing the research

I am responsible for the data even after the research process has ended. All data related to this research will be deleted by 31.12.2026. I understand that I am responsible for destroying the data, even if I´m no longer a student at the university.

I will store all data until 31.12.2026.

I will destroy all data immediately after completion.

Appendix 3. Explanation of the use of AI

I, Hanna Nikkilä, declare the use of artificial intelligence (AI) as follows. In addition to conventional library research, I used ChatGPT to generate synonyms for words, since my initial choices seemed too informal and unsuitable for academic writing. Synonym search was performed for example to the following words: as well as, specifies, peek, back up, has its spot/has its place, must, jump back and worth, how likely, apply to another context, transferability, believable, parallels, constructed, to think, this is that, indicate, for top of something, grounded, careful, for to show, for open up, traditional, pushing companies, stepped up, underlaying thinking, try to come up with. Table C delivers examples of an academic synonym search. Bolded words were chosen for this thesis.

Table C Examples of synonym search

Synonym for word		Synonym for word	
as well as	**In addition to**	Specifies	**States**
	Along with		**Indicates**
	Together with		**Outlines**
	Besides		Declares
	Moreover (if starting a new clause)		Prescribes
	Complementing		**Details**
	Coupled with		**Defines**
			Describes
			Articulates
			Identifies

ChatGPT was used to clarify conceptual confusions and verify adequate use of SPSS software. The following prompts were used:

1. Enhancing understanding of leverage
   - ChatGPT, OpenAI, 10.11.2025. Prompt: “what is the explanation for debt terms?”
2. Adequate use of SPSS software:
   - ChatGPT, OpenAI, 01.10.2025. Prompt: ” how to make a wide format into a long format in SPSS?”
   - ChatGPT, OpenAI, 28.10.2025. Prompt: “Hausman test in SPSS.”
   - ChatGPT, OpenAI, 04.11.2025. Prompt: “Utilizing the Welch F-test in SPSS”

AI-based tools, specifically the Grammarly program, were employed to correct spelling and improve language during the writing process. An example of a sentence in this thesis before and after the use of Grammarly is presented in Figure A. Example of a sentence in this thesis before the use of Grammarly:
“ ...and financial sustainability is an important essential so that the EU's...” , the word *important*, has changed to *essential*.

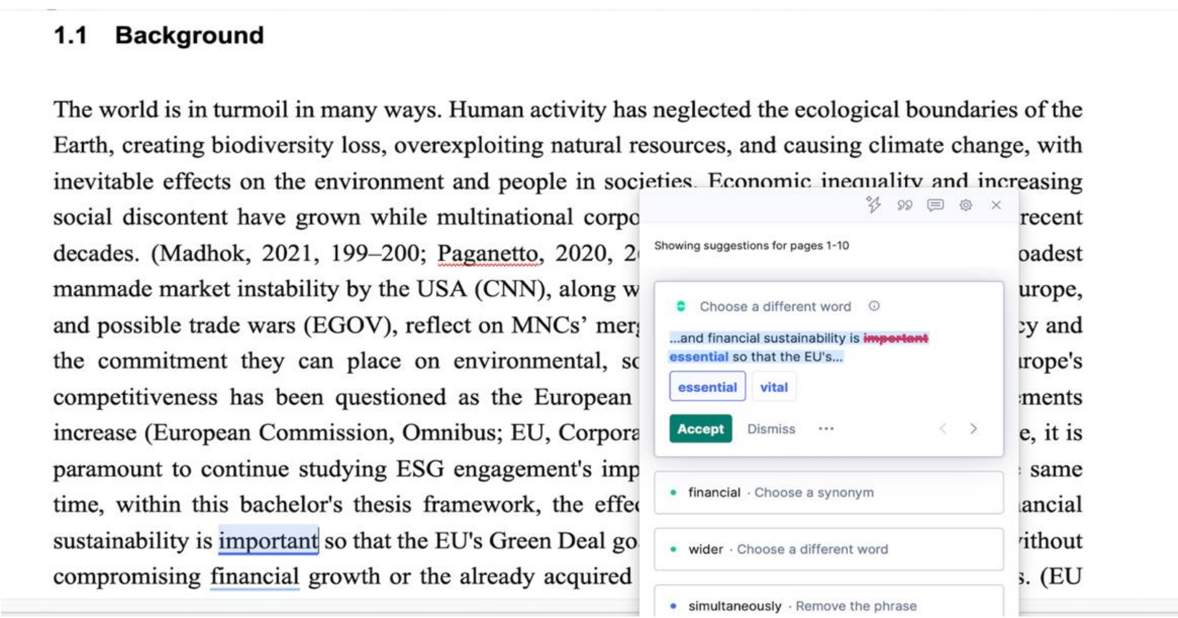

Figure A **An example of a sentence in this thesis before and after using Grammarly.**

ChatGPT was used to get a more academic writing style in a couple of chapters, with only a couple of sentences. An example of ChatGPT usage is in figure B.

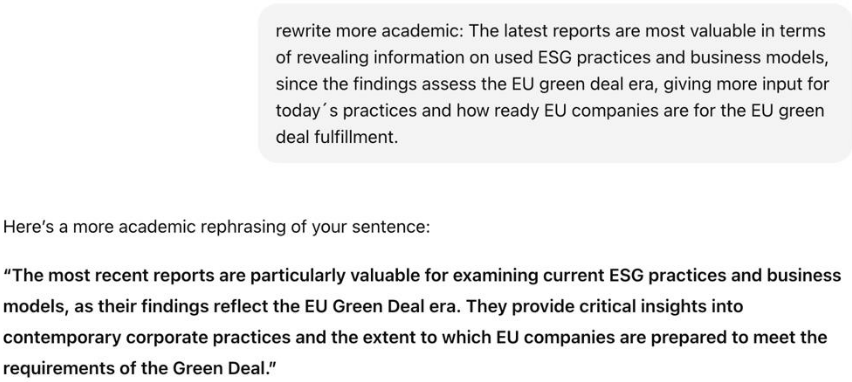

Figure B An example of ChatDPT writing assistant, 12.09.2025

To ensure that the original meaning of the content was not altered and that it remained accurate, I proofread everything carefully and made corrections where necessary. The use of AI, particularly ChatGPT and Grammarly, has been integral to my thesis research, analysis, and writing. I acknowledge the valuable assistance these AI tools have provided in enhancing my understanding, resolving conceptual ambiguities, facilitating data analysis, and refining my thesis language. I confirm that I have used AI with essential care and caution, fully disclosed the use of AI, and take full responsibility for the content of this thesis.