

Master's Programme in Accounting

Focused Engagement or Holistic Governance: Strategies for higher ESG scores

A configurational study on the governance and strategic choices for ESG success

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Abstract

This thesis aims to recognise different configurations of strategic and governance attributes that companies can implement to improve their ESG (environmental, social and governance) scores. The study is done on a sample of 70 North American industrial sector companies. Companies on the industrial sector are under pressure to improve their sustainability commitment and performance, as the sector is one of the main corporate contributors to climate change.

The study is done using the fuzzy-set Qualitative Comparative Analysis (fsQCA) approach, which is a configurational study methodology combining both quantitative and qualitative study techniques. It recognises how the corporate governance and strategic attributes used in this thesis interact with each other and the different bundles which lead to higher ESG scores.

Five explanatory conditions are used as variables in the study: structural diversity (gender and ethnic diversity), effective attendance (board size and board meeting attendance), board control (number of independent directors and CEO power), CSR focus (presence of CSR committee and CSR reporting), and R&D intensity.

The main analysis finds two configurations that are consistently linked with high ESG scores: the first strategy, named *focused engagement strategy*, has CSR focus and effective attendance present and structural diversity as an absent condition. The second strategy is named *holistic governance strategy*, as it is more comprehensive, having four out of the five conditions present. In addition, several sub-analyses are made. First, a score for ESG specialisation is calculated, based on whether the companies concentrate on all of the ESG pillars equally or specialise only in one of them. Two configurations are found to be linked with high ESG specialisation. Moreover, a sub-sample analysis is conducted dividing the sample by firm size.

The findings contribute to the research on the influence that governance characteristics have on sustainability and offers a configurational perspective to the question.

Keywords ESG, sustainability, corporate governance, fsQCA, configurational study

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Tiivistelmä

Tämän opinnäytetyön tavoitteena on tunnistaa erilaisia strategian ja hallinnon ominaisuuksia, joita yritykset voivat implementoida parantaakseen ESG-arviotaan, joka mittaa yrityksen suoriutumista ympäristön, yhteiskuntavastuun sekä hyvän hallinnon osalta. Tutkimus on tehty 70 pohjoisamerikkalaisen teollisuusalan yrityksen otoksella. Teollisuusalan yrityksillä on paineita parantaa sitoutumistaan ja suorituskykyään kestäväen kehityksen osalta, sillä ala on yksi merkittävimmistä ilmastonmuutoksen aiheuttajista.

Tutkimus tehdään käyttämällä konfiguraationaalista fsQCA-metodologiaa, jossa yhdistyvät kvantitatiivisen ja kvalitatiivisen tutkimuksen tekniikat. Se tunnistaa, kuinka tässä opinnäytetyössä käytetyt hallinto- ja strategiset attribuutit toimivat vuorovaikutuksessa keskenään, sekä löytää attribuuttien joukkoja, jotka johtavat korkeimpiin ESG-arvioihin.

Tutkimuksessa on viisi muuttujaa selittävinä ehtoina: rakenteellinen monimuotoisuus (sukupuolen ja etnisen taustan monimuotoisuus), tehokas osallistuminen (hallituksen koko sekä osallistuminen hallituksen kokouksiin), hallituksen valvonta (riippumattomien johtajien määrä ja toimitusjohtajan valta), yhteiskuntavastuufokus (vastuullisuuskomitea ja vastuullisuusraportointi) sekä T&K-intensiteetti.

Pääasiallisessa analyysissä löydetään kaksi konfiguraatiota, jotka linkittyvät johdonmukaisesti korkeisiin ESG-arvioihin: ensimmäinen strategia on nimeltään *fokusoitu sitoutumisstrategia*, ja siinä yhteiskuntavastuufokus sekä tehokas osallistuminen ovat läsnä ja rakenteellinen monimuotoisuus on puuttuvana ehtona. Toinen strategia nimetään *kokonaisvaltaiseksi hallintostrategiaksi*, koska se on kattavampi ja sillä on neljä viidestä ehdosta läsnä. Lisäksi työssä tehdään useita alatutkimuksia. Ensin lasketaan ESG-erikoistuvuuden pistemäärä sen perusteella, keskittyvätkö yritykset kaikkiin ESG-pilareihin yhtä paljon vai ovatko yritykset erikoistuneet vain yhteen niistä. Kahden konfiguraation on havaittu liittyvän korkeaan ESG-erikoistumiseen. Lisäksi suoritetaan osaotosanalyysi jakamalla otos yrityksen koon mukaan.

Löydökset edistävät tutkimusta hallinnon ominaisuuksien vaikutuksesta kestäväen kehitykseen ja tarjoavat konfiguraationäkökulman kysymykseen.

Avainsanat ESG, vastuullisuus, hyvä hallintotapa, fsQCA, konfiguraatiotutkimus

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Otaniemi, 24 January 2025
Julia Karinto

1 Introduction

1.1 Background and motivation

“Human-caused climate change is already affecting many weather and climate extremes in every region across the globe. This has led to widespread adverse impacts and related losses and damages to nature and people.”

This is a direct quote from the Intergovernmental Panel on Climate Change IPCC’s sixth synthesis report on climate change (Calvin et al., 2023), which summarises the current state of climate change and the risks it carries, along with suggestions for adjustments. The report paints an alarming image of the future for the planet, the people and other species living on it. For the past 200 years, since the industrial revolution, human action has been the cause for the rising temperatures, rising sea levels, declining biodiversity and other devastating results of the climate change (United Nations, n.d.).

The need for more sustainable action is not only extremely important but also a timely topic: the IPCC report indicates that the choices and actions made – or not made – today will have an impact on the next thousands of years. Action must be taken during the limited time window we still have. Corporations have a significant role in the mitigation of the climate change, as they are major pollutants: a study by CDP (2017) reveals that just 100 corporations are responsible for over half of the global industrial greenhouse gas emissions produced since the industrial revolution. The report emphasises the important role that corporations hold in the transition to a better and more sustainable future. Similarly, the article by Damian Carrington (2024) points out that 60 percent of the interviewed IPCC’s climate experts blame corporations’ vested interests for the climate crisis.

In addition to the destructive impacts that companies have had on the environment, many social catastrophes occur as a result of corporate actions.

Amnesty International (n.d.) accuses globalisation to be the main reason to human rights crises and the decline in workers' rights, which can especially be seen in developing countries – caused by multinational corporations. Some devastating examples of human rights violations created by the industrial sector are the forced labour and child labour executed in the Democratic Republic of the Congo for mining cobalt, a metal used for batteries for phones, computers and electric vehicles (United States Department of Labor, 2023), and the collapse of the Rana Plaza garment factory in Bangladesh, which killed over a thousand workers who were producing clothes for several western fashion brands (Amnesty International, 2014). As the EU Agency for Fundamental Rights (2020) notes, multinational corporations easily get away with human rights violations as they often have complex supply chains crossing several countries, making it harder to monitor.

The sustainability performance of a company is interesting from two main angles. First, as the previously mentioned reports foreshadow, corporate sustainability holds an absolute value in the question on the future of the planet and our society as we know it. Second, companies have many incentives to improve their ESG (environmental, social and governance) practices: stakeholders' demands for improved sustainability commitment and reporting are growing (McKinsey & Company, 2023), and thus it has become a question of competitiveness, reputation and new opportunities.

In compliance with the mentioned reasons motivating for better corporate sustainability, this thesis offers companies different strategies they can implement to improve their sustainability commitment and performance. The strategies are built consisting of different governance and organisational factors, studying how they interact with each other in the business environment the corporation acts in.

1.2 Research objective and research questions

Corporate governance, which implies the practices and structure of how the company is governed, influences the strategy and decisions made by the board of directors. Better corporate governance strengthens the transparency and flow of information, and a more diversified board allows for an improved variety of experience, knowledge and perspectives. This then is likely to grant for more focus on improving sustainability performance. A larger and more diverse board with a decentralised control and high focus on CSR matters is, according to previous literature described in detail in Chapter 2, likely to have a positive influence on a company's ESG commitment and performance. Based on this, the aim of this thesis is to study how different corporate governance and strategic attributes interact with each other and influence companies' ESG scores.

Therefore, this thesis aims to find an answer to the following research questions:

Q1. What different configurations of corporate governance and strategic attributes lead to high ESG scores in the industrial sector?

Q2. What different configurations of corporate governance and strategic attributes lead to high ESG scores among small firms in the industrial sector?

Q3. What different configurations of corporate governance and strategic attributes lead to high ESG scores among large firms in the industrial sector?

This thesis studies how structural diversity in the boards of directors, board size and meeting attendance, CEO power and independence of directors, CSR focus, and R&D intensity interact within the industrial sector, and how

together they form configurations that lead to a better sustainability performance. The outcome, the ESG score, is a score calculated by London Stock Exchange, and measures companies' commitment and performance on environmental, social and governance practices, based on companies' own reporting. The analysis is done on a sample of 70 firms, and on subsamples of small and large firms, where the original sample is split into two groups based on total current assets.

The result of the study is the discovery of different configurations of corporate governance attributes that lead to a high ESG score. These are calculated using the fuzzy-set Qualitative Comparative Analysis (fsQCA) methodology, which generates these configurations. With a data set of 70 industrial sector firms in North America, this thesis identifies two configurations that are consistently linked to high ESG scores: a Focused Engagement strategy and a Holistic Leadership strategy. Moreover, an auxiliary analysis is done studying ESG specialisation. Two configurations are found to be leading companies to specialise on only one of the ESG dimensions. In addition, by conducting a subsample analysis, this thesis recognises three configurations linked with high ESG scores for smaller firms and one for larger firms. The findings emphasise the different strategies and trade-offs that a company can take, in the context of its corporate governance and strategic decisions, when it aims to enhance its CSR commitment and performance.

The fsQCA methodology used in this study has many perks. It recognises different combinations of the corporate characteristics that companies can implement as strategies to improve their sustainability commitment and performance. It does not only show how different characteristics impact ESG scores, but it provides the different ways that these characteristics interact with each other, and the alternative paths that can lead to the same outcome. This makes the results interesting, as the reader can then see which of the provided configurations works best for their current business context.

Many previous research has studied the influence that different corporate governance and strategic decisions have on companies' ESG commitment and performance. However, most of these studies seem to be made using regression analysis. This thesis contributes to the literature and research on the relationship between governance and strategic attributes and sustainability commitment through a configurational approach. To identify the different paths leading to the outcome of higher ESG scores, the fsQCA methodology is the ideal choice. Furthermore, this thesis offers different solutions for corporations of different sizes, recognising that different business contexts might call for different strategies.

1.3 Structure

This thesis is structured as follows. The next chapter (Chapter 2) is a review of previous literature regarding corporate social responsibility and its significance in the business context, of corporate governance and its connection to sustainability, and of the governance and strategic attributes that are the focus of this thesis. The third chapter delves deeper into the fsQCA methodology, explaining why and how it is used in this study. In addition, Chapter 3 describes the outcome – ESG score – and the explanatory conditions used in the study, as well as the specifics of the sample set used. The results of the study are then disclosed in the fourth chapter and discussed in more detail in the fifth chapter. Finally, Chapter 6 concludes the study and findings, and offers recommendations for further research.

2 Literature Review

Companies are facing growing pressure to integrate social responsibility into their operations, all while balancing the interests of their many stakeholders (Doni & Fiameni, 2024), and it is one of the biggest trends seen in the corporate world over the last decade (Dodd et al., 2022). Corporate social responsibility is a significant topic in the corporate world for several reasons. First, the state of the planet is the foundation for anything in society to operate. Moreover, sustainability is an important matter for many stakeholders that companies depend on to become successful and remain that way. As the stakeholder theory (Freeman et al., 2010) suggests, firms need to satisfy the needs and expectations of their stakeholders such as investors, customers, employees, and the local communities in a broader sense. This theory can be applied in the context of sustainability, as has been done by for example Dodd et al. (2022), Ghanbarpour et al. (2024), Kumar et al. (2022) and Radu & Smaili (2022). These studies have found a positive relationship between sustainability performance and stakeholders' approval and satisfaction, and consequently with firm value. Similarly, Doni & Fiameni (2024) recommend that companies should foster business models that not only create direct financial value but also benefit the interests of other stakeholders, which then in return will possibly advance the financial performance.

This chapter will describe and analyse previous literature on the key concepts of this thesis. First, the meaning and significance of ESG and corporate sustainability is explained. Following this, the importance of corporate governance and the influence of the different variables used in this thesis on corporations' sustainability commitment and performance are described. Finally, this thesis is built on a few theoretical frameworks, which are defined in the context of this thesis.

2.1 Definition of key concepts

2.1.1 Corporate Social Responsibility and ESG

The perception of corporate social responsibility has far evolved from Milton Friedman's (1970) statement that the only social responsibility a company has is to increase its profits and create value for its shareholders, claiming that environmental and social responsibilities should be left to governments. He stated that any efforts used to environmental or social causes are a misallocation of resources, taking away from the shareholders' benefit. Today, the awareness of corporate social responsibility seems to be different: it means incorporating ethical standards to business conduct (Beji et al., 2021), including concerns for the environment, human rights, employees' conditions and overall reflecting the interests of all stakeholders (Doni & Fiameni, 2024; Mahmoudian & Jermias, 2022).

Sustainability is a multifaceted concept: it can be measured and perceived in several ways. Studies regarding environmental sustainability have focused for instance on greenhouse gas emissions (Liao et al., 2015; Tingbani et al., 2020), carbon emissions (Kumar et al., 2022), toxic releases (Egilmez et al., 2013; Thomas et al., 2022) and waste generation (Egilmez et al., 2013). A more social point of view to sustainability can be taken by concentrating on human rights in the supply chain (Beji et al., 2021; Ferrero-Ferrero et al., 2015). In this thesis, sustainability is measured with the overarching ESG score, which has been used as the outcome variable by studies such as Abdullah et al. (2024), Do & Herbohn (2024) and Wu et al. (2024). In sustainability discussion and research, the terms CSR (Corporate Social Responsibility) and ESG are often used interchangeably. The term ESG comprises three sustainability pillars: environmental, social and governance. Doni & Fiameni (2024) describe ESG as the "main form of CSR", and Narula et al. (2023) as a metric of the "overall health" of a company.

A company's reputation matters to its directors. As Harjoto et al. (2019) suggest, practicing CSR is an important commitment for companies to mitigate and prevent unfavorable reputation and to keep stakeholders happy. Corporate scandals and controversies are rising as stakeholders are becoming more aware and demanding of better CSR performance (Loughran et al., 2023; Narula et al., 2023). Particularly after the Covid-19 pandemic, the demand for more stable and resilient companies has risen. Studies such as Cardillo et al. (2023), Narula et al. (2023) and Singh (2020) indicate that firms with a strong ESG strategy and commitment were better valued by stakeholders and performed better during the Covid-19 crisis. This suggests that in unprecedented times, stakeholders find comfort and trust in companies that are committed to CSR practices, which could be an additional motivation for corporations to strive for better sustainability practices.

A study conducted by McKinsey & Company (2023) reveals that around 85 percent of chief investment officers consider ESG to have a significant role in investment decisions. Furthermore, they find that 47 percent of investors consider phasing out their investments on industrial companies that do not demonstrate a clear ESG strategy, and that especially the environmental pillar holds importance in investment decisions on the industrial sector.

2.1.2 Corporate governance as a driver for sustainability

Boards are the governing and deciding body of a company, and thus have a significant role also in the sustainability performance of the company they represent (Dodd et al., 2022). Effective corporate governance strengthens the transparency and disclosure between the company and its stakeholders, keeping companies accountable and providing more stakeholder engagement (Radu & Smaili, 2022). Furthermore, Velte (2024) argues that better governance, implying diversity among board members and introducing a

CSR committee and CSR-related compensation, has a significant role in integrating sustainability targets into corporate strategies.

Radu & Smaili (2022) note that rather than studying the effect of a singular corporate governance mechanism on CSR, it is more reasonable to study different bundles of corporate governance characteristics and see how they interact with each other. For instance, they find that a CSR committee has an indirect positive influence on social performance only when present with CSR-related compensation. Following their advice, this thesis studies the different configurations, or bundles, of strategic and corporate governance characteristics and how they jointly affect the ESG score.

The link between sustainability performance and different board characteristics has been widely studied. Next, numerous studies and their findings are presented. The theories and results presented support the focus of this thesis.

2.1.3 The governance and strategic conditions studied

This thesis analyses eight corporate governance characteristics: gender diversity, ethnic diversity, board size, board meeting attendance, share of independent board members, CEO-chairman duality, presence of a CSR committee and presence of CSR reporting. These are all variables regularly used in studies researching the relationship between corporate governance factors and ESG performance (e.g., Beji et al., 2021; Liao et al., 2015; Nadeem, 2021; Post et al., 2011). From these eight attributes, four variables are grouped: board structural diversity, board meeting effectiveness, board control and CSR focus. In addition to these governance attributes, the study also includes research and development spending as a variable. Total current assets are used to scale the R&D spending and to split the sample in two by firm size in the subsample analysis.

The governance and strategic attributes mentioned above are further defined in this section, as well as their association with sustainability performance. The benchmark is that all the attributes used in this thesis are proven by previous research and literature to have a relevant influence on sustainability commitment and performance. This follows the recommendation by Greckhamer et al. (2018), that the explanatory conditions used in an fsQCA study should be selected based on previous literature and theory.

Board structural diversity

The structural diversity of a board of directors consists of factors that have to do with the personal or demographic traits of board members, such as gender, ethnicity, age or tenure. The diversity in the boardroom is an interesting topic of research, as a diverse board can be expected to bring a more varied arrangement of skills, information, experience and perspectives (Beji et al., 2021; Ferrero-Ferrero et al., 2015; Post et al., 2011). In addition, greater diversity may come with alternative thinking and ideas (Dodd et al., 2022) and perhaps even stronger ethics and morals (Do & Herbohn, 2024; Dodd et al., 2022), which can be linked to willingness to improve sustainability performance.

Gender diversity is one widely studied phenomenon of structural diversity. Numerous studies, such as Beji et al. (2021), Ben-Amar et al. (2017), Caby et al. (2024), Glass et al. (2016), Post et al. (2011) and Post et al. (2015), find a positive link between the number of women in boards of directors and the companies' sustainability performance. Ben-Amar et al. (2017) find that a higher representation of women on the board increases the voluntary disclosure of carbon emissions. Liao et al. (2015) and Tingbani et al. (2020) have reached similar conclusions, suggesting that board gender diversity positively correlates with more extensive voluntary disclosure of greenhouse gas

emissions. According to the studies conducted by Post et al. (2011) and Velte (2024), boards consisting of three or more women achieve better environmental CSR results. Furthermore, Arayssi et al. (2016) also find a positive relationship between representation of women in the board and both ESG reporting and performance. They conclude that gender diversity improves the firm's societal conscience and strengthens the commitment to the firm's mission.

The relationship between ethnic diversity and sustainability has been studied by for instance Beji et al. (2021) and Do & Herbohn (2024), who found a positive relationship between the two. Beji et al. (2021) suggest that directors from different backgrounds have a significant and positive influence on environmental and social performance, as they present new ideas, perspectives and information. To a similar extent, Dodd et al. (2022) find that cultural diversity in the board has a positive impact on environmental and social performance, and Harjoto et al. (2019) discover a positive relationship between diversity of nationality in the boardroom and CSR performance.

The data set used in this thesis is from North America, where companies generally have shown loyalty mainly to shareholders, focusing less on the value created for other stakeholders (Harjoto et al., 2019). As noted by Harjoto et al. (2019), boardroom diversity could be one factor to improve this issue and expand the efforts on other stakeholders' interests, including corporate sustainability.

Although a substantial amount of literature has found a positive link between boardroom diversity and CSR, there are also studies that do not. Nadeem (2021) does not find a correlation between representation of women in the board and commitment to supplemental environmental projects, suggesting that at director level, gender does not have such an impact. Post et al. (2011) argue that a higher proportion of Western European directors in American companies improve the environmental focus of companies, which can be

understood as a suggestion that ethnic minorities would have no or even a negative impact on environmental CSR.

Hence, it seems that previous research has not yet found a unanimous ground on the relationship between board structural diversity and CSR, and it seems to be a complex, widely studied matter. Nevertheless, this thesis makes the assumption that structural diversity positively impacts the ESG score, using it as one of the explanatory conditions in the study. This relies on the theory presented by the literature described above, suggesting the diverse ethics, perspectives and skills sets associated with varying demographic backgrounds of board members contribute to better ESG commitment and performance.

Effective attendance: board size and meeting participation

Previous literature offers evidence that boards with more members are inclined to take further action in sustainability matters and develop better implementation of ESG practices (Beji et al., 2021; Liao et al., 2015; Liao et al., 2018; Nekhili et al., 2021; Nguyen et al., 2021). For instance, Beji et al. (2021) suggest that larger boards comprise more knowledge, social capital and perspective, all necessary for better decision-making and improving sustainability strategies. In addition, they propose that additional members in the board lead to better and more extensive communication with stakeholders, which can encourage to improve commitment to CSR. A larger board may contain more knowledge and experience, and thus would be more effective at implementing its monitoring role, and a larger board is more likely to have many useful connections with different stakeholders (Liao et al., 2018). Furthermore, Nguyen et al. (2021) find that in the Chinese industrial sector, companies with larger boards are more likely to perform better environmentally.

Conversely, one may debate that larger boards might have difficulty being as effective and coordinated as small ones. For instance Nadeem (2021) finds that boards of a smaller size are more likely to manage supplemental environmental projects. He argues that group dynamic works better in smaller boards, as there is less conflict inside the group.

The board members communicate and take decisions at board meetings. The meetings are significant occasions, where all board members, including members independent of the company, can gain insight as to the firm's actions and performance. Thus, frequent and effective board meetings facilitate guaranteeing the interests of the stakeholders (Liao et al., 2018). It is not only important that board meetings are frequently held, but that board members also actively attend them. For instance Nguyen et al. (2021) find a positive and significant correlation between active board meetings and environmental performance, suggesting the meetings improve effectiveness and enable sharing ideas and discussing critical topics, including sustainability performance. As suggested by Carter et al. (2010), a higher attendance proportion in board meetings improves the quality of processes and decisions made and measures the involvement and interest of board members.

Based on the aforementioned literature, this thesis assumes that larger boards and active attendance of the board meetings improve the ESG score.

Board control

A board of directors has a disproportionate balance of control and power, if for instance it consists of many non-independent directors. Another situation that disrupts the power-balance of a board is when the CEO of the company is simultaneously the chairman of the board. These kinds of instances create a situation where certain members of the board have an excessive power and

even a dominating authority. This contains the risk that they may not have the interests of all stakeholders as their main priority (Mahmoudian & Jermias, 2022) and may have the power to override the other, independent directors (Liao et al., 2018).

Board independence measures the degree to which board members are independent of the company management. It is necessary for companies to have independent directors, who are less likely to act opportunistically and are more prone to monitor and detect potential unethical behaviour (Liao et al., 2018). Similarly, Post et al. (2015) suggest that independent directors are more likely to have the interest of stakeholders in mind and strive to please them in many issues, including sustainability. In addition to differences in the interests and morals between independent and non-independent directors, Post et al. (2015) note that independent directors may also have more diverse experience and knowledge, and thus bring value to decision-making and strategy-development. Several other studies have found a positive relationship between the share of independent directors and CSR performance (Ben-Amar et al., 2017; Nadeem, 2021).

CEO-chairman duality may lead to a conflict of interest and abuse of power. A powerful CEO might want to and be able to pursue their own interests (Beji et al., 2021), which often cultivates as short-term profits (Mahmoudian & Jermias, 2022). The study conducted by Mahmoudian & Jermias (2022) detects that companies where the CEO also acts as the chairman of the board are less likely to undertake additional environmental tasks. Furthermore, Do & Herbohn (2024) find that with a powerful CEO, ethnic diversity among board members does not have the same positive influence in ESG activities as in companies where the chairman is not the CEO. This insinuates that powerful CEOs can override other board members, who otherwise would use their diverse knowledge and perspective to improve the CSR strategies and performance of the company.

However, some previous research also contradicts the aforementioned. Nguyen et al. (2021) find no significant relationship between independent directors and environmental performance, while Gerged (2021), Jizi et al. (2014) and Nadeem (2021) find that while a higher proportion of independent directors improves environmental commitment, so does CEO-chairman duality. A powerful CEO may in fact have a positive impact on sustainability commitment and performance, as they are under more stakeholder pressure to be seen as successful (Gerged, 2021; Nadeem, 2021) and are thus more risk averse (Jizi et al., 2014).

Nevertheless, this study assumes that boards with more independent directors and where the chairman is not simultaneously the CEO will increase the ESG score of the company, and thus unites the two variables as one. The variable Board control measures how decentralised the control of the board is.

CSR focus

As companies face more and more demands from stakeholders to improve and disclose their sustainability commitment and performance, many strive to improve their CSR governance mechanisms (Abdullah et al., 2024; Radu & Smaili, 2022). Examples of corporate governance actions that companies take include establishing CSR committees (Abdullah et al., 2024; Burke et al., 2019; Dixon-Fowler et al., 2017; Nadeem, 2021; Radu & Smaili, 2022), providing CSR-related compensation (Elbardan et al., 2023; Radu & Smaili, 2022), engaging in additional CSR reporting (Hsueh, 2018; Moussa et al., 2022; Palma et al., 2022), having an external auditor conduct assurance of said CSR reporting (De Beelde & Tuybens, 2015; Elbardan et al., 2023; Pflugrath et al., 2011), or even nominating a Chief Sustainability Officer (Kanashiro & Rivera, 2019). In this thesis, the term CSR focus consists of two elements: presence of a CSR committee and of CSR reporting.

A CSR committee is an addition to the board, with the goal of strengthening the company's ESG commitment and performance through monitoring, advising, and providing relevant connections and information (Burke et al., 2019; Radu & Smaili, 2022). The study conducted by Burke et al. (2019) found that CSR committees often have one or several stakeholder groups or priorities that they focus on, such as environmental issues, community engagement, health and safety in the workplace, or product quality. These committees are most common in sectors that may be under public scrutiny over sustainability issues (Burke et al., 2019), as the industrial sector examined in this study is. CSR committees are voluntary in most areas of the world, including in North America which is the focus of this study.

The prevalence of CSR committees has risen over the few past decades (Burke et al., 2019; Dixon-Fowler et al., 2017), which can be seen as a sign that companies do care about being more sustainable and want to respond to the expectations of stakeholders. Presence of a CSR committee has been demonstrated to have a positive impact on CSR decision-making and performance (Burke et al., 2019; Dixon-Fowler et al., 2017; Moussa et al., 2022; Velte, 2024). On the other hand, Nadeem (2021) finds no significant relationship between environmental committees and environmental projects, and notes that there are cases where forming a CSR committee could rather be just a symbolic gesture aimed at managing the perceptions of stakeholders.

In most areas of the developed world, some sort of sustainability reporting is mandatory, but companies have flexibility in determining how profoundly and extensively they want to report on their sustainability actions and performance, and what they want to voluntarily disclose. As noted by Elbardan et al. (2023), voluntary CSR reporting has recently become a frequent action taken by firms, and it can be taken as a sign of greater commitment to CSR action. Caritte et al. (2015) suggest that publishing CSR reports allows stakeholders to give feedback and further ideas, from which companies can further learn and improve their sustainability performance. Moreover, they argue

that CSR reporting can be a motivator for companies to progress in their sustainability performance, as they can see and communicate their yearly improvement and achievements. Similarly, Hahn et al. (2023) note that companies that make the decision to prepare and publish sustainability reports are more likely to be motivated to also adopt and implement CSR-related practices in their operations. In addition, studies such as Elbardan et al. (2023) and Uyar et al. (2024) also find a positive link between CSR reporting and financial performance, which suggests that important stakeholders such as investors and customers value voluntary non-financial reporting.

By publishing sustainability reports, companies communicate their ESG commitments and performance to stakeholders who are interested in more than just the financial performance (Elbardan et al., 2023). As reasoned by Moussa et al. (2022), CSR reporting mitigates companies' risks regarding reputation and strengthens their relationships with stakeholders. There are several frameworks globally used for disclosing sustainability information, such as the United Nations Sustainable Development Goals (Narula et al., 2023) and the Global Reporting Initiative guidelines (Moussa et al., 2022; Uyar et al., 2024).

Based on previous literature, this thesis assumes that establishing a CSR committee and practicing voluntary CSR reporting strengthens a company's commitment to sustainability and its performance in it. These corporate governance mechanisms demonstrate a more structured approach to managing ESG responsibilities and improves accountability and transparency.

R&D intensity

Companies carrying out research and development (R&D) activities make an investment to enhance knowledge and improve their products and processes

(Padgett & Galan, 2010). As stated by Doni & Fiameni (2024), companies should integrate sustainability in their R&D strategies, to create more attractive goods and services and thus improve their financial performance as well. The innovation approach is a critical strategic decision, shaping the future direction of a firm.

Previous literature has found the relationship between R&D expenditure and CSR performance to be positive (Padgett & Galan, 2010; Ullah & Arslan, 2022). Innovation often creates improved efficiency, which can save natural resources and can result in new sustainable products and technologies. The study conducted by Wagner (2010) finds that a company directing CSR-related activities is more likely to foster more R&D. This indicates that not only does innovation positively influence CSR performance, but that the relationship is reciprocal as well.

The effect of R&D intensity on sustainability may be dependent on the industry. For instance Padgett & Galan (2010) and (Ullah & Arslan, 2022) find that the relationship between R&D intensity and CSR performance is strong in the manufacturing sector, while in the non-manufacturing sector it is insignificant. This supports the research conducted in this thesis, as the focus is on the industrial sector, which includes manufacturing.

Therefore, based on previous literature this thesis also investigates the relationship that R&D expenses have with the ESG score. To measure R&D intensity, the R&D expenses are scaled with firm size, which is measured with total current assets. This is a similar practice to studies like Doni & Fiameni (2024), (Schiehl et al., 2018) and Ullah & Arslan (2022) who measure R&D intensity as the ratio of R&D expenses to financial variables.

2.2 Theoretical Framework

This thesis builds on theoretical frameworks from previous literature. The main theory used as the framework of this study is the complementarity theory (Milgrom & Roberts, 1995), often used in fsQCA studies and directly linked to the use of corporate governance characteristics as the centre of the study. The complementarity theory explores how the elements within a company interact with each other, suggesting that the different governance and strategic characteristics complement each other. This theory reinforces the use of the fsQCA method in this thesis, which is built on the premise that the conditions interact with each other and are dependent on each other. For instance Schiehl et al. (2018) base their configurational study on the complementarity theory, proposing that conditions mutually reinforce each other.

Building on the complementarity theory, Aguilera et al. (2012) highlight that corporate governance attributes behave in bundles, complementing and substituting each other. They observe that there can be many bundles of corporate governance characteristics that lead to an improved firm performance, supporting the central idea of this thesis which aims to find the different configurations that lead to high ESG scores. This idea is captured in the notion of equifinality, which is explained in Chapter 3 where the fsQCA methodology and its nature is described.

Similarly, Furnari et al. (2021) highlight causal complexity and how different configurations can lead to the same outcome in organisational studies. Based on the complementarity theory, they recommend using a configurational methodology instead of executing a traditional correlational study. This again supports the approach chosen for this thesis, highlighting that a configurational study is ideal to observe the complexity and interaction between the explanatory conditions. The notion of causal (or explanatory) complexity is also further explained in Chapter 3.

In addition to the complementarity theory, other theories often used in similar literature can also be used to support this thesis. As one the main focus of this study is the board of directors and its characteristics, two theories that assist with the analysis are upper echelons theory and resource dependence theory. Both theories emphasise the importance that corporate governance characteristics have on organisations' performance and success. In addition to the complementarity theory, the use of the configurational study methodology fsQCA in this thesis is supported by contingency theory, which emphasises the importance of the context the variables are in. These three theories are further described in Appendix A.

3 Methodology and Data

This chapter introduces the research approach used in this thesis, the fuzzy-set Qualitative Comparative Analysis (fsQCA), along with the benefits and reasons why it is an appropriate research methodology to recognise the bundles of governance and strategic attributes leading to improved corporate sustainability. Furthermore, the execution and the format of results of the fsQCA methodology are thoroughly explained.

After the fsQCA methodology is described, this chapter presents the composition of the outcome variable, the ESG score assigned by London Stock Exchange, as well as the explanatory conditions, meaning the corporate governance and strategic attributes used in the study.

Finally, the sample of the study is presented. The data set used in the study consists of North American companies operating in the industrial sector. The choice to focus on the industrial sector is based on the fact that it is a major corporate contributor to the environmental degradation and ESG controversies (Aouadi & Marsat, 2018; Egilmez et al., 2013). The sample chosen should be relevant to the study, and thus the industrial sector is an appropriate choice when the focus is on ESG commitment and performance.

3.1 Research methodology

The fuzzy-set Qualitative Comparative Analysis, referred to as fsQCA from now on, is an approach to find different paths or configurations that lead to a certain outcome (Rihoux & Ragin, 2009). As described by Elliott (2013), it is a methodology which intends to come up with solutions to a certain problem, instead of merely finding the effects that different variables have to a certain outcome. This chapter will explain the fsQCA methodology, how it is executed and the reasons why it is implemented in this thesis.

3.1.1 Qualitative Comparative Analysis (QCA)

The fsQCA approach is a type of Qualitative Comparative Analysis, a study technique which intends to find simple explanations to a certain outcome by forming configurations (Greckhamer et al., 2018; Pappas & Woodside, 2021). Developed in the late 1980's, QCA was originally used in political science and historical sociology studies (Rihoux & Ragin, 2009). It has since then become a methodology used in many study areas, such as strategy and organizational studies (Greckhamer et al., 2018; Gupta et al., 2020) and governance studies (Aguilera et al., 2012; Schiehl et al., 2018).

A key notion of the QCA methodology is the concept of *explanatory complexity*, which is a broader term including the concepts of *multiple-conjunctural causation*, *equifinality* and *asymmetry*. Explanatory complexity, also referred to as causal complexity, emphasises the interaction of the different explanatory conditions and how together they explain a certain outcome: different “explanatory paths” or “recipes”, that are each formed by several explanatory conditions, lead to the same outcome (Misangyi et al., 2017; Ragin, 2008). Moreover, the notion of multiple-conjunctural causation refers to the fact that it is not one single condition that leads to the outcome, but the combination of conditions that act together (Rihoux & Ragin, 2009). Equifinality explicitly describes the fact that there are multiple paths that lead to the same outcome, and they can be equivalently effective (Pappas & Woodside, 2021; Rihoux & Ragin, 2009). Finally, QCA embraces the perception that the connections of conditions are asymmetrical: the conditions that lead to the presence of an outcome are not strictly the same conditions that effect the absence of an outcome (Pappas & Woodside, 2021; Ragin, 2008). In other words, the absence of a certain outcome is not necessarily explained by the absence of its causes.

The QCA methodology combines quantitative and qualitative study techniques, which makes it an interesting study approach. The empirical testing is quantitative, and the results are analysed qualitatively. This is a strong

benefit of the fsQCA methodology, as it allows for a larger and more complex data set than a traditional qualitative approach might. The quantitative part of this thesis is done using the programming language R and the QCA package it offers. The code generates the results and configurations, which are presented in Chapter 4. The findings are then analysed qualitatively, linking them to previous literature and theory.

The classic version of the QCA methodology is the crisp-set Qualitative Comparative Analysis (csQCA). In csQCA, the explanatory conditions are “crisp”, or Boolean: they have the value of either 0 or 1, meaning the membership to a certain criterion is either fully off or fully on. A few other variations of the QCA have been developed: the fuzzy-set QCA and multi-value QCA. The multi-value QCA (mvQCA) handles variables as multi-valued, meaning they can belong in more distinct categories than just in or out, such as 0 being out, 1 being basic and 2 being advanced (Pappas & Woodside, 2021). The fuzzy-set QCA, the methodology of this thesis, is explained comprehensively in the next part.

3.1.2 Fuzzy-set Qualitative Comparative Analysis (fsQCA)

Developed by Ragin (2000), fuzzy-set Qualitative Comparative Analysis is an amplification of the QCA methodology, where the memberships are expressed in degrees anywhere on the range of 0 to 1. This allows for complexity in the variables, fixing the conservativity issue of csQCA which assumes that the variables' membership to the criterion are either fully on or fully off. Moreover, the fsQCA methodology acknowledges the in-between cases. The concept of fuzzy sets allows one to calibrate the conditions partial membership, where the membership degree is somewhere between 0 (non-member) and 1 (full member).

Fuzzy sets can be negated, which implies a situation where we study the reversal of the set (Ragin, 2008). Here, the membership degree is subtracted from 1. For instance, if a certain membership degree for a certain explanatory condition is 0.7, its negation is $1 - 0.7 = 0.3$. The negation is expressed with a tilde ($\sim$):

$$\text{Negation: } \sim A = 1 - A$$

3.1.3 fsQCA in the context of this thesis

One of the fsQCA methodology's benefits is that it provides multiple solutions to reach one outcome (Elliott, 2013). As this thesis aims to find several different configurations of corporate governance attributes that lead to high ESG scores, the fsQCA method is an ideal choice. In other words, this thesis aims not just to discover what effects certain corporate governance attributes have on a company's sustainability performance, but what are the different bundles of these corporate governance characteristics that have a somewhat equal effect on the outcome, a high ESG score. Moreover, it assumes that there is not only one path that leads to an improved sustainability score, but rather that there are several bundles of corporate governance characteristics that can do so.

Thus, fsQCA seems like an appropriate choice for the methodology of this study. The nine corporate governance and strategic attributes used as variables in the method are grouped into five sets and are then calibrated to the membership criteria. Although, as described in the section 2.1.3. in the Literature Review chapter, all the variables used are recognised to individually influence sustainability, this thesis studies how they interact with each other and then form the different configurations leading to better ESG commitment and performance in the context of the industrial sector. Simply put, what this study aspires to discover is how the corporate governance and

strategic characteristics act when combined with one another, and the fsQCA methodology is an ideal tool to find the answer to this.

3.1.4 The execution and results of an fsQCA study

Calibration

The fuzzy set data must be calibrated into set memberships, that comprise the degrees of membership. In other words, each firm is allocated a membership degree for each explanatory condition. If the degree is 1, the variable is fully in in the membership, and if it is 0, it is fully out. As for the nature of fsQCA, variables can have a membership degree anywhere between 0 and 1.

The calibration of fuzzy sets can be done either in a direct or indirect method. The indirect method is more subjective and requires qualitative assessment by the researcher on what qualifies as membership and non-membership. In direct calibration, only the three breakpoints of the fuzzy set are defined: thresholds for full membership, full non-membership, and a cross-over point (Ragin, 2008). As all observations in this study are from the industrial sector and the data is quantitative and rather objective, the direct calibration method is used.

In this thesis, a membership score of under 0.1 is considered “fully out” and a score of over 0.9 is considered “fully in”. The score of 0.5 is the cross-over point, where the firm is “more in”, if it has a score of over 0.5, and “more out”, if it has a score of under 0.5. The membership degrees are described in the Table 1 below.

Degree	Definition/calibration
0 – 0.1	Fully out
0.1 – 0.5	More out than in
0.5 – 0.9	More in than out
0.9 – 1	Fully in

Table 1 – Calibration of conditions

Truth table

After the calibration process, the truth table can be generated. With the fsQCA method, the number of logically possible combinations of explanatory conditions is 2^k , where k indicates the number of explanatory conditions. In this thesis, the final number of explanatory conditions, after composing them in groups, is five (structural diversity, effective attendance, board control, CSR focus, and R&D intensity). Therefore, the number of possible combinations is $2^5 = 32$.

The possible configurations are represented in the so-called truth table, which will have the same number of rows as there are possible combinations, so 2^k rows (Elliott, 2013; Ragin, 2008). The truth table demonstrates all the possible combinations of explanatory conditions, alongside the outcome that is associated with each combination – in other words, whether there is evidence in the data set that the combination is linked with the outcome. Furthermore, it analyses the explicit connections between configurations of explanatory conditions and the outcomes, so it visualises explanatory

complexity (Ragin, 2008). The truth table of this study will be displayed in Chapter 4 with the results.

Necessity analysis

The combinations of explanatory conditions with a significantly strong consistency value are considered necessary or almost necessary for the outcome and must thus be excluded from the fsQCA sufficiency analysis (Elliott, 2013; Ragin, 2008). The strict value for the cut-off is not defined, but Elliott (2013) recommends starting from 0.8. This thesis uses the consistency of 0.9 as the threshold, following the recommendation by Greckhamer et al. (2018) and the example of similar studies such as Schiehl et al. (2018) and Gupta et al. (2020).

Sufficiency analysis and results

To identify the configurations consistently connected to the outcome, three threshold values need to be set: thresholds for frequency, proportional reduction of inconsistency, and consistency. Frequency declares the minimum number of cases that should belong to a certain configuration for it to be considered as a part of the solution. As the sample size is small, the frequency threshold is set at 1, as recommended by Greckhamer et al. (2018) and done by Schiehl et al. (2018). The proportional reduction of inconsistency (PRI) is a value used specifically in the fuzzy set QCA studies, and it is set to avoid having similar configurations leading to the presence and absence of the outcome (Pappas & Woodside, 2021). In the context of this thesis, it means that no configurations should simultaneously lead to both high and low ESG scores. The PRI threshold should be set above 0,5 (Greckhamer et al., 2018). In this study, the PRI threshold is set at 0,7. Finally, the consistency

threshold should have the value of at least 0,75 (Rihoux & Ragin, 2009), and it indicates when a configuration's association with the outcome is deemed reliable. In this thesis, the consistency threshold is set at 0.8.

As the result, the fsQCA provides different configurations that lead to the outcome, which is a high ESG score or its negation. In other words, the configurations leading to both high and low ESG scores are generated. Along with the configurations, the respective values for consistency, raw and unique coverage and solution consistency and solution coverage are produced.

The fsQCA method derives three different solutions: the complex solution, the parsimonious solution and the intermediate solution. The complex solution offers all possible configurations for the outcome. As its name suggests, it can present a needlessly large number of solutions, and thus can be considered as impractical. Therefore, the parsimonious and intermediate solutions are formed to propose a more practical result. The parsimonious solution is much more simplified: it gives only the so-called "core conditions" as a result, which are the most imperative conditions which are necessary in all solution configurations. (Pappas & Woodside, 2021)

The intermediate solution is the "balance" between the complex and parsimonious solutions and is usually the solution presented as the result (Rihoux & Ragin, 2009). The solution presented can also be a combination of the parsimonious and intermediate solutions, where the conditions which appear both in the parsimonious and in the intermediate solution are reported as core conditions, and those present only in the intermediate solution are reported as peripheral conditions (Pappas & Woodside, 2021). This is the practice used in this thesis, similarly to studies like Schiehl et al. (2018) and Gupta et al. (2020). The results will be shown in configuration charts, produced both for high and low ESG scores as well as for the subsamples for small and large firms. These are presented in Chapter 4.

Consistency and coverage

The fsQCA study generates two important values: consistency and coverage. Consistency represents the degree to which the observations sharing a given combination of conditions exhibit the outcome. Or, as Ragin (2008) portrays it, consistency implies how close to a “perfect subset” the relation seems. It tells us how reliably or accurately a certain combination of explanatory conditions leads to the outcome in question. The value of consistency varies between 0 and 1, and a higher value indicates that the combination of conditions is strongly associated with the outcome (Elliott, 2013; Ragin, 2008).

Coverage, on the other hand, indicates the degree to which a combination of conditions accounts for the instances of the outcome in question. It represents the empirical relevance and importance of the relevant configuration on the outcome (Ragin, 2008), or in other words, how much that exact configuration explains the outcome (Schiehl et al., 2018). The value of coverage also ranges between 0 and 1, and a high value indicates that there are not many other relevant paths to the outcome. If there are many different combinations that lead to the outcome, the coverage may be quite small for the configurations (Ragin, 2008).

3.2 Outcome: ESG score

ESG Score

The outcome variable studied in this thesis is the ESG score retrieved from Refinitiv Eikon. The ESG score is assigned to firms by London Stock Exchange Group (LSEG) and is calculated based on companies’ self-reported information on their environmental, social and corporate governance performance. More specifically, the ten following categories are analysed and grouped to determine the ESG score: resource use, emissions, and innovation

(for the Environmental pillar), workforce, human rights, community and product responsibility (for the Social pillar), and management, shareholders and CSR strategy (for the Governance pillar). These are presented in Table 2 below. The objective of the ESG score is to give a transparent and objective measure of a company's sustainability commitment and performance. (LSEG, 2023)

<u>Environmental pillar</u>	<u>Social pillar</u>	<u>Governance pillar</u>
Resource use	Workforce	Management
Emissions	Human rights	Shareholders
Innovation	Community	CSR strategy
	Product responsibility	

Table 2 – The ESG pillars (LSEG, 2023)

The ESG score from Refinitiv Eikon is used as a variable in previous studies such as Abdullah et al. (2024), Cardillo et al. (2023) and Wu et al. (2024). The ESG score used is disclosed as a percentage, where a higher value represents a better score. In the sample used in this thesis, the highest ESG score is 83,48, and the lowest score is 19,10. The average in the sample is 46,79.

Still, it is important to keep in mind that the ESG score is an external perspective of companies' sustainability commitment and performance. Great reporting on ESG commitment does not necessarily guarantee that the company is in fact acting so responsibly.

ESG specialisation score

In addition to the ready ESG score from Refinitiv Eikon, an ESG specialisation score can be drawn from companies' performance separately in the environmental, social and governance dimensions. The ESG specialisation score measures whether a company is more specialised in one of the three pillars, or equally in all three. For calculating this variable, the separate Environmental Pillar Score, Social Pillar Score and Governance Pillar Score are drawn from Refinitiv Eikon. These scores are calculated based of the categories mentioned in the previous paragraph. A similar variable, CSR specialisation, is used by Fu et al. (2020). They use a formula parallel to the following:

$$ESG\ specialisation = \frac{\sqrt{\frac{(E - ESG)^2 + (S - ESG)^2 + (G - ESG)^2}{3}}}{ESG}$$

where E, S and G represent the separate scores for the company's environmental, social and governance commitment and performance, and ESG measures the overall ESG score.

A high ESG specialisation score implies that a company has a high score in one of the three pillars, but a relatively low one for the others – in other words, it is highly specialised in one of the three dimensions of ESG, but does not perform as satisfactory in the others (Fu et al., 2020). The downside of the ESG specialisation measure is that it does not necessarily tell us about the quality of the overall ESG performance: for instance, in the data set of this study, there are two companies that have the ESG specialisation score of around 0.08. However, for one of them, the overall ESG score is 83,48, and for the other, it is a much lower score of 65,70. The reason they have the same score for ESG specialisation is that neither of them seems to be using a significant amount of resources on one of the pillars, but rather focuses on all of them, and thus the ESG specialisation score is low. Furthermore, a high ESG

specialisation score does not specify which of the ESG dimensions the company specialises in.

This thesis will analyse the impact that corporate governance and strategic attributes both have on the ESG score and the ESG specialisation score. Nevertheless, as the aim of this study is to discover the configurations of corporate governance attributes that lead to a high ESG score, the ESG score is the main outcome variable of this study. However, the ESG specialisation score is also analysed, as it might lead to some interesting findings, such as whether certain governance or strategic characteristics lead to specialising in or ignoring some of the pillars.

3.3 Explanatory conditions: governance & strategic attributes

The explanatory conditions used in this thesis are companies' governance and strategic attributes that, based on previous literature described in Chapter 2, are likely to influence ESG commitment and performance. Following the idea behind upper echelons theory and resource dependence theory, most of the conditions used are corporate governance characteristics. Leadership traits such as boardroom diversity, board control and board size and effectiveness are likely to impact the strategic decisions and offer a higher and more diverse set of skills, knowledge and resources to achieve the targets, such as improving ESG performance. Moreover, the strategic decisions made by the board of directors, for instance related to innovation and R&D, also impact the company's CSR (Chang et al., 2017). The directors make both direct and indirect decisions regarding sustainability, and this thesis will study how the chosen explanatory conditions together influence ESG scores. The corporate governance and strategic variables used in this study are presented in Table 3.

Variable	Description	Measure
<i>Gender diversity</i>	Percentage of women in the board of directors.	Percentage
<i>Ethnic diversity</i>	Percentage of ethnic minorities in the board of directors.	Percentage
<i>Board size</i>	Size of the board of directors.	Total value
<i>Meeting attendance</i>	The average overall attendance percentage of board meetings.	Percentage
<i>Independent members</i>	Percentage of independent members in the board of directors.	Percentage
<i>CEO power</i>	The CEO is/has been also the chairman of the board.	Boolean
<i>CSR committee</i>	The company has a CSR committee.	Boolean
<i>CSR reporting</i>	The company publishes a separate CSR report or includes a CSR section in its annual report.	Boolean
<i>R&D expenses</i>	Expenses on research and development.	Total value
<i>Total current assets</i>	Total current assets of the company.	Total value

Table 3 – Description of variables

As recommended by Rihoux & Ragin (2009) and Greckhamer et al. (2018), the number of explanatory conditions should not be too high. The more explanatory conditions are involved in the study, the more there will be different possible configurations, as to the logic of the truth table which will show all possible configurations that sum up to 2^k , where k signifies the number of conditions. If the number of possible configurations increases too much, also the number of possible combinations that do not display any cases increases (Greckhamer et al., 2018). To keep the number of conditions low, the conditions used in this study are combined into groups, and thus the final number of conditions used will be five. These are presented in Table 4.

Composite variable	Variables	Calculation
Structural diversity	Gender diversity, Ethnic diversity	<i>Gender diversity / 100 + Ethnic diversity / 100</i>
Effective attendance	Meeting attendance, Board size	<i>Meeting attendance / 100 * Board size</i>
Board control	Number of independent directors, CEO duality	<i>Independent members / 100 – CEO power</i>
CSR focus	CSR Committee, CSR Reporting	<i>CSR committee + CSR reporting</i>
R&D expenses (scaled with firm size)	R&D expenses	<i>R&D expenses / total current assets</i>

Table 4 – Composite variables

The first composite variable, Structural Diversity, consists of the variables representing gender diversity and ethnic diversity. This condition aims to

present the boardroom diversity of each company. A higher value signifies a higher heterogeneity among the board members, either by gender or ethnicity, or by both.

Effective Attendance symbolises the size of the board of directors and how actively the board members attend board meetings. It is calculated as the product of board members and meeting attendance percentage. A larger board size and active board meeting participation are expected to improve the effectiveness and efficiency of the board's activities and functioning.

The third composite variable Board Control represents how centralised the control of the board is. It combines the variables representing the share of independent board members and CEO-chairman duality. A higher value of the condition represents a more decentralised power in the board: the share of independent members is high, and/or the CEO is not and has not been the chairman of the board.

The composite variable CSR focus combines the two Boolean variables CSR Committee and CSR Reporting. If the value of CSR focus is 0, it means that the company does not have a CSR Committee and does not do CSR reporting. A value of 1 means that one of the two occurs, and a value of 2 means that both do.

Finally, the variable R&D intensity is measured by scaling the expenses on R&D activities with firm size, which is measured by the total current assets. Scaling the R&D expenses with a financial variable makes the variable representative of the organisational scale and capacity (Schiehll et al., 2018).

3.4 Sample

The data set used in this thesis consists of 70 company observations from the industrial sector. The geographical area of the data is North America. The ESG score data studied is from year 2023, and the variables used as explanatory conditions are lagged by one year, representing year 2022. The one-year lag is used to reduce risk of reverse causality and to allow time for the explanatory conditions to influence the outcome. Similar studies, such as M. Harjoto et al. (2015) and Gupta et al. (2020) also use a one-year lag. The data has been retrieved from Refinitiv Eikon on October 9th, 2024. As the data used is from years 2022 and 2023, it is posterior to the peak of the Covid-19 pandemic. Hence, this study assumes that the pandemic no longer has significant effects on the data and the results.

London Stock Exchange Group (LSEG) defines the industrial sector to consist of companies employed in manufacturing, distribution of capital goods and in providing support services. The industrial sector consists of, e.g., manufacturers of construction materials, aerospace, defence, electronic and electrical equipment, machinery, and vehicles (LSEG, 2024). This is also the definition used by Refinitiv Eikon for grouping industrial sector companies. This thesis focuses on the industrial sector as it is a heavily polluting one (Nguyen et al., 2021), which makes it relevant to study when analysing ESG scores. Egilmez et al. (2013) note that in the United States, the industrial sector is responsible for 20 percent of the country's total greenhouse gas emissions. Furthermore, Aouadi and Marsat (2018) point out that the industrial sector is one of the two industries most influenced by ESG controversies, along with the finance sector.

The initial data downloaded from Refinitiv Eikon consists of 437 firm observations. Due to a substantial amount of missing data, specifically regarding the R&D expenses, the final data sample was reduced to 70 observations after removing any firms with missing observations. Luckily due to the nature of

the fsQCA method, the sample size can be anything ranging from very small to very large (Pappas & Woodside, 2021; Rihoux & Ragin, 2009). Hence, the sample size of 70 is adequate for the study.

Table 5 presents the descriptive statistics of the variables. The outcome variable ESG score and the separate scores for the Environmental, Social and Governance pillars are all scores out of 100. The average value for the outcome ESG score is 52,95, and out of the three pillars, the Governance score has the highest average value while the Environmental score has the lowest.

On average, the companies have a 27,67 percent representation of women and 21,43 percent representation of ethnic minorities in their boards. The minimum value for both variables is zero, implying that some of the companies observed do not have any women or representatives of ethnic minorities in their boards. The average board size is a bit over 9 board members, and attendance in their meetings is on average 82,25 percent. Furthermore, on average 84,34 percent of board members are independent from the company, while in roughly half of the companies the CEO is or has been also the chairman of the board. The minimum value for independent members is 50, meaning that in some firm observations half of the board members are not independent of the company. The average values for the conditions CSR committee and CSR reporting are 0,70 and 0,77, which indicates that a majority of the companies in the sample have CSR committees and/or prepare voluntary CSR reports.

	Mean	Standard Dev.	Min.	Max
<i>Outcome variables</i>				
ESG score	52,95	17,32	17,73	83,48
Environmental score	45,63	23,61	0,97	91,7
Social score	54,92	20,41	10,95	89,57
Governance score	57,85	22,15	12,11	91,65
<i>Original variables</i>				
Gender diversity	27,67	10,11	0,00	50,00
Ethnic diversity	21,43	12,00	0,00	60,00
Meeting attendance	82,25	10,91	75,00	100,00
Board size	9,26	1,94	5,00	13,00
Independent members	84,34	9,47	50,00	93,75
CEO duality	0,51	0,50	0	1
CSR Committee	0,70	0,46	0	1
CSR Reporting	0,77	0,42	0	1
<i>Explanatory conditions</i>				
Structural diversity	0,50	0,17	0,08	0,93
Effective attendance	7,63	1,99	3,75	13,00
Board control	0,33	0,51	-0,5	0,94
CSR focus	1,47	0,76	0	2
R&D expenses (scaled by firm size)	0,054	0,08	0,0009	0,41
<i>Firm size</i>				
Total current assets (in millions)	5053,47	15451,62	27,36	109523,00

Table 5 – Descriptive statistics

Tables 6 and 7 show the correlations between variables, Table 6 for the explanatory conditions and Table 7 for the original variables. Interestingly, two of the explanatory conditions, structural diversity and board control, have quite insignificant correlations with the ESG score: the correlation between structural diversity and ESG scores is 0,100, and between board control and ESG score it is only 0,016. The correlations between the original values and the ESG score can be observed in Table 7. The correlation between the outcome and gender diversity has a rather low value of 0,289, and with ethnic diversity it is even negative, although to an insignificant extent. Furthermore, while the correlation between the share of independent members and the outcome is moderate, the correlation between CEO duality and the outcome is near zero. As mentioned in the literature review in Chapter 2, there is no clear consensus on the impact of gender and ethnic diversity and CEO duality on sustainability. Some studies find that structural diversity does not influence CSR (Nadeem, 2021; Post et al., 2011), and some argue that a CEO acting simultaneously as the chairman of the board might actually have a positive influence on sustainability commitment and performance, as they might be under more pressure and scrutiny (Gerged, 2021; Nadeem, 2021) and want to improve their personal image for their own benefit (Jizi et al., 2014). These might explain the results of the correlation analysis.

It is also remarkable that research and development intensity seems to be negatively correlated with ESG scores, with a correlation value of -0,263. Although this seems to contradict most previous research, which has found a positive relationship between investments on R&D and CSR, there are also studies that have not found such a relationship (Cassely et al., 2020). The correlations between the rest of the explanatory conditions and the outcome are more relevant and significant.

Firm size, demonstrated by total current assets, seems to have a moderate positive correlation with the ESG score. The relationship between firm size and existence of a CSR committee and CSR reporting are also positive,

although not significant, with correlation values 0,174 and 0,158, respectively. Larger firms have more resources to improve their sustainability commitment, and also are under more pressure, as they are often more visible and scrutinised on their actions and ESG performance than smaller firms (Aouadi & Marsat, 2018).

		1	2	3	4	5	6	7	8	9	10
1	ESG score	1,000									
2	Environmental score	0,846	1,000								
3	Social score	0,843	0,635	1,000							
4	Governance score	0,648	0,313	0,297	1,000						
5	Structural diversity	0,100	0,050	0,059	0,117	1,000					
6	Effective attendance	0,499	0,339	0,570	0,240	-0,033	1,000				
7	Board control	0,016	-0,096	0,015	0,149	0,166	0,100	1,000			
8	CSR focus	0,662	0,629	0,625	0,280	0,139	0,315	-0,049	1,000		
9	R&D intensity	-0,263	-0,308	-0,326	0,031	0,345	-0,380	0,030	-0,231	1,000	
10	Total current assets	0,389	0,347	0,358	0,189	-0,006	0,413	0,111	0,194	-0,144	1,000

Table 6 – Correlation matrix, explanatory condition

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	ESG score	1,000													
2	Environmental score	0,846	1,000												
3	Social score	0,843	0,635	1,000											
4	Governance score	0,648	0,313	0,297	1,000										
5	Gender diversity	0,289	0,196	0,211	0,245	1,000									
6	Ethnic diversity	-0,103	-0,095	-0,094	-0,041	0,162	1,000								
7	Meeting attendance	0,233	0,119	0,251	0,192	-0,005	0,036	1,000							
8	Board size	0,451	0,329	0,528	0,165	0,050	-0,155	0,092	1,000						
9	Independent members	0,481	0,318	0,434	0,385	0,171	-0,075	0,196	0,299	1,000					
10	CEO Duality	0,074	0,157	0,067	-0,080	-0,055	-0,178	-0,017	-0,019	-0,004	1,000				
11	CSR committee	0,570	0,511	0,512	0,312	0,164	-0,065	0,014	0,201	0,364	0,175	1,000			
12	CSR reporting	0,562	0,567	0,558	0,160	0,211	0,092	0,129	0,355	0,224	0,016	0,460	1,000		
13	R&D intensity	-0,263	-0,308	-0,326	0,031	0,176	0,337	-0,165	-0,386	-0,182	-0,065	-0,060	-0,348	1,000	
14	Total current assets	0,389	0,347	0,358	0,189	0,021	-0,026	0,217	0,347	0,203	-0,075	0,174	0,158	-0,144	1,000

Table 7 – Correlation matrix, original variables

4 Results

The fsQCA study provides a view on how the explanatory conditions interact with each other in complementary ways. This chapter first presents the results of the necessity analysis and the truth table for high ESG scores. Next, the main results of the analysis are introduced: the two configurations that are consistently linked with high ESG scores, and the four configurations consistently linked with low ESG scores. Third, this chapter exhibits the results for the ESG specialisation analysis, which recognises two configurations linked with high ESG specialisation and two with low ESG specialisation. Following that, the findings of the subsample analysis are presented, exhibiting the configurations leading to high and low ESG scores separately in the contexts of small and large firms. Finally, a robustness analysis is performed to check whether the results are robust when alterations are made in the thresholds for consistency and PRI values.

4.1 Necessity analysis and truth table

The necessity analysis is used to examine whether there are explanatory conditions that are necessary for the outcome. If there is a condition that is necessary for a high ESG score, it should be excluded from the analysis. Whether a condition is necessary is disclosed by the consistency value. The cut-off for the consistency value used in this thesis is 0.9, as disclosed in the previous chapter. As can be seen in the Table 8 below, no condition has a consistency value of 0.9 or above, so neither the presence nor the absence of any of them is considered as necessary. Consequently, all five conditions can be included in conducting the analysis.

Explanatory conditions	Consistency	Coverage
Structural diversity	0,626	0,641
Effective attendance	0,667	0,703
Board control	0,711	0,648
CSR focus	0,837	0,618
R&D	0,545	0,609
~Structural diversity	0,593	0,640
~Effective attendance	0,555	0,580
~Board control	0,497	0,616
~CSR focus	0,307	0,561
~R&D	0,653	0,648

Table 8 – Analysis of necessary conditions for high ESG score

As mentioned in Chapter 3, the sufficiency analysis in this thesis is done with the consistency and PRI threshold values of 0,8 and 0,7, respectively. The truth table shows the possible combinations of explanatory conditions and the consistency and PRI values that the combinations have related to the outcome *high ESG score* with the set thresholds. As there are five explanatory conditions, the truth table has $2^5 = 32$ rows. The truth table is presented in Table 9.

Structural diversity	Effective attendance	Board control	con-	CSR focus	R&D intensity	int-	Out-come	n	Consistency	PRI
0	1	0		0	1		?	0	-	-
1	0	0		0	0		?	0	-	-
1	0	1		0	0		?	0	-	-
1	1	0		0	0		?	0	-	-
1	1	0		0	1		?	0	-	-
1	1	0		1	0		?	0	-	-
1	1	1		0	1		?	0	-	-
1	0	1		0	1		0	3	0,466	0,095
0	0	0		0	1		0	3	0,563	0,121
0	0	1		0	1		0	4	0,570	0,124
0	0	0		0	0		0	3	0,639	0,145
1	0	0		1	1		0	4	0,708	0,279
0	0	1		0	0		0	1	0,718	0,208
1	0	0		0	1		0	3	0,739	0,256
0	1	0		0	0		0	2	0,741	0,379
0	1	1		0	0		0	2	0,751	0,289
0	0	0		1	0		0	2	0,771	0,298
1	1	1		0	0		0	4	0,774	0,402
1	0	1		1	1		0	3	0,778	0,502
1	1	1		1	0		0	7	0,814	0,649
0	1	1		0	1		0	1	0,839	0,361
0	0	1		1	1		0	2	0,844	0,613
1	1	0		1	1		0	2	0,861	0,651
1	0	1		1	0		0	1	0,867	0,466
0	0	1		1	0		0	3	0,869	0,560
1	0	0		1	0		0	5	0,876	0,642
0	0	0		1	1		0	4	0,889	0,619
0	1	0		1	0		1	4	0,891	0,761
0	1	1		1	0		1	1	0,894	0,752
1	1	1		1	1		1	2	0,924	0,816
0	1	0		1	1		1	3	0,928	0,838
0	1	1		1	1		1	1	0,946	0,868

Table 9 – Truth table for high ESG score

If the column “outcome” in the truth table has a value of 1, the configuration consistently leads to the presence of the outcome, meaning a high ESG score, and if it has a value of 0, it consistently leads to the absence of the outcome. A question mark signifies that there is not enough evidence on the effect of the configuration in question on the outcome. Furthermore, the column “n” indicates the number of firms that match the specific configuration of corporate governance attributes. We can see that a question mark in the column “outcome” appears in those configurations, where the number of firms having that specific configuration is zero – in other words, the data does not have any evidence on these configurations and how it would affect the ESG score.

The truth table discloses the limited diversity: the amount of condition combinations, shown as truth table rows, with zero cases in the “n” column (Greckhamer et al., 2018). The dataset and method used results in seven rows with zero cases, meaning configurations that do not lead to a high ESG score in the whole sample. These can be seen in the first seven rows of the truth table in Table 9. Out of these seven configurations, six have the absence of CSR focus and five have the absence of board control. On the contrary, six out of these configurations have structural diversity as a present condition. This already gives an idea that CSR focus and board control seem to be important, while structural diversity does not play as big of a role when interacting with the other conditions.

4.2 Configurations leading to high and low ESG scores

As recommended by Greckhamer et al. (2018), both the configurations for the presence and absence of the outcome are identified and presented in this section. Similarly, other configurational studies such as Schiehl et al., 2018 and Slager et al. (2023) present configurations both for high and low performance of the outcome. This way companies are displayed with both the strategies that they could implement to attain higher ESG scores, as well as strategies they possibly should consider avoiding.

Configurations leading to high ESG scores

Based on the data set used, two combinations of the explanatory conditions are found to be linked to high ESG scores in the industrial sector. These are presented in Table 10. The black dot means that the condition is present in the configuration, and a crossed dot signifies the absence of the condition in the configuration. If there is no dot, it means that the condition may be either present or absent, and thus does not play an important role in the configuration. A smaller dot means that the condition is peripheral, meaning it is contained in the intermediate solution but not in the parsimonious, and does thus not have as strong a relationship with the outcome as core conditions. A core condition, contained in both the intermediate and parsimonious solutions, is denoted with a big dot.

The solution consistency of 0,871 suggests that the two configurations are associated with a high ESG score in 87,1 percent of the cases. The solution coverage value of 0,516 indicates that 51,6 percent of the high ESG score is explained with these two configurations. These values are great: the solution consistency should be of at least 0,80 (Greckhamer et al., 2013; Pappas & Woodside, 2021), and while previous literature does not seem to offer a

common threshold value for solution coverage, Pappas & Woodside (2021) recommend it to be around 0,50, while Greckhamer et al. (2013) only mention that in a small-sample study it should be relatively high. When looking at previous fsQCA studies, the overall coverage value in results seems to be between 0,10 and 0,60, and around 0,30 on average (Gupta et al., 2020; Schiehl et al., 2018; Slager et al., 2023).

High ESG scores		
	Focused Engagement Strategy	Holistic Governance Strategy
Structural diversity	⊗	
Effective attendance	●	●
Board control		●
CSR focus	●	●
R&D intensity		●
Consistency	0,881	0,914
Raw coverage	0,464	0,300
Unique coverage	0,215	0,051
Solution consistency	0,871	
Solution coverage	0,516	

Table 10 – Configurations for high ESG score

In the configurations for high ESG scores, all conditions are core conditions, suggesting that they all have a strong influence on the outcome. This can also be seen in the high consistency values.

The results offer two strategies for higher ESG scores. The first strategy, labelled as the *focused engagement strategy*, is the more simplified and narrow configuration: only an effective meeting attendance and high CSR focus are required, while structural diversity in the boardroom should be low. The second strategy, named the *holistic governance strategy* is much more comprehensive, entailing the presence of not only effective attendance and CSR focus but also a decentralised power and high innovation.

While the *focused engagement strategy* links the absence of structural diversity to high ESG scores, the *holistic governance strategy* is indifferent to its presence or absence. This suggests that when companies have higher decentralised control and invest on R&D activities, boardroom diversity is not relevant. This leads to the assumption that in the industrial sector, structural diversity is not an important factor leading to higher ESG scores. On the other hand, CSR focus and bigger and more active boards hold high importance in the industrial sector, as these are present in both of the configurations.

Configurations for low ESG scores

Table 11 shows the four configurations that are consistently found to be associated with low ESG scores in the dataset. The results suggest that the absence of effective attendance and of CSR focus are the main factors leading to lower ESG commitment and performance. Furthermore, as the results visualise, the configurations leading to high ESG scores are not the opposite to those leading to low ESG scores. This proves the assumption of explanatory

asymmetry, meaning that the absence of the outcome is not necessarily explained by the absence of its causes.

Low ESG scores				
	C1	C2	C3	C4
Structural diversity	⊗		⊗	●
Effective attendance	⊗	⊗		⊗
Board control			●	⊗
CSR focus	⊗	⊗	⊗	
R&D intensity		●	⊗	●
Consistency	0,961	0,963	0,918	0,851
Raw coverage	0,284	0,324	0,186	0,258
Unique coverage	0,035	0,077	0,046	0,134
Solution consistency	0,916			
Solution coverage	0,580			

Table 11 – Configurations for low ESG score

Nonetheless, the most important factors again seem to be the CSR focus and effective attendance, both of which are present in the two configurations for high ESG scores, and absent in three of the four configurations for low ESG score. This follows substantial literature, summarised in Chapter 2, highlighting the positive influence that bigger boards with frequent and active

meetings, as well as CSR committees and voluntary CSR reporting, have on sustainability commitment and performance.

The configurations leading to low and high scores for the Environmental, Social and Governance pillars separately can be found in Appendix B. The results suggest that for the Environmental pillar, the most important attribute is the CSR focus, which is present in all four configurations for a high score and absent in the two configurations for a low score. The other attributes are more versatile, being both present and absent in the configurations for low and high Environmental scores. Similarly, the CSR focus is also present in all the configurations for a high Social score, while being absent for all the configurations for a low Social score. In addition, the Effective attendance attribute has a strong significance in the Social pillar. For the Governance score, CSR focus is not as important, while an effective attendance and decentralised board control have a stronger presence in the configurations leading to a high Governance score. This of course makes sense, as the number of independent members, CEO duality and board meeting attendance are significant factors in measuring commitment and performance for good corporate governance.

4.3 ESG specialisation

In addition to studying the configurations leading to a high ESG score, also the effect on ESG specialisation was reviewed. Table 12 below shows the combinations of conditions that are connected with the situation where the company is highly specialised in only one of the ESG pillars, keeping the focus on the other two pillars marginal.

The results suggest that the main attributes leading to high ESG specialisation are R&D intensity and absence of effective attendance and of CSR focus.

Especially CSR focus seems to hold important value: its absence leads to high specialisation in one of the ESG pillars, while its presence leads to more comprehensive commitment to sustainability. This suggests that a CSR committee monitors that the company commits to all ESG dimensions. Structural diversity and board control do not have a clear role in the ESG Specialisation analysis.

	High ESG specialisation		Low ESG Specialisation	
	C1	C2	C1	C2
Structural diversity	⊗		●	⊗
Effective attendance	⊗	⊗	⊗	●
Board control		●	●	⊗
CSR focus	⊗	⊗	●	●
R&D intensity	●	●	●	⊗
Consistency	0,871	0,901	0,842	0,873
Raw coverage	0,211	0,238	0,221	0,236
Unique coverage	0,059	0,085	0,127	0,142
Solution consistency	0,894		0,859	
Solution coverage	0,296		0,377	

Table 12 – Configurations for high and low ESG specialisation.

4.4 Subsample analysis: firm size

Splitting the data in smaller categories and analysing the subsamples is an approach done in other configurational studies, such as by Gupta et al. (2020), and is recommended by the contingency theory, which emphasises that corporate characteristics act differently based on their business environment. The configurational results for different subsamples reveal whether different contexts call for different strategies, and if so, what kind of strategies companies should take depending on their business environment (Gupta et al., 2020).

To see whether the results would be different for firms of different size, the original data is split in two based on firm size, measured by total current assets. The cut-off used is the median value of total current assets in the whole sample, valued at 993,6 million. This results in two subsamples: (a) small firms and (b) large firms, both data sets of 35 companies. The small firms subsample has an average ESG score of 44,58 and the large firms subsample has an average ESG score of 61,32. This suggests that larger firms are more likely to develop better ESG commitment and performance, or at least they have the resources and motivation to publish better reporting on their ESG matters.

In the subsample analysis, the same five explanatory conditions are used as in the analysis of the whole sample. Equally, the same thresholds for consistency of 0,8 and PRI of 0,7 are kept, as well as the frequency threshold of 1. Next, the findings for the configurations leading to high and low ESG scores in the small firms subsample and large firms subsample are presented.

Small firms subsample

Table 13 shows the three configurations that are linked to a high ESG score in the subsample of small firms. What all three of the configurations have in common is the presence of CSR focus. In addition, Board control and Effective attendance are present in two of the three configurations, making these also relatively significant conditions in the small firms subsample. On the contrary, Structural diversity and R&D intensity are absent in two of the three configurations. This follows the same logic as could be seen in the analysis for the whole sample, where CSR focus and Effective attendance are the most prevalent variables leading to high ESG scores. It can also be noted that as the sample size is cut by half, the value of solution coverage also increases in the results.

Small firms, High ESG scores			
	C1	C2	C3
Structural diversity	⊗	●	⊗
Effective attendance	●	●	⊗
Board control		●	●
CSR focus	●	●	●
R&D intensity	●	⊗	⊗
Consistency	0,941	0,871	0,916
Raw coverage	0,256	0,317	0,183
Unique coverage	0,100	0,150	0,038
Solution consistency	0,839		
Solution coverage	0,585		

Table 13 – Configurations for high ESG score, small firms

Table 14 shows the results for low ESG scores in the small firms subsample. While CSR focus is present in all three configurations that result in high ESG scores, it is absent in all for low ESG scores. This further reassures the importance of CSR focus for small firms to achieve better ESG scores. The configuration C2 is similar to the configuration C2 in the main analysis for low ESG scores, together with the absence of Effective attendance and CSR focus and presence of R&D intensity.

Small firms, Low ESG scores			
	C1	C2	C3
Structural diversity	⊗		⊗
Effective attendance		⊗	●
Board control	⊗		
CSR focus	⊗	⊗	⊗
R&D intensity		●	⊗
Consistency	0,945	0,982	0,899
Raw coverage	0,982	0,408	0,229
Unique coverage	0,899	0,186	0,046
Solution consistency	0,932		
Solution coverage	0,635		

Table 14 – Configurations for low ESG score, small firms

The findings emphasise that CSR focus is the most important factor for small firms to reach for higher ESG scores. Smaller firms have fewer resources, and

the findings suggest that smaller companies should channel these limited resources in establishing committees responsible for CSR improvement and preparing additional reports on their CSR commitment and implementation. In addition, board control seems to have a relevant and uniform role for smaller firms in the industrial sector, as it is present in the configurations for high ESG scores and absent in one configuration for low ESG scores, unlike in the whole sample analysis and large firms subsample analysis. This suggests that especially for smaller firms, decentralisation of control plays an important role.

Large firms subsample

Only one configuration is found to be consistently linked to high ESG scores in the large firms subsample. This configuration is shown in Table 15, which shows that the most important conditions for better ESG scores for larger firms are Effective attendance and Board control, joined with the absence of Structural diversity. CSR focus is only a peripheral condition, meaning it does not hold as strong a value as the other conditions presented in the configuration. The solution coverage of this configuration has a relatively low value of 0,399, which means that this configuration accounts for about two fifths of the cases of high ESG scores. This suggests that there may be various paths leading to a high ESG score in the large firms subsample, but this is the only one that is consistently linked to a high score, with consistency and PRI thresholds set at 0,8 and 0,7, respectively.

The configuration is quite similar to the configuration for the *focused engagement strategy* in the main analysis for high ESG scores, which consists of the absence of Structural diversity and presence of Effective attendance and CSR focus. In the large firms subsample, Board control is also present,

suggesting that a decentralised control and independent members are especially relevant in larger companies in order to achieve ESG targets.

Large firms, High ESG Scores	
Configuration 1	
Structural diversity	⊗
Effective attendance	●
Board control	●
CSR focus	●
R&D intensity	
Consistency	0,862
Raw coverage	0,399
Unique coverage	-
Solution consistency	0,862
Solution coverage	0,399

Table 15 – Configuration for high ESG score, large firms

Although in the large firms subsample only one configuration is linked with high ESG scores, a total of five configurations are identified to consistently result in low ESG scores: these findings are shown in Table 16. The configurations suggest that the main conditions leading to a low ESG score are the absence of Effective attendance (four out of five configurations) and of CSR focus (three out of five configurations), and the presence of Structural diversity (three out of five configurations). Board control and R&D intensity are both present in two of these configurations and absent in two, which suggests that they act differently in different contexts.

The configurations for low ESG scores in the large firms subsample are quite similar to those in the main analysis. The main resemblance is the absence of the conditions Effective attendance and CSR focus in most configurations. The configuration C1 is comparable to configuration C4 in the main analysis for low ESG scores, as they both have Effective attendance and Board control absent and R&D intensity present. In addition to these, configuration C4 in the main analysis includes the presence of Structural diversity. Furthermore, C2 is similar to C1 in the main analysis for low ESG scores, where Structural diversity, Effective attendance and CSR focus are absent, adding to these the absence of Board control.

Large firms, Low ESG scores					
	C1	C2	C3	C4	C4
Structural diversity		⊗	●	●	●
Effective attendance	⊗	⊗	⊗	⊗	●
Board control	⊗	⊗		●	●
CSR focus		⊗	⊗	●	⊗
R&D intensity	●		●	⊗	⊗
Consistency	0,938	0,980	0,983	0,916	0,912
Raw coverage	0,437	0,153	0,176	0,228	0,162
Unique coverage	0,230	0,003	0,049	0,070	0,039
Solution consistency	0,909				
Solution coverage	0,640				

Table 16 – Configuration for low ESG score, large firms

The results on the large firms subsample imply that although CSR focus still has a significant role, being present in the configuration for high ESG scores and absent in three of the configurations for low ESG scores, having larger boards with effective meetings seems to be most important. Effective attendance is present in the only configuration for high ESG scores and absent in four of the configurations for low ESG scores. Furthermore, boardroom diversity seems to have even a negative effect on ESG scores on the context of larger firms, as it is absent in the configuration for higher scores and present in three configurations for lower scores. These results suggest that for larger firms, it is most important that the board works effectively and efficiently in allocating its resources in better CSR implementation. As noted in the literature review in Chapter 2, structural diversity may bring more ideas, perspectives and knowledge, but it may also bring complexity and reduce efficiency.

4.5 Robustness analysis

To evaluate the robustness of the findings, alterations are made in the consistency thresholds to see whether the results change (Greckhamer et al., 2018; Schiehl et al., 2018). If the changes made do not have a significant effect on the configurations and the values for consistency and coverage, the study and results are robust. For the robustness check for the whole sample, the thresholds for consistency and PRI are increased and lowered by 0,05 and 0,03 percentage points.

Robustness check: main analysis

The results of the robustness check for the whole sample are summarized in Table 17. For the high ESG scores configurations, lowering the thresholds by 0,05 percentage points results in a small change in Configuration 2, as the Board control condition is removed from the configuration. Otherwise, the

results stay the same when altering the consistency and PRI thresholds. The configurations for high ESG score can therefore be deemed as robust.

Changes made to the analysis					
	Original values	Lower threshold	Lower threshold	Higher threshold	Higher threshold
High ESG scores					
PRI/ consistency threshold	0,7 / 0,8	0,65 / 0,75	0,67 / 0,77	0,73 / 0,83	0,75 / 0,85
Number of configurations	2	2	2	2	2
Solution consistency	0,871	0,859	0,871	0,871	0,871
Solution coverage	0,516	0,538	0,516	0,516	0,516
Differences in configurations		C2: Board control removed	None	None	None
Low ESG scores					
PRI/ consistency threshold	0,7 / 0,8	0,65 / 0,75	0,67 / 0,77	0,73 / 0,83	0,75 / 0,85
Number of configurations	4	4	4	2	2
Solution consistency	0,916	0,905	0,916	0,966	0,968
Solution coverage	0,580	0,642	0,580	0,400	0,379
Differences in configurations		C1: CSR focus deleted, absence of board control and R&D added.	None	C2 and C3 eliminated.	C2 and C4 eliminated. C3: R&D expenses changed from absent to present.

Table 17 – Summary of robustness analysis for ESG score, whole sample

For the low ESG scores, more changes can be noticed in the configurations and values for overall consistency and coverage when the consistency and

PRI thresholds are altered. When raising the thresholds, the whole configuration C2 is eliminated in both cases, while configuration C3 is eliminated when thresholds are raised by 0,03 percentage points and C4 when they are raised by 0,05 percentage points. We can also see that R&D expenses becomes absent in one of the configurations when the thresholds are lowered by 0,05 percentage points and becomes present when they are increased by 0,05 percentage points. Therefore, and as configurations C2, C3 and C4 all have R&D intensity either present or absent, the robustness check seems to insinuate that R&D intensity is the most fluctuating and sensitive condition. Still, the changes in the results are not too drastic, and the findings for a low ESG score can also be deemed as robust.

Robustness check: Small firms subsample

In the robustness check for the subsamples of small and large firms, summarised in Tables 18 and 19, the changes made in consistency and PRI thresholds are smaller (minus and plus 0,02 and 0,04 percentage points), as the subsamples consist of only 35 company observations. The results show that even the small changes of 0,4 and 0,2 have some effect on the results.

The findings for small firms seem rather robust. For a high ESG score, the only change is seen when the thresholds are lowered by 0,04 percentage points: presence of Effective attendance is removed from the configuration C2, and absence of Structural diversity is removed from the configuration C3. Otherwise, the configurations and values for solutions consistency and coverage remain the same. Quite similarly, for low ESG score in small firms the results are quite robust. Lowering the thresholds results in no change in the configurations nor the values for solution consistency and coverage. Increasing the thresholds by 0,02 and 0,04 percentage points eliminates the configuration C3, which consists of the absence of structural diversity, CSR focus and R&D intensity and the presence of effective attendance.

Changes made to the analysis					
	Original values	Lower threshold	Lower threshold	Higher threshold	Higher threshold
High ESG scores, small firms					
PRI/ consistency threshold	0,7 / 0,8	0,66/ 0,76	0,68 / 0,78	0,72 / 0,82	0,74 / 0,84
Number of configurations	3	3	3	3	3
Solution consistency	0,839	0,830	0,839	0,839	0,839
Solution coverage	0,585	0,565	0,585	0,585	0,585
Differences in configurations		C2: Effective attendance removed. C3: Absence of Structural diversity removed.	None	None	None
Low ESG scores, small firms					
PRI/ consistency threshold	0,7 / 0,8	0,66 / 0,76	0,68 / 0,78	0,72 / 0,82	0,74 / 0,84
Number of configurations	3	3	3	2	2
Solution consistency	0,932	0,932	0,932	0,934	0,934
Solution coverage	0,635	0,635	0,635	0,598	0,598
Differences in configurations		None	None	C3 eliminated	C3 eliminated

Table 18 – Summary of robustness analysis for ESG score, small firms subsample

Robustness check: Large firms subsample

The subsample of large firms encounters some changes when altering the thresholds for high ESG scores. These can be seen in Table 19. A new configuration C2 is created when the thresholds for consistency and PRI values are lowered, where the conditions Effective attendance, Board control, CSR focus and R&D intensity are present. This is similar to the configuration C1, where Effective attendance, Board control and CSR focus are also present, with the difference that the absence of Structural diversity is not in the configuration and presence of R&D intensity is added. Furthermore, in both C1 and C2 CSR focus is a peripheral condition, while others are case conditions. This suggests that especially Effective attendance and Board control are relevant in the Large firms subsample when studying high ESG score. When the thresholds are increased, there are no changes in the configurations, but a small change occurs in the solution consistency and coverage values when the increase is of 0,04 percentage points.

The findings for a low ESG score in the large firms subsample, are fully consistent, as the alterations made in PRI and consistency thresholds have no effect on the configurations nor the solution consistency and coverage values.

Changes made to the analysis					
	Original values	Lower threshold	Lower threshold	Higher threshold	Higher threshold
High ESG scores, large firms					
PRI/ consistency threshold	0,7 / 0,8	0,66 / 0,76	0,68 / 0,78	0,72 / 0,82	0,74 / 0,84
Number of configurations	1	2	2	1	1
Solution consistency	0,862	0,858	0,858	0,862	0,891
Solution coverage	0,399	0,486	0,486	0,399	0,254
Differences in configurations		New configuration C2: presence of Effective attendance (core), Board control (core), CSR focus (peripheral) and R&D (core)	New configuration C2: presence of Effective attendance (core), Board control (core), CSR focus (peripheral) and R&D (core)	None	None
Low ESG scores, large firms					
PRI/ consistency threshold	0,7 / 0,8	0,66 / 0,76	0,68 / 0,78	0,72 / 0,82	0,74 / 0,84
Number of configurations	5	5	5	5	5
Solution consistency	0,909	0,909	0,909	0,909	0,909
Solution coverage	0,640	0,640	0,640	0,640	0,640
Differences in configurations		None	None	None	None

Table 19 – Summary of robustness analysis for ESG score, large firms subsample

5 Discussion

This chapter extends the analysis of the results and mirrors the results with previous literature and the theoretical framework, which are described in Chapter 2. The objective is to reflect on the implications and lessons learned from the study, and the different strategies it proposes to corporations aiming to improve their sustainability practices, offering an answer to the three research questions. Furthermore, the results are paralleled with previous literature, with which both similarities and differences can be observed.

As described in Chapter 3, one of the main concepts in an fsQCA study is equifinality, which notes that there are several configurations leading to the same outcome. This thesis offers different strategies, of which companies can choose which best fits their current context and resources. As Greckhamer et al. (2018) note, the results of an fsQCA study are analysed by looking at the joint effect that the different explanatory conditions have on the outcome. This follows the complementarity theory, which implies that governance and strategic characteristics complement each other and act differently in different bundles.

5.1 Research question 1

The first research question, introduced in Chapter 1, asks the following:

Q1. What different configurations of corporate governance and strategic attributes lead to high ESG scores in the industrial sector?

The main analysis offers two configurations leading to high ESG scores, and four leading to low ESG scores. The two configurations linked with higher scores, named *focused engagement strategy* and *holistic governance*

strategy, highlight the importance of effective attendance and CSR focus, both of which are present in the two configurations. The findings for lower ESG scores introduce the absence of effective attendance and of CSR focus in three of the four configurations. This is consistent with the configurations for high ESG scores, confirming that the most important attributes identified in this study are a bigger board size, active board meeting attendance and the presence of CSR committees and CSR reporting. The presence of these attributes leads to improved ESG scores, while their absence leads to inferior ESG scores.

As the literature presented in Chapter 2 suggests, larger boards with active meeting participation introduce an improved distribution of experience and social capital (Beji et al., 2021). Effective meetings are a place for board members to share their knowledge and ideas and for enhanced discussions on strategic priorities, such as sustainability (Nguyen et al., 2021). Similarly, voluntary CSR practices such as establishing a CSR committee to support the work of the board or publishing additional CSR reporting are emphasised as they hold both an advisory and a monitoring role when it comes to ESG practices. A CSR committee has been linked with better CSR decision-making and performance (Burke et al., 2019; Dixon-Fowler et al., 2017), while publishing CSR reports facilitates for better discussions on sustainability with stakeholders and keeps companies more accountable (Caritte et al., 2015).

It must be noted that the fact that a company occupies a CSR committee and voluntarily reports about its CSR commitment and performance is included in the calculation for the ESG score. The Governance pillar contains CSR strategy and management, which include committees as well as reporting and transparency on ESG matters (LSEG, 2023). Thus, it could be that just the existence of a CSR committee and reporting has a positive impact on the ESG score, without evidence of actually improved sustainability performance. However, when observing the configurations for the separate environmental, social and governance scores presented in Appendix B, it can be

observed that CSR focus is present in all configurations for high environmental scores and for high social scores. This suggests that a high CSR focus does have a real positive influence on ESG commitment and performance in the industrial sector.

Hence, the study conducted suggests that in the industrial sector in North America, the combination of large boards that have a high participation percentage in their meetings and additional sustainability commitment in the form of CSR committees and voluntary CSR reporting is the most crucial for improved ESG scores. Nevertheless, the other explanatory conditions also appear in the different configurations and are worth observing. Board control and R&D intensity are present in the second configuration for high ESG scores, while structural diversity is absent in the first one. In the four configurations for low ESG scores, structural diversity is absent in two of them and present in one. It seems that especially a lack of CSR focus together with low structural diversity leads to low ESG scores, as can be seen in configurations C1 and C3. The impact of board control is not clear from the main analysis results: it is present in one of the configurations for high ESG scores and present in one and absent in of the configurations for low ESG scores. Board control seems to work well together with R&D intensity: the configuration for high ESG scores has both present, and in configurations C3 and C4 for low ESG scores one of them is present and one is absent. This suggests that when company invests significantly in innovation, it is important for the company's control to be decentralised, so that the non-independent board member of a powerful CEO do not make the decision to spend the R&D expenses on less-sustainable ideas and innovations, that may bring quicker short-term profits.

Although the amount of previous literature linking gender and ethnic diversity in the board of directors with better ESG commitment and performance is considerable (e.g., Beji et al., 2021; Ben-Amar et al., 2017; Do & Herbohn, 2024), in the context of this thesis boardroom diversity seems to have either no effect or even an undesirable one on ESG scores. Similar results are

discovered by Nadeem (2021), who finds an insignificant negative correlation between the representation of women in the board and companies' supplemental environmental commitment. He contemplates that although women may in general care about environmental sustainability more than men, this may not reflect to those working in director profiles. Furthermore, he suggests that perhaps those minorities that are motivated to positively impact the environment in their work would not reach for director positions in unsustainable fields – which could translate into the heavily polluting industrial sector. Especially in the context of large firms, the negative effect of structural diversity looks straightforward: it is absent in the one configuration for high ESG scores and present in three configurations for low scores.

On the other hand, a certain number of minority representatives may be needed for them to have an influence, following the critical mass theory, which suggests that minority representatives, such as women, struggle to have an impact on decision-making and strategic outcomes unless their number exceeds a certain threshold (Kanter, 1977). This suggests that having only one or two “token” women is not enough to have a real impact. Also Post et al. (2011) and Velte (2024) imply that a certain number of minority representatives is crucial for the outcome to be impacted. Perhaps the results would be different if gender and ethnic diversity had a certain threshold, for instance a critical mass of three minority representatives (Post et al., 2011; Velte, 2024). Furthermore, gender and ethnic minorities could be striving for more long-term CSR, and thus the effect that minorities have on sustainability commitment and performance may also take longer to manifest. Perhaps lagging the variables by more than one year would bring different results.

Appendix B shows the configurations leading to high and low scores for the separated Environmental, Social and Governance pillars. Again, CSR focus holds great importance, being present in all configurations for high environmental and social scores and absent in all configurations for low environmental and social scores. For low governance scores, CSR focus is absent in one

and present in one and does not appear in one of the configurations. This supports the aforementioned argument that CSR focus does have a real positive influence on sustainability commitment and action and does not just improve the ESG score because the presence of CSR committees and reporting are included in the calculation for the Governance score. Furthermore, effective attendance seems to be the other most important explanatory condition for the separated scores, being present in most configurations for high E, S and G scores and absent in the low score configurations. Companies with little structural diversity striving for higher environmental scores should improve either the effectiveness of their board meetings (configuration C1 for high environmental scores) or work on decentralising the board's power (configuration C2 for high environmental scores). The configuration C1 for low environmental scores shows that low structural diversity mixed with low effective attendance and highly controlled board leads to decreased environmental scores. For higher social scores, companies with little structural diversity should especially focus on improving the effective attendance. Board control and R&D intensity hold lower importance, both being peripheral conditions in one of the three configurations for high social scores. Although board control is an important factor when computing the score for the governance pillar, it can be seen in configurations C1 for high and C2 for low governance scores that it does not alone improve the governance score. Decentralised board control should be matched with also CSR focus and effective attendance to improve the governance scores.

5.2 Research questions 2 and 3

The findings of the subsample analysis aim to answer research questions 2 and 3:

Q2. What different configurations of corporate governance and strategic attributes lead to high ESG scores among small firms in the industrial sector?

Q3. What different configurations of corporate governance and strategic attributes lead to high ESG scores among large firms in the industrial sector?

When the data is split in two based on firm size, the findings for high and low ESG scores are different depending on firm size. The results suggest that companies might like to take on different strategies depending on the context they are in. This follows the idea of contingency theory, which implies that corporate governance characteristics perform differently depending on the business context they are in. The results in Table 13 and Table 14 show the bundles of governance and strategic characteristics that smaller firms can implement to achieve high or low ESG scores. The findings insinuate that for smaller firms it is most important to focus on CSR related activities, such as disclosing voluntary CSR reporting and forming sustainability committees. An effective attendance of board meetings is also positively linked to high ESG scores for small firms, but its importance is not as clear and straightforward as that of CSR focus. One reason for this might be that smaller firms are more flexible and the useful knowledge and experience travels through board members naturally off-the-record, outside the board meetings.

Similarly, Tables 15 and 16 show the configurations leading to high and low ESG scores in the large firms subsample. The results suggest that larger companies should put emphasis on having effective and active board meetings and a more decentralised control. Especially the condition Effective attendance holds major importance in the large firms subsample, which supports the idea that larger firms require larger boards that attend well-structured and organised meetings where the board members can share their knowledge and ideas. While CSR focus also important for large firms, it is only a

peripheral condition in the configuration for high ESG scores and its role differs in the configurations for low ESG scores, being even present in one of them. This suggests that while CSR focus is important, it does not have such a significant role in the context of large firms as it does in the small firms subsample. Structural diversity seems to have a negative impact on ESG scores in the context of large firms. This may be explained by the previously mentioned presumptions that those minority representatives that care about improving sustainability practices are not working in these large industrial sector corporations.

The results from the subsample analysis suggest that as smaller firms have less resources, it seems that for them it is important to focus these resources on improved CSR commitment. On the other hand, large firms benefit from larger boards with more knowledge, experience and useful connections, who meet in an effective and active manner.

5.3 Policy implications

Having answered the three research questions, this thesis suggests that corporations aiming to improve their ESG commitment and performance should in particular invest on improving their sustainability focus by establishing a CSR committee and publishing CSR reporting, and form larger boards that have effective meetings with active meeting participation. Less important, but still having mostly a positive impact on ESG scores, are having decentralised board control and investing on research and development. On the other hand, the results of this thesis insinuate that a higher structural diversity does not seem to hold importance when it comes to improving sustainability commitment and performance.

These findings offer several suggestions for company boards and regulators. First, a clear message is that corporations should use their resources in improving their CSR focus. Establishing CSR committees to support and monitor the work of the directors offers companies useful advice, knowledge and connections that strengthen the sustainability commitment and performance. Similarly, publishing CSR reporting allows for a better dialogue with stakeholders on sustainability matters and can also work as a motivator to improve sustainability performance and to achieve higher ESG scores. Therefore, this thesis suggests that although taking on additional voluntary sustainability engagements may be costly at first, the benefits they bring are worth it for a corporation that aims to improve their sustainability performance.

Second, the findings suggest that it is important for corporations to form boards big enough to allow for a broader and deeper pool of knowledge and perspectives. The board should also have active meetings, as board meetings are the official place where the ideas and knowledge can be shared and where the decisions, also regarding sustainability strategy, are made. Hence, companies should encourage the board members to actively participate in the board meetings and engage with the company's strategic goals.

Especially in the context of smaller companies, CSR focus is strongly emphasised. As smaller firms have limited resources, it is recommended that they invest in improving their directly sustainability-related actions, such as committees and reporting. The results of this thesis hint that for smaller firms, effective and active board meetings do not have such a significant influence on sustainability, suggesting that perhaps the knowledge and ideas flow through more unofficial channels in smaller companies.

The findings suggest that larger companies, on the other hand, should most importantly on effective board meetings and on keeping the control of the board decentralised. This implies that a larger company should strive for

effective board meetings where the knowledge, expertise and ideas are shared. Of course, focus on CSR activities is also important for large companies.

These recommendations given are based on the results achieved with the sample used and fsQCA approach executed. The policy implications aim to give some ideas for corporations in a similar business environment as the sample used (described in detail in Chapter 3) that are striving to increase their sustainability commitment and performance. Nevertheless, it is important to note that the results of this thesis may have some flaws, which are discussed more in detail in Chapter 6. Still, the recommendations given are an adequate addition to be considered when refining a company's strategy and governance to better suit to the CSR targets.

6 Conclusion

The relationship between different strategic and governance attributes and sustainability performance has been widely studied in past years, but configurational studies on the issue are still quite rare. This thesis conducts a configurational analysis on the different bundles of corporate governance and strategic attributes that lead to high ESG scores. The study is conducted on a sample of 70 North American industrial companies. The key contribution of this study is that it offers different approaches that companies can use to improve their ESG commitment and performance through governance and strategic decisions and priorities. Based on the upper echelons theory, this thesis assumes that the characteristics of the board of directors are linked to the strategic outcome, in this case the ESG scores.

The main analysis offers two strategies that lead to higher ESG scores. The *focused engagement strategy* emphasises the presence of effective board meeting attendance and CSR focus for businesses that have a low structural diversity in the boardroom. The *holistic governance strategy* is indifferent to the structural diversity, but highlights the importance of effective attendance, a decentralised control in the board, CSR focus and R&D intensity. The importance of effective attendance and CSR focus is reinforced by the findings for lower ESG scores, as they are both absent in three of the four configurations for low ESG scores.

In addition to the main study, a subsample analysis was conducted by splitting the data in two by firm size. The findings provided by the subsample analysis suggest that for smaller firms, focusing the resources on establishing a CSR committee and producing voluntary CSR reporting is most important to improve ESG scores. Also a decentralised control of the board holds importance for small firms. On the other hand, large firms should focus on having building big enough boards that have efficient and active meetings where the board members can share their knowledge, ideas and experience to improve their sustainability commitment and performance.

While this study contributes to configurational research in the impact that governance and strategic decisions have on sustainability, it is not without limitations. Although the fsQCA methodology allows for small sample sizes, a study conducted with a broader sample, with more observations from different sectors and areas, could yield different results. In addition, there are more explanatory conditions that would be interesting to include in a similar study: CSR focus could include for instance the presence of CSR assurance, CSR compensation or a Chief Sustainable Officer as variables. Moreover, a variable measuring knowledge diversity, such as diversity in professional experience and education between board members, would be a noteworthy addition, as these can also be linked with sustainability performance.

As mentioned in the discussion, the reason why the condition structural diversity variable does not seem to have a relevant role in the results is that it may be reasonable to settle a certain critical threshold for women and ethnic minorities in the board. An example could be a Boolean variable that assigns the value of 0 if the share of women or ethnic minorities is less than 3 and the value of 1 if their share is 3 or higher.

One must also be critical of the ESG score used as the outcome variable, as it is a score calculated by LSEG on the basis of information that companies have themselves reported on their environmental, social and governance commitment and performance. As noted by Drempetic et al. (2020), the reporting quantity might overrule quality when the ESG score is calculated, and the actual sustainability commitment and performance is not as important as the mere fact that companies have reported something. Furthermore, the ESG score retrieved from Refinitiv Eikon is an external perspective on companies' commitment and performance on sustainability issues and does not necessarily mirror how the company is in fact operating. Therefore, it would be interesting to see a similar study performed with more internal and possibly accurate data on ESG commitment and performance.

To conclude, this thesis offers companies strategies that they can follow, depending on the business context they are in and the resources they have, to achieve higher ESG scores. The configurational approach offers several different paths leading to the same outcome and shows how the variables perform in different ways depending on how they are bundled together. To continue on the same path analysing the impact that governance and strategic attributes have on sustainability, future research could broaden the sample to other areas and sectors than the North American industrial sector and include variables such as CSR assurance and compensation and knowledge diversity and take into account the critical mass theory when measuring structural diversity.

In addition to the recommendations that this thesis offers, this thesis hopes to generally inspire corporations to aim for enhancing their sustainability commitment and performance. As described in the introduction, corporations hold substantial responsibility when it comes to the effects that their operations have on the environment and society. It is important for company board members and regulators to remember that using additional resources now on improving sustainability performance means better reputation in the future. And most importantly: profits mean nothing on a dead planet.

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Appendix A – Supplementary theoretical framework

The *upper echelons theory*, first introduced by Hambrick & Mason (1984), argues that the characteristics, experiences and values of members of the board of directors influence the organisational outcomes of the company. This implies that corporate governance characteristics partly explain the company's strategic decisions and performance (Ferrero-Ferrero et al., 2015). Based on the upper echelons theory, this thesis makes the assumption that leadership traits, such as structural diversity, the size of the board, number of independent board members or CEO duality, can impact ESG strategy and thus the ESG score. Several similar studies assessing the relationship between corporate governance attributes and ESG commitment and performance use the upper echelons theory as the framework for their research (Dodd et al., 2022; Ferrero-Ferrero et al., 2015; Harjoto et al., 2019; Post et al., 2015).

Similarly, the *resource dependence theory* emphasises the board characteristics and their link to strategic decision-making. Introduced first by Pfeffer & Salancik (1978), the resource dependence theory proposes that board members hold a set of resources that the company can use to achieve their strategic goals. These resources indicate for instance experience, skills sets, knowledge and relationships with stakeholders, that are useful for the company, and a more diverse board with more members is likely to have a more diverse set of resources (Post et al., 2015). According to Hillman et al. (2009) and Dodd et al. (2022), the resource dependence theory is a successful tool for understanding boards of directors and the authority they hold to impact the strategies of firms. Moreover, building on the theory, Dixon-Fowler et al. (2017) suggest that a CSR committee may provide the board with additional expertise, connections and resources to help the company successfully carry out sustainability projects and strategies, as well as provide better insight on the importance of CSR. Similarly, Post et al. (2015) use resource dependence

theory to study the influence that boards have on CSR practices and performance, finding that gender diversity and a higher proportion of independent directors positively influence companies' environmental performance.

The *contingency theory* argues that corporate governance characteristics act differently depending on the context and the business environment (Ghofar & Islam, 2015). Building on the contingency theory, Carter et al. (2010) find that the influence that gender and ethnic diversity has on companies' performance depends on the circumstances the companies are in and on the time period. Hence, the contingency theory suggests that the board characteristics interact differently with each other, and their usefulness depends on the business environment. This supports this thesis' use of the configurational method, which analyses how the different conditions act together. In addition, this thesis also conducts a subsample analysis by splitting the data on small and large firms, to see whether the findings are different for companies in different contexts.

Appendix B – Configurations for high and low Environmental, Social and Governance scores

	High Environmental Score				Low Environmental Score	
	C1	C2	C3	C4	C1	C2
Structural diversity	⊗	⊗		●	⊗	
Effective attendance	●		●	⊗	⊗	⊗
Board control		●		⊗	⊗	●
CSR focus	●	●	●	●	⊗	⊗
R&D intensity			●	⊗		●
Consistency	0,856	0,857	0,907	0,924	0,930	0,926
Raw coverage	0,432	0,411	0,383	0,206	0,203	0,242
Unique coverage	0,045	0,076	0,071	0,043	0,110	0,150
Solution consistency	0,848				0,940	
Solution coverage	0,649				0,353	

Table B1 – Configurations for high and low Environmental score

	High Social Score			Low Social Score		
	C1	C2	C3	C1	C2	C3
Structural diversity	⊗			⊗		⊗
Effective attendance	●	●	●	⊗	⊗	
Board control		●				●
CSR focus	●	●	●	⊗	⊗	⊗
R&D intensity			●		●	⊗
Consistency	0,884	0,849	0,915	0,972	0,959	0,941
Raw coverage	0,451	0,524	0,391	0,296	0,333	0,197
Unique coverage	0,056	0,140	0,025	0,036	0,104	0,049
Solution consistency	0,836				0,962	
Solution coverage	0,696				0,461	

Table B2 – Configurations for high and low Social score

	High Governance Score	Low Governance Score		
	C1	C1	C2	C3
Structural diversity	⊗	⊗	⊗	●
Effective attendance	●	⊗	⊗	
Board control	●	⊗	●	⊗
CSR focus	●		⊗	●
R&D intensity	⊗	⊗		●
Consistency	0,879	0,932	0,925	0,896
Raw coverage	0,287	0,302	0,200	0,301
Unique coverage	-	0,124	0,086	0,156
Solution consistency	0,879		0,893	
Solution coverage	0,287		0,549	

Table B3 – Configurations for high and low Governance score