ASSOCIAÇÃO DE POLITÉCNICOS DO NORTE (APNOR)

INSTITUTO POLITÉCNICO DE BRAGANÇA

The impact of corporate governance on company financial performance

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Final Dissertation submitted to *Instituto Politécnico de Bragança*

To obtain the Master Degree in Management, Specialisation in Business Management

Supervisor:

Nuno Moutinho

***Bragança*, October, 2024.**

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Abstract

This study aims to investigate the relationship between corporate governance practices and ESG practices on financial performance in leading technology companies. Utilizing a mixed-methods approach, the research combines quantitative analysis of financial metrics, such as Tobin's Q and Return on Assets (ROA), with qualitative assessments of governance structures and ESG (Environmental, Social, and Governance) practices. The sample was comprised of top tech firms, filtered to exclude financial and fintech companies that lacked sufficient data. The multiple regression model allows us to find that the adoption of ESG and governance practices are important for a higher performance. Thus, we show that ESG performance and board size negatively affect the performance and that the woman on board positively influence financial performance. The study provides valuable insights for corporate stakeholders on the relevance of governance practices in enhancing company value and sustainability. The results suggest that companies aiming for sustainable growth should prioritize independent directors and diverse board representation while integrating ESG practices into their operational strategies. These findings contribute to the ongoing discourse on the role of governance in corporate performance and offer actionable recommendations for stakeholders in the technology industry.

Keywords: Corporate governance, ESG, financial performance, technology industry.

Resumo

Este estudo tem como objetivo investigar a relação entre práticas de governança corporativas e práticas ESG no desempenho financeiro em empresas líderes em tecnologia. Utilizando uma abordagem de métodos mistos, esta pesquisa combina análise quantitativa de métricas financeiras, como: Q de Tobin e Retorno sobre Ativos (ROA) com avaliações qualitativas de estruturas de governança e práticas ESG (Ambientais, Sociais e de Governança). A amostra compreendeu as principais empresas de tecnologia realizando filtragem para excluir empresas financeiras e fintech sem dados suficientes. Um modelo linear corrigido por heterocedasticidade foi aplicado para analisar as relações. As descobertas indicam que diretores independentes, diversidade de gênero, adoção de práticas ESG de governança e o tamanho do conselho têm graus variados de influência no desempenho financeiro. O estudo fornece insights valiosos para as partes interessadas corporativas sobre a relevância das práticas de governança na melhoria do valor e da sustentabilidade da empresa. Os resultados sugerem que as empresas que buscam crescimento sustentável devem priorizar diretores independentes e representação diversificada em seus conselhos, ao mesmo tempo em que integram práticas ESG em suas estratégias operacionais. Essas descobertas contribuem para o discurso em andamento sobre o papel da governança no desempenho corporativo e oferecem recomendações acionáveis para stakeholders na indústria de tecnologia.

Palavras-chave: Governança corporativa, ESG, desempenho financeiro, indústria de tecnologia.

Dedication

This thesis is dedicated to my beloved family.

To *my father*, whose sacrifices have provided me with the opportunities to pursue my dreams. Your resilience, hard work, and unwavering support have been my greatest motivation, and I am endlessly grateful for all you've given up for my success. This achievement is as much yours as it is mine.

To *my mother*, whose love and support have been the cornerstone of my journey. Your constant belief in me has inspired me to overcome challenges and strive for excellence. Thank you for your patience, understanding, and endless encouragement during the toughest moments.

To *my siblings*, who have stood by me with friendship and understanding, making every step of this journey more meaningful.

Thank you for being my pillars of strength and for believing in me every step of the way.

Acknowledgements

The completion of this thesis would not have been possible without the support and encouragement of numerous individuals who contributed their time, insights, and assistance along the way. I would like to express my sincere gratitude to everyone who has played a role in helping me achieve this goal, including:

My supervisor, Professor Nuno Moutinho, for his guidance and support throughout this journey. His feedback and advice were essential in helping me complete this thesis, and I appreciate the time and effort he dedicated to helping me reach this milestone.

My extended family, to whom I wish to express my deepest gratitude for their love and support throughout my academic journey. Your encouragement, understanding, and patience have been invaluable to me. Thank you for believing in me and for being a constant source of inspiration and strength. I am truly fortunate to have such a supportive family by my side.

My friends in Tunisia, for their steadfast support and encouragement. Your friendship has been a source of joy and motivation during my studies. Thank you for the laughter, the shared experiences, and for always believing in me, no matter the distance. I am truly grateful to have you in my life.

My friends in Bragança, your unwavering support and companionship have made the journey of estrangement more bearable. Thank you for being there through the ups and downs, for sharing laughter when times were tough, and for reminding me that I am never alone. I truly appreciate each of you for your kindness and understanding.

And finally, I would like to extend my heartfelt thanks to everyone who has supported me throughout this journey, whether through a kind word, a thoughtful gesture, or a simple wish. Your encouragement and compassion have made a significant impact on my life, and I am truly grateful to feel loved and appreciated. Each of you has played a part in my journey, and I thank you for being there in your own unique way.

Abbreviations

FINTECH: Financial technology

ROA: Return on assets

AI: Artificial intelligence

CSR: Corporate Social Responsibility

Acronyms

ESG: Environmental, social and governance

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Introduction

The concept of sustainable development gained global prominence in 1987 when the Brundtland Commission**,** formally known as the World Commission on Environment and Development (WCED)**,** published its landmark report **"**Our Common Future**"**. This report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." It emphasized the need for a balance between economic growth, environmental protection, and social equity. Meanwhile, the roots of ESG trace back to the 1960s and 1970s with socially responsible investing, when investors began avoiding investments in industries like tobacco, firearms, and apartheid-era South Africa due to ethical concerns. Over time, ESG frameworks emerged to measure corporate practices in these three key areas, reflecting an evolution from traditional financial assessments to a more holistic view of corporate responsibility and sustainability.

Today, investors, shareholders, and consumers are increasingly mindful of their choices' environmental and social impacts. With sustainability being more critical than ever, all firms must adapt adequately by adopting the right corporate governance mechanisms in addition to the right ESG practices in order to preserve their longevity and reputation and see to the continuity of their business. Moreover, ESG considerations are becoming essential for businesses, investors, consumers, and policymakers due to their impact on financial performance, risk management, and corporate accountability.

Technological firms, in particular, are witnessing a ground breaking evolution with the appearance of AI, and in order to keep thriving in this ever-evolving market, sustainability is now a critical concern for the technology industry. Known for their innovations, tech companies need to be able to keep up with the fast pace of these advancements, which can have unintended negative impacts on a social and environmental level. As a result, ESG adoption is not just a moral or compliance decision for tech companies but a strategic imperative that aligns their business with long-term value creation, innovation, and sustainability.

This work aims to delve into the intricacies of the effects of corporate governance and ESG practices on technology firms by investigating the impact of board characteristics, such as the proportion of independent directors, gender diversity, and board size, along with ESG and corporate governance practices on the financial performance of leading technology companies. By exploring these relationships, this research aims to provide insights into the governance dynamics within the tech industry and their potential effects on financial outcomes, whether negative or positive.

The study begins with the first section, the literature review, where key theories, previous studies, and empirical findings related to the research topic are discussed. Secondly, the research methodology which outlines the approach, techniques, and data sources used to conduct the study, ensuring its transparency and accountability. Following is the third section which focuses on the findings obtained from the analysis, the presentation and analysis of results. This section presents descriptive statistics, correlation analysis, and regression results, providing insights into the relationships between variables. Finally, the final section, conclusions, limitations and future research, provides a summary of the study's main findings.

1. Literature Review

The literature review explores the theoretical foundations and empirical findings related to corporate governance, ESG practices, and their impact on financial performance. By analyzing prior research, this review aims to provide an extensive apprehension of the relationship between governance structures, sustainable practices, and financial outcomes, offering insights into how firms can strategically align their governance and ESG initiatives to achieve long-term success.

1.1. The impact of corporate governance practices on firm performance

According to the ASX Corporate Governance Council, there are various definitions for corporate governance. In the context of this thesis, it can be defined as the intricate framework of principles, policies, structures, and processes that outlines the distribution of rights and responsibilities among different stakeholders within a corporation. It encompasses the mechanisms through which strategic objectives are formulated, organizational performance is monitored, and ethical standards are upheld.

Several theories of corporate governance are relevant for studying the impact of corporate governance on financial performance (Jensen & Meckling, 1976; Davis, Schoorman, & Donaldson, 1997; Pfeffer & Salancik, 1978). These theories provide different perspectives on how corporate governance mechanisms influence the behavior of corporations and their financial outcomes.

Agency Theory:

In the context of corporate governance, agency theory is frequently employed to analyze the dynamics between the two entities and to examine how governance mechanisms, such as boards of directors and executive compensation, can align the interests of managers with those of shareholders to improve financial performance (Jensen & Meckling, 1976)

Agency theory is a commonly used theory that focuses on the relationship between principals and agents and the potential conflicts of interest that arise due to the separation of ownership and control (Jensen & Meckling 1976; Ross 1973).

The principal, often represented by shareholders, investors, or owners with a stake in a corporation, relies on the agent, typically the managers overseeing these investments. This dynamic constitutes the principal-agent relationship (Ross 1973; Mitnick 1975; 2011; 2019).

Agency theorists argue that agents may not consistently prioritize the best interests of the principal due to inherent challenges stemming from information asymmetry. This information gap gives rise to two key phenomena: moral hazards and adverse selection.

Moral hazards occur when agents engage in hidden actions that are unverifiable by the principal, leading to potential conflicts of interest and suboptimal decision-making (Jensen & Meckling, 1976). On the other hand, adverse selection arises from hidden information regarding the agent's abilities, creating uncertainties about their competence and reliability in fulfilling their obligations (Ross, 1973).

To address these challenges, agency theory identifies several costs incurred within the principal-agent relationship. Firstly, monitoring costs are expenses borne by the principal to oversee and supervise the agent's activities, ensuring compliance with agreed-upon objectives and minimizing opportunistic behavior (Jensen & Meckling, 1976). Secondly, bonding costs refer to investments made by the agent to signal their commitment to fulfilling their duties faithfully. This may include posting performance bonds or acquiring professional certifications to reassure the principal of their trustworthiness (Ross, 1973).

In essence, agency theory recognizes that managers may prioritize their own interests over those of shareholders due to information asymmetry and divergent incentives. Consequently, effective governance mechanisms are essential to monitor managerial actions, incentivize value-maximizing behavior, and ensure accountability (Jensen & Meckling, 1976). Boards of directors play a pivotal role in overseeing managerial decisions, setting strategic direction, and safeguarding shareholder interests. By comprising independent directors with diverse expertise and exercising diligent oversight, boards can mitigate agency conflicts and promote transparency and integrity in corporate operations (Jensen & Meckling, 1976; Ross, 1973).

Stewardship Theory:

Stewardship theory serves as a distinctive alternative to the conventional perspectives offered by agency theory, particularly in the context of understanding the relationships between the management of a corporation and its shareholders (Donaldson & Davis 1991; 1993). While agency theory is often centred on the potential conflicts of interest between principals (shareholders) and agents (managers) (Ross 1973), stewardship theory takes a more optimistic stance, emphasizing collaboration, trust, and shared objectives within organizational relationships (Davis; Schoorman & Donaldson 1997).

Donaldson and Davis (1991) suggest that managers possess an innate motivation to consistently act in the best interests of the firm and its shareholders. This notion underscores the idea of a fundamental alignment between the objectives of managerial decision-making and the interests of shareholders. It highlights the belief that, by prioritizing the firm's long-term success and maximizing shareholder value, managers inherently serve as stewards of the company's assets, thereby fostering a harmonious relationship between managerial actions and shareholder expectations.

This concept implies that establishing effective governance structures goes beyond mere oversight and control; it entails fostering an environment of trust and empowerment for managers. By doing so, organizations enable their managers to make decisions confidently and take ownership of their roles and responsibilities. This empowerment not only enhances managerial morale and job satisfaction but also

cultivates a culture of accountability and innovation. As a result, when managers feel trusted and empowered, they are more likely to demonstrate proactive leadership, make strategic decisions aligned with the organization's goals, and adapt swiftly to changing market dynamics (Davis, Schoorman, & Donaldson, 1997).

Ultimately, this can lead to improved financial performance as the organization becomes more agile, responsive, and capable of seizing opportunities while mitigating risks. Therefore, effective governance practices that prioritize trust and empowerment can serve as catalysts for sustainable growth and competitive advantage (Donaldson & Davis, 1991).

1.2. The impact of ESG practices on company performance

Corporate Social Responsibility (CSR) theory, a prominent framework in modern business studies, offers better comprehension into the impact of environmental, social, and governance (ESG) factors on corporate performance (McWilliams, Siegel, & Wright, 2006). By understanding how companies prioritize ESG principles, researchers can analyze their influence on long-term sustainability and success in today's socially conscious marketplace (Brammer, Jackson, & Matten, 2012).

This theory suggests that businesses should consider their impacts on various stakeholders, including employees, customers, communities, and the environment, while making decisions (Freeman, 1984). CSR theory emphasizes integrating social and environmental concerns into business operations and practices to contribute positively to society (Carroll, 1999). Companies that embrace this integration often find it crucial to align their strategies with societal values, fostering ethical behavior and promoting sustainable development (Elkington, 1997).

The CSR framework is supported by influential works such as Carroll's CSR Pyramid (Carroll, 1979, 1991), which delineates four dimensions of CSR: economic, legal, ethical, and philanthropic responsibilities. These dimensions provide a structured approach for businesses to address their obligations to various stakeholders comprehensively. Similarly, stakeholder theory (Freeman, 1984) asserts that businesses should prioritize the interests of all stakeholders—not just shareholders—in their decision-making processes. This perspective reinforces the notion that effective stakeholder management can be a driver of innovation, reputation building, and financial performance (Donaldson & Preston, 1995).

Moreover, the concept of sustainable development (World Commission on Environment and Development, 1987) underscores the importance of meeting present needs without compromising the ability of future generations to meet theirs. This principle emphasizes environmental stewardship as a key pillar of CSR. Elkington’s triple bottom line approach further expands this view by advocating that

businesses measure their success in terms of social, environmental, and economic impacts, rather than financial performance alone (Elkington, 1997).

Corporate social responsibility (CSR), as a specific theory, suggests that corporations are not solely profit-seeking entities but also have broader responsibilities to society (Wood, 1991). This perspective highlights that by acknowledging and addressing these multifaceted responsibilities, corporations can enhance their long-term sustainability, build trust with stakeholders, and contribute positively to the communities in which they operate (Porter & Kramer, 2006).

Furthermore, CSR theory underscores the importance of aligning business objectives with societal values and expectations, promoting a more ethical and sustainable approach to corporate governance and decision-making (Matten & Moon, 2008). By proactively engaging in CSR activities, companies demonstrate their commitment to corporate citizenship, thereby fostering goodwill and strengthening stakeholder relationships (Bhattacharya & Sen, 2004).

Effective governance practices, coupled with responsible corporate behavior, play a pivotal role in fostering long-term financial success (Jamali & Mirshak, 2007). Through transparency, accountability, and ethical conduct, companies can bolster their reputation and cultivate positive relationships with stakeholders (Eccles, Ioannou, & Serafeim, 2014). These practices are integral to gaining trust from investors, customers, employees, and the broader community. The resulting goodwill enhances organizational resilience and competitiveness (Clarkson, 1995).

In addition, organizations that demonstrate good governance and responsible corporate behavior not only mitigate risks and avoid potential scandals but also attract investment, retain talent, and secure customer loyalty (Orlitzky, Schmidt, & Rynes, 2003). For example, firms with strong CSR initiatives often experience enhanced brand equity and customer satisfaction, as they are perceived as socially responsible and ethical players in the marketplace (Du, Bhattacharya, & Sen, 2010).

As the global business environment continues to evolve, the integration of CSR principles into corporate strategy remains a critical determinant of sustainable success and societal impact.

1.3. The impact of board independence and board size on firm performance

Resource dependence theory argues that independent directors bring valuable external resources to a firm, such as expertise, networks, and legitimacy, which strengthen its strategic capabilities (Pfeffer & Salancik, 1978). By contributing these resources, independent directors enhance decision-making processes and provide access to critical information and opportunities, leading to better firm performance. Empirical studies have supported this view, indicating that board independence is linked to higher-quality strategic decisions and stronger financial outcomes (Hillman, Cannella, & Paetzold,

2000). Independent directors add diverse perspectives and specialized knowledge that help firms navigate complex business environments.

Independent directors also play a key role in fostering strong corporate governance. Research demonstrates that their presence positively influences the relationship between governance practices and firm performance. For instance, Rosenstein and Wyatt (1997) found that firms with more independent directors experienced positive market reactions to announcements of independent board appointments, signaling that investors value such oversight. Similarly, Dahya and McConnell (2007) revealed that firms with higher proportions of independent directors often exhibit superior performance indicators, such as return on assets (ROA) and return on equity (ROE). This underscores the significance of board independence in promoting accountability and reducing agency conflicts.

The size of the board is another critical factor influencing corporate performance. Larger boards often bring a wider range of expertise and perspectives, which can improve the board's ability to monitor management and guide strategic decisions. Adams and Ferreira (2009) highlighted that larger boards might enhance oversight functions, leading to better governance and, in some cases, stronger financial results. The diversity of thought present in larger boards allows for a more comprehensive understanding of complex issues, enabling better responses to challenges (Hillman & Dalziel, 2003).

However, the advantages of larger boards may diminish when they grow too large. Research shows that excessively large boards can suffer from coordination difficulties and slower decision-making processes, reducing their effectiveness (Jensen, 1993). Larger groups may also experience "social loafing," where individual members contribute less effort due to the assumption that others will take responsibility (Brenner, 2007). These factors can undermine the intended benefits of having a larger board, leading to inefficiencies.

Theoretical and empirical research consistently highlights the importance of both board independence and board size in driving firm performance. Independent directors provide objective oversight, enhance accountability, and mitigate potential conflicts of interest, leading to better governance and financial results (Fama & Jensen, 1983; Hermalin & Weisbach, 1991; Bhagat & Bolton, 2008). However, determining the optimal board size is context-dependent. Resource dependence theory emphasizes the benefits of larger boards in terms of access to diverse skills and external resources (Pfeffer, 1972; Coles, Daniel, & Naveen, 2008). Conversely, agency theory cautions against the potential inefficiencies that may arise from larger boards, such as communication barriers and slower decision-making (Jensen, 1993; Yermack, 1996).

To maximize performance, companies must carefully design their boards, balancing size and composition to fit their unique strategic and operational requirements. The relationship between board characteristics and firm performance is complex and multifaceted, reinforcing the need for customized governance structures (Bhagat & Bolton, 2008; Coles et al., 2008).

1.4. The impact of gender diversity on firm performance

In the field of corporate governance, female board members are increasingly recognized as a vital tool for influencing agency conflicts and enhancing overall governance structures. Gender diversity on boards is widely believed to improve governance by reducing agency costs in environments characterized by agency issues (Daily et al., 1999; Jurkus et al., 2011). According to the resource dependency hypothesis, women bring unique resources such as diverse skills, expertise, and experience to boards, which can significantly contribute to the decision-making process and the overall strategic direction of the company (Pfeffer, 2019). Hillman et al. (2007) assert that the inclusion of women on corporate boards enhances the utilization of resources, which is critical for managing complex Environmental, Social, and Governance (ESG) challenges.

Empirical research highlights that women on boards positively impact Corporate Social Responsibility (CSR) and ESG performance. Gender-diverse boards contribute to the credibility of CSR reporting, thereby showcasing a strong commitment to stakeholders (Bear et al., 2010; Beji et al., 2021; Boulouta, 2013; Post et al., 2011; Sundarasen et al., 2016). Furthermore, recent studies indicate that gender diversity facilitates a more effective mediation of temporal orientation, which is essential for sustainable growth. Specifically, gender-diverse boards have been found to positively influence sustainable growth rates, particularly in family-owned businesses (Amin et al., 2023). Nekhili (2013) supports these findings by emphasizing that female representation on boards enhances CSR reporting credibility and signals a robust commitment to stakeholder interests, which positively impacts market value.

Additionally, research has established a link between the presence of women on boards and a reduction in environmental lawsuits, as well as higher ethical standards within firms. Female directors often prioritize corporate legitimacy and ethical practices, such as eliminating harmful labor practices (Dadanlar & Abebe, 2020; Liu, 2018). Eliwa et al. (2023) further highlight the significance of board gender diversity in impacting ESG decoupling across diverse cultural and religious contexts, underscoring its critical role in promoting ethical corporate practices.

Studies, such as those by Dadanlar & Abebe (2020) and Liu (2018), emphasize the positive impact of female directors in reducing environmental lawsuits, particularly in firms that are more engaged in contentious activities. Moreover, Amin et al. (2023) provide evidence of gender diversity enhancing sustainable growth rates in family-owned enterprises. These findings collectively underscore the multifaceted role of female directors in improving corporate governance and ethical standards, while mitigating potential risks associated with ESG controversies. Consequently, the inclusion of women on boards of companies involved in sensitive or contentious activities is increasingly viewed favorably by investors, as it serves to enhance the firm's value by addressing potential risks and ethical concerns.

This review highlights the importance for firms to thoughtfully design their governance structures, balancing board characteristics in a way that aligns with their unique strategic goals and operational

contexts. This nuanced understanding emphasizes the necessity for ongoing research to refine our knowledge of corporate governance's role in driving firm performance and achieving sustainable development. The subsequent section will outline the research methodology employed to further investigate these relationships and assess their implications on firms.

2. Research Methodology

This section outlines the research methodology employed to investigate the impact of corporate governance practices on firm performance. The objective of the study is to provide empirical evidence on the relationships between these governance characteristics and financial outcomes, guided by well-defined research hypotheses. To achieve this, a systematic approach to data collection and analysis was undertaken, ensuring robust and reliable findings. The following subsections will detail the study's objectives and hypotheses, describe the data collection process, explain the methods of data analysis, and differentiate between the populations and samples used in this research. By establishing a clear methodological framework, this section aims to ensure the validity and reliability of the study's conclusions.

2.1. Objective of the study and Research Hypotheses

The primary objective of this study is to examine the impact of corporate governance structures and ESG (Environmental, Social, and Governance) factors on firm performance. Specifically, this study aims to analyze how variables such as board composition, CEO duality and ESG scores influence firm valuation, as measured by Tobin's Q and Return on Assets (ROA). By investigating these relationships, the study seeks to provide insights into the extent to which governance and sustainability practices contribute to a firm's financial success. Thus, the following hypotheses were developed:

Table 1: Research hypotheses.

Label	Hypothesis
H_1	CEO duality negatively affects firm financial performance.
H_2	The percentage of shares held by the major shareholder can negatively affect firm performance.
H_3	Companies that adopt ESG practices show better financial performance.
H_4	The percentage of independent directors is positively related to firm financial performance.
H5	The size of the board positively affects firm financial performance.
H6	The percentage of women in the board of directors is positively related to financial performance.

Source: Own elaboration.

2.2. Description of Data Collection

The primary instrument used for data collection was companiesmarketcap.com, an online financial database providing comprehensive financial and market-related information on companies across various sectors. The data selection process was mindful and in-depth, focusing on the top-performing technology firms to create a homogeneous sample. Financial firms, including fintech companies, were systematically excluded to maintain the integrity of the sample, considering their differing financial reporting and valuation standards.

After finalizing the sample, all financial data for the year 2023 was collected simultaneously from Yahoo Finance and Google Finance, ensuring consistency and cross-referencing accuracy. Governance data was gathered individually from each company's website to obtain accurate details on their board structures. In addition, the S&P Global ESG score was acquired directly from the S&P Global website to incorporate comprehensive environmental, social, and governance data.

Tobin's Q was calculated using the formula:

$$Tobin's\ Q = \frac{Market\ Cap}{Total\ assets}$$

This multi-source data collection approach ensured the thoroughness and reliability of the dataset, laying a strong foundation for analysis.

2.3. Description of Data Analysis

The data analysis involved both descriptive and inferential statistical methods to thoroughly examine the relationships within the database. The analysis began with descriptive statistics computed using GRETL software to summarize key characteristics of the sample. Measures such as mean, median, standard deviation, minimum, and maximum were calculated for essential variables, including Tobin's Q, Return on Assets (ROA), total assets, ESG scores and board composition metrics. Additionally, a correlation matrix was created to assess the solidity and direction of relationships between the independent variables and the dependent variables.

In light of the research objectives and the hypotheses formulated, two OLS regression models have been established with the following specifications:

$$ROA = \beta_0 + \beta_1\, BSIZE + \beta_2\, PERCENTINDEP + \beta_3\, CEODUAL + \beta_4\, PERCENTWOMEN + \beta_5\, PERCENTMAJORSHAREHOLDER + \beta_6\, SPESGSCORE + \epsilon$$

$$Tobin's\ Q = \beta_0 + \beta_1\ BSIZE + \beta_2\ PERCENTINDEP + \beta_3\ CEODUAL + \beta_4\ PERCENTWOMEN + \beta_5\ PERCENTMAJORSHAREHOLDER + \beta_6\ SPESGSCORE + \epsilon$$

Where $BSIZE$ is the board size determined by the number of directors; $PERCENTINDEP$ is the percentage of independent directors in the board; $CEODUAL$ indicates whether the CEO's role is separate from other executive functions, measured as 1 for "yes", and 0 otherwise; $PERCENTWOMEN$ is measured by the percentage of directors who are women; $PERCENTMAJORSHAREHOLDER$ is the determination of ownership concentration measured by the percentage of shares held by the major shareholder and $SPESGSCORE$ is the assessment of a company's sustainability performance based on its environmental, social, and governance (ESG) practices calculated by S&P Global using the Corporate Sustainability Assessment (CSA), which evaluates companies across various industries on a wide range of ESG criteria.

2.4. Population *vs.* Sample

The analysis was conducted using a sample of leading technology companies sourced from companiesmarketcap.com, which ranks the top firms in the tech sector by market capitalization. Initially, the top 200 companies were selected; however, fintech companies were excluded due to sector-specific characteristics and the distinct accounting practices of these institutions. Additionally, companies with insufficient data were removed to preserve the integrity and relevance of the dataset. This process resulted in a final sample of 187 companies, as displayed in Table 2. By refining the selection to focus on non-financial tech firms, the approach ensured a robust and comprehensive dataset, providing a solid foundation for the analysis.

Table 2: Sample distribution by continent.

Sample distribution	Europe	Asia	North America	South America	Oceania	**Total**
Initial population	22	56	117	1	4	**200**
Fintech corporations		(3)	(4)			**(7)**
Companies with missing data		(5)	(1)			**(6)**
Final sample retained	**22**	**48**	**112**	**1**	**4**	**187**

Source : Own elaboration.

In conclusion, this research methodology section has laid the groundwork for exploring the impact of corporate governance and ESG practices on firm performance. By clearly defining the study's objectives and hypotheses, detailing the data collection and analysis processes, and distinguishing between populations and samples, the methodology aims to ensure a systematic and rigorous examination of the relationships under investigation.

3. Empirical Results Analysis

This section presents and analyzes the findings from the study, focusing on the relationships between corporate governance characteristics and firm performance. The results will be systematically presented to highlight the nature of relationships and insights obtained from the data. The aim of this section is to critically examine the empirical evidence and draw meaningful conclusions that support or challenge the study's hypotheses, thereby contributing to a deeper understanding of the research.

3.1. Sample Characterisation

Our sample consists of top leading tech companies that are ranked globally based on market capitalization, selected from the companiesmarketcap.com database. The final sample comprises firms with complete and publicly available data for the year 2023. Figure 1 demonstrates the distribution of the firms by continent.

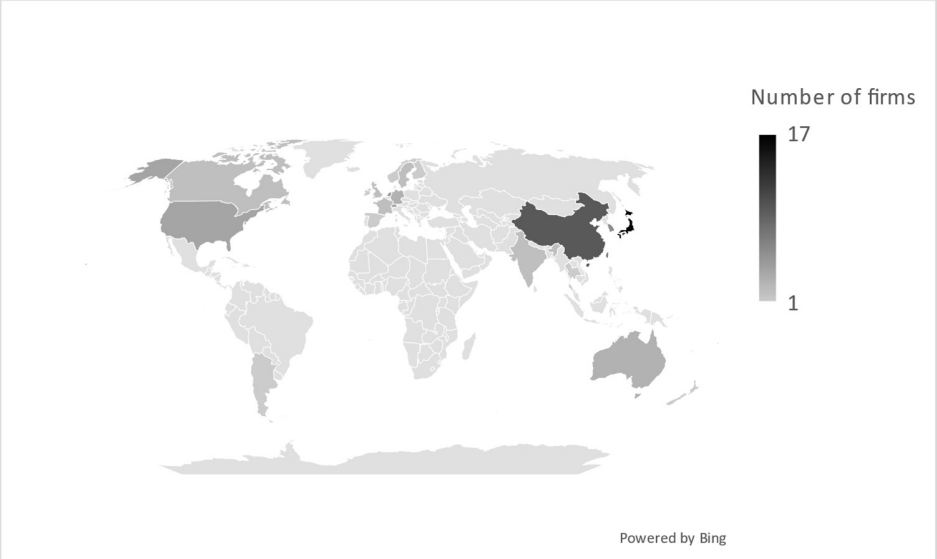

Figure 1: Final Sample of Leading Technology Companies by Market Capitalization.

Source: Own elaboration.

The sample covers companies with varied board sizes, percentages of independent directors, and female representation on the board, providing diversity in governance structures. This variety allows for a comprehensive examination of the relationships between these governance characteristics and financial performance. Furthermore, the sample includes firms with different levels of ESG adoption,

facilitating a comparison between companies that prioritize sustainability and those that do not. The characterization of the sample is detailed in Table 3.

Table 3: Sample characteristics.

Variable	n	%
Geographical distribution		
• Europe	22	11.76%
• Asia	48	25.67%
• North America	112	59.89%
• South America	1	0.53%
• Oceania	4	2.14%
Board composition		
• Women on board	<=20%	13%
	21%-40%	70%
	41%-60%	14%
	>61%	0%
• Independence of the board	<50%	16.6%
	51%-80%	46%
	>81%	34.8%
• CEO Duality	YES	66.3%
	NO	33.7%
ESG SCORE:		
• Poor	0-49	67%
• Average/Good	50-74	26%
• Very good	75-89	6%
• Excellent	90-100	1%

Source: Own elaboration.

3.2. Descriptive statistics

Table 4 offers a detailed summary of the descriptive statistics for each variable included in the study. Each metric clearly depicts central tendency and variability, highlighting the characteristics and patterns within the dataset. For each variable, there were 187 observations.

The variable Tobin's Q has a mean of 4.156 and a median of 2.803, indicating that the average Tobin's Q value is slightly higher than the central point of the distribution. This suggests a right-skewed distribution, as the mean is greater than the median. The standard deviation of 4.835 indicates considerable variability in Tobin's Q values, reflecting a wide spread of data points. This is further supported by the range between a minimum of 0 and a maximum of 49.52, showing that some firms have exceptionally high Tobin's Q values.

The variable ROA (Return on Assets) has a mean of 0.05237 and a median of 0.04930. This indicates that the data is fairly centered around these values, with a slight positive skew since the mean is slightly higher than the median. The standard deviation of 0.07179 shows moderate variability in ROA values. The minimum value is -0.3195, indicating some firms experienced negative returns, while the maximum of 0.2926 reflects firms with high positive returns. This range highlights a significant spread in profitability among firms.

Table 4: Descriptive statistics.

	MEAN	MEDIAN	STANDARD DEVIATION	MIN	MAX
TOBINSQ	4.156	2.803	4.835	0.0000	49.52
ROA	0.05237	0.04930	0.07179	-0.3195	0.2926
BSIZE	9.695	10.00	2.240	5.000	18.00
PERCENTINDEP	0.7038	0.7778	0.1945	0.1250	1.000
CEODUAL	0.3369	0.0000	0.4739	0.0000	1.000
PERCENTWOMEN	0.3085	0.3000	0.1060	0.0000	0.5833

PERCENTMAJORSHAR~	0.1446	0.09800	0.1213	0.0000	0.9040
SPESGSCORE	44.45	42.00	16.92	10.00	93.00

Source: Own elaboration.

The variable BSIZE (Board Size) has a mean of 9.695 and a median of 10.00, indicating that the average board size is close to 10 members, with most companies having similar board sizes. The standard deviation of 2.240 suggests moderate variation in board sizes across companies. The minimum board size is 5, while the maximum is 18, indicating that while most companies have around 10 members, some have significantly larger or smaller boards.

The variable PERCENTINDEP (Percentage of independent members of a board) has a mean of 0.7038 and a median of 0.7778, indicating that around 70% of board members are independent on average. The standard deviation of 0.1945 shows moderate variation, with a minimum of 0.1250 and a maximum of 1.000, indicating some boards are entirely independent.

The variable CEODUAL (CEO duality) has a mean of 0.3369 and a median of 0.0000, indicating that, on average, about 33.69% of companies have a dual CEO-chairperson role. The standard deviation of 0.4739 reflects significant variability in the presence of CEO duality. The minimum value is 0.0000, meaning some companies do not have this structure, while the maximum value of 1.000 indicates that a few companies do have a dual role.

The variable PERCENTWOMEN (Percentage of female board members) has a mean of 0.3085 and a median of 0.3000, indicating that, on average, women make up approximately 30.85% of the board. The standard deviation of 0.1060 suggests moderate variability in this percentage across companies. The minimum value is 0.0000, meaning some boards have no women, while the maximum of 0.5833 indicates that some boards have up to 58.33% female representation.

The variable PERCENTMAJORSHAR (Ownership control) has a mean of 0.1446 and a median of 0.0980, suggesting that major shareholders typically own about 14.46% of the shares. With a standard deviation of 0.1213, there is moderate variability in ownership levels. The minimum is 0.0000, indicating some companies do not have a concentrated ownership control, while the maximum is 0.9040, showing that a few companies have as much as 90.40% of shares owned by major shareholders.

The variable SPESGSCORE (S&P ESG Score) has a mean of 44.45 and a median of 42.00, indicating that the average ESG score is around 44.45, with many scores clustered around 42. The standard deviation of 16.92 reflects considerable variability in the scores. The minimum score is 10.00, suggesting some companies score low on ESG factors, while the maximum score is 93.00, indicating that a few companies achieve high ESG ratings.

3.3. Correlation coefficients

Table 5 presents the correlation coefficients between various financial and governance-related variables. The correlation coefficients range from -1 to 1, indicating the strength and direction of relationships among the variables. A value of 1 signifies a perfect positive correlation, -1 a perfect negative correlation, and 0 indicates no correlation.

Table 5: Correlation coefficients.

	TOBINSQ	ROA	BSIZE	PERCENTINDEP	CEODUAL	PERCENTWOMEN	PERCENTMAJORSHAR~	SPESGSCORE
TOBINSQ	**1.0000**	0.3437	-0.1525	0.0959	-0.0943	0.0775	0.0992	-0.1936
ROA		**1.0000**	0.0384	-0.0489	-0.0394	0.0573	0.0680	0.1285
BSIZE			**1.0000**	0.0751	-0.2471	0.0816	-0.0266	0.2757
PERCENTINDEP				**1.0000**	0.0297	0.3122	-0.1595	-0.1505
CEODUAL					**1.0000**	-0.0703	-0.0138	-0.0401
PERCENTWOMEN						**1.0000**	-0.1412	0.1361
PERCENTMAJORSHAR~							**1.0000**	0.0426
SPESGSCORE								**1.0000**

Source: Own elaboration.

The relationship between Tobin's Q (TOBINSQ) and Return on Assets (ROA) is characterized by a moderate positive correlation of 0.3437, indicating that firms with higher ROA are likely to have higher Tobin's Q. This correlation implies that effective asset management and strong profitability can enhance a firm's market perception, resulting in investors valuing these companies more favorably in relation to their asset base (Berk & DeMarzo, 2017). Consequently, investors tend to perceive firms demonstrating robust financial performance as having greater growth potential, which can lead to an increase in their market value. In contrast, the correlation between ROA and board size (BSIZE) is very weak at 0.0384, indicating little to no meaningful relationship; this suggests that having a larger board does not

significantly impact a firm's profitability, this may be due to potential inefficiencies in decision-making processes within larger groups (Jensen, 1993).

Additionally, the relationship between the percentage of independent directors (PERCENTINDEP) and CEO duality (CEODUAL) shows a negligible correlation of 0.0297, suggesting that the proportion of independent directors is largely unaffected by whether the CEO also serves as the chair. This could reflect differing governance philosophies where companies may not prioritize board independence in dual-role situations (Finkelstein & Hambrick, 1996).

Moreover, a weak negative correlation of -0.0401 between CEO duality and ESG score (SPESGSCORE) suggests that firms with CEO duality tend to have slightly lower ESG scores, indicating that a concentration of power in one individual might impact governance practices negatively, potentially leading to less emphasis on environmental and social issues (Benn et al., 2013).

The percentage of women on the board (PERCENTWOMEN) shows a moderate positive correlation of 0.3122 with PERCENTINDEP, suggesting that companies with a higher percentage of women on their boards also tend to have a greater proportion of independent directors.

This relationship may reflect broader governance trends where firms that embrace diversity in board composition also prioritize independence, potentially leading to better decision-making and governance outcomes (Adams & Ferreira, 2009). Overall, these relationships highlight the complexities of corporate governance and performance metrics, emphasizing the interplay between financial outcomes and governance structures.

3.4. Results analysis and Interpretation

3.4.1. ESG and ROA

This section investigates the relationship between corporate governance and ESG practices on company performance. Table 6 show the results of econometric models estimating the impact of financial and governance factors on Return on Assets (ROA). Each model includes combinations of financial ratios and governance characteristics to evaluate their significance in influencing ROA.

Examining the effect of ESG practices on firm performance, the overall ESG score does not appear to significantly impact ROA in any model, suggesting that variations in ESG performance have minimal influence on ROA within this sample. Previous studies highlight that the financial benefits of ESG investments may not be immediately apparent in accounting-based measures like ROA (Eccles, Ioannou, & Serafeim, 2014).

Board size remains statistically insignificant in all subsequent models. The coefficients close to zero indicate no substantial relationship between board size and ROA which indicates that there is no clear optimal size to enhance performance. Jensen (1993) noted that larger boards might lead to slower decision-making, while smaller boards may lack the diversity of expertise needed for comprehensive oversight.

The proportion of independent directors shows no statistically significant effect on ROA across all models. Coefficients range between -0.004 and 0.008, indicating no clear relationship between board independence and financial performance. Despite theoretical expectations, the proportion of independent directors does not significantly affect ROA. Prior research shows that the impact of independent directors depends on their engagement and firm-specific contexts, with mixed findings on their effectiveness (Bhagat & Black, 2002; Hermalin & Weisbach, 1991).

CEO duality shows a negative coefficient in all models. However, these results are not statistically significant, indicating that CEO duality has no clear impact on ROA. The results align with some studies that suggest CEO duality's impact on firm performance is context-dependent and might not always hinder board independence (Brickley, Coles, & Jarrell, 1997).

The percentage of women on the board is statistically significant in Models 4,6,7 and 8 at either the 5% or 10% level, with positive coefficients ranging from 0.072 to 0.084. This finding suggests that greater gender diversity on the board is associated with higher ROA. The positive and significant coefficient for gender diversity supports findings from other studies, indicating that women bring diverse perspectives and improve board decision-making (Adams & Ferreira, 2009; Singh, Terjesen, Sealy, & Singh, 2009). This diversity may enhance financial performance by encouraging innovative thinking and stakeholder alignment.

Table 6: Determinants of ROA.

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Const	0.039***	0.053***	0.038*	0.043***	0.021	0.039***	0.041	0.050*	0.027
	(0.013)	(0.019)	(0.021)	(0.014)	(0.015)	(0.014)	(0.026)	(0.027)	(0.022)
Leverage	-0.001*	-0.001*	-0.001**	-0.001	-0.001*	-0.001**	-0.001*	-0.001*	-0.001**
	(0.0004)	(0.0004)	(0.0003)	(0.0004)	(0.0003)	(0.0004)	(0.0003)	(0.0003)	(0.0004)
Liquidity	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SPESGSCORE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.004)	
BSIZE		-0.001					-0.001	-0.002	0.001
		(0.001)					(0.001)	(0.001)	(0.001)
PERCENTINDEP			0.004				-0.004	-0.003	0.008
			(0.022)				(0.024)	(0.025)	(0.023)
CEODUAL				-0.012			-0.014	-0.014	-0.012
				(0.009)			(0.010)	(0.009)	(0.009)
PERCENTWOMEN					0.081**		0.080*	0.072*	0.084**
					(0.038)		(0.042)	(0.041)	(0.039)
PECENTMAJORSHAREHOLDER						-0.002	0.011	-0.028	0.028
						(0.052)	(0.048)	(0.049)	(0.036)
SPENV								0.000	0.000
								(0.001)	(0.0002)
SPSOC								0.000	0.000
								(0.001)	(0.0006)
SPGOV								0.000	0.000
								(0.001)	(0.0004)
n	**179**	**179**	**179**	**179**	**179**	**179**	**179**	**179**	**179**
r	0.030	0.025	0.040	0.033	0.052	0.034	0.072	0.087	0.100
r^2	0.013	0.003	0.018	0.011	0.030	0.011	0.029	0.026	0.046
F(n,k)	1.781	1.112	1.823	1.477	2.365	1.515	1.654	1.440	1.858
P-value (P)	0.153	0.353	0.126	0.211	0.055	0.200	0.113	0.159	0.054

Note: This table shows the results of OLS estimation with heteroskedasticity corrected. The dependent variable is ROA, and the independent variables are: BSIZE is the board size determined by the number of directors; PERCENTINDEP is the percentage of independent directors in the board; CEODUAL indicates whether the CEO's role is separate from other executive functions, measured as 1 for "yes", and 0 otherwise; PERCENTWOMEN is measured by the percentage of directors who are women; PERCENTMAJORSHAREHOLDER is the determination of ownership concentration measured by the percentage of shares held by the major shareholder and SPESGSCORE is the assessment of a company's sustainability performance based on its environmental, social, and governance (ESG) practices calculated by S&P Global using the Corporate Sustainability Assessment (CSA), which evaluates companies across various industries on a wide range of ESG criteria. The results evidence the variable coefficient on the first line, and below is the standard deviation on brackets. ***, ** and * refers to statistical significance at 1%, 5% and 10%, respectively.

Source: Own elaboration.

The absence of a significant relationship between major shareholders and ROA could reflect findings by Demsetz and Lehn (1985), who argue that ownership concentration's effect depends on how actively these shareholders are involved in governance decisions.

As for the subcomponents of the ESG score's components; Environmental (SPENV), Social (SPSOC), and Governance (SPGOV) Scores, these variables were included in Models 7 and 8, but none showed a significant impact on ROA, indicating that disaggregated ESG scores are not key determinants of financial performance in this sample. The insignificance of ESG scores in this sample could indicate that their effect on ROA may be more long-term or indirect. Previous studies highlight that the financial benefits of ESG investments may not be immediately apparent in accounting-based measures like ROA (Eccles, Ioannou, & Serafeim, 2014).

The analysis reveals that leverage and gender diversity within the board, represented by the percentage of women on the board, are the most consistent and significant variables affecting ROA. Other governance variables, such as board size, CEO duality, and percentage of independent directors, do not exhibit a significant impact on ROA within the context of this analysis.

3.4.2. ESG and TOBIN'S Q

Table 7 show the results of the estimation of the impact of various financial and governance factors on Tobin's Q. Each model includes combinations of financial ratios and governance characteristics to evaluate their significance in influencing Tobin's Q.

The ESG score shows a consistent negative and significant relationship with Tobin's Q, with the p value being lower than 0.05, suggesting that higher ESG scores are associated with lower firm value. Implementing and maintaining high ESG standards can be costly, potentially leading to lower short-term profitability and investor skepticism regarding the immediate benefits of these initiatives. Eccles et al. (2014) indicate that while ESG investment may enhance long-term sustainability, it can strain financial performance in the short term.

Board size is negatively significant in models where included, indicating that larger boards might be perceived as inefficient or face decision-making challenges that could lower firm value. This finding aligns with agency theory, which argues that larger boards can be less effective due to free-rider problems and slower decision-making processes (Jensen, 1993; Lipton & Lorsch, 1992).

Although the board's independence variable is not significant in any of the models, its positive coefficient suggests a potential relationship with Tobin's Q, implying independence in the board may improve firm

value. The paradoxical findings on the effectiveness of independent directors could stem from varying levels of experience or influence.

Table 7: Determinants of TOBIN'S Q.

	Model 0	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Const	6.130***	7.973***	4.740***	6.225***	5.117***	6.234***	4.803***	5.662***	4.606***
	(0.860)	(1.268)	(1.472)	(0.908)	(1.082)	(0.799)	(1.290)	(1.232)	(1.062)
Leverage	-0.083**	-0.070**	-0.089**	-0.092**	-0.076**	-0.081**	-0.052**	-0.072***	-0.069***
	(0.038)	(0.033)	(0.039)	(0.037)	(0.036)	(0.036)	(0.023)	(0.027)	(0.024)
Liquidity	-0.002***	-0.002**	-0.002***	-0.001**	-0.001**	-0.002**	-0.001	-0.001	-0.001
	(0.0005)	(0.0009)	(0.0005)	(0.0005)	(0.0006)	(0.0006)	(0.0007)	(0.001)	(0.0006)
SPESGSCORE	-0.043***	-0.032**	-0.037**	-0.041***	-0.042***	-0.040***	-0.022*	-0.252	
	(0.015)	(0.014)	(0.016)	(0.015)	(0.014)	(0.012)	(0.012)	(0.203)	
BSIZE		-0.240**					-0.164*	-0.151*	-0.114
		(0.117)					(0.093)	(0.083)	(0.083)
PERCENTINDEP			1.591				1.190	0.289	0.728
			(1.489)				(1.083)	(1.069)	(1.008)
CEODUAL				-0.657			-0.388	-0.259	-0.256
				(0.609)			(0.471)	(0.458)	(0.438)
PERCENTWOMEN					2.705		4.230**	2.893	3.270*
					(2.329)		(2.062)	(1.758)	(1.729)
PECENTMAJORSHAREHOLDER						-2.122	-3.207	-4.629	-4.017
						(3.392)	(2.621)	(2.973)	(2.567)
SPENV								0.055	-0.010
								(0.058)	(0.016)
SPSOC								0.061	-0.033
								(0.075)	(0.025)
SPGOV								0.117	0.026
								(0.079)	(0.027)
n	**179**	**179**	**179**	**179**	**179**	**179**	**179**	**179**	**179**
r	0.126	0.126	0.126	0.148	0.127	0.118	0.118	0.245	0.272
r^2	0.111	0.106	0.106	0.129	0.107	0.098	0.188	0.195	0.229
F(n,k)	8.426	6.271	6.295	7.564	6.318	5.822	6.142	4.914	6.276
P-value (P)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: This table shows the results of OLS estimation with heteroskedasticity corrected. The dependent variable is TOBIN's Q, and the independent variables are: BSIZE is the board size determined by the number of directors; PERCENTINDEP is the percentage of independent directors in the board; CEODUAL indicates whether the CEO's role is separate from other executive functions, measured as 1 for "yes", and 0 otherwise; PERCENTWOMEN is measured by the percentage of directors who are women; PERCENTMAJORSHAREHOLDER is the determination of ownership concentration measured by the percentage of shares held by the major shareholder and SPESGSCORE is the assessment of a company's sustainability performance based on its environmental, social, and governance (ESG) practices calculated by S&P Global using the Corporate Sustainability Assessment (CSA), which evaluates companies across various industries on a wide range of ESG criteria. The results

evidence the variable coefficient on the first line, and below is the standard deviation on brackets. ***, ** and * refers to statistical significance at 1%, 5% and 10%, respectively.

Source: Own elaboration.

Bhagat and Black (2002) suggest that merely increasing the number of independent directors does not automatically improve firm performance unless they actively monitor and engage with management.

Moreover, CEO duality is not statistically significant, indicating that combining the roles of CEO and chair does not have a noticeable impact on Tobin's Q in this sample. This may indicate that combining the roles of CEO and chair does not necessarily impair oversight or harm firm value, particularly if effective governance mechanisms are in place**.**

As for the percentage of women on the board, it is positively significant in some models, indicating a positive impact of gender diversity on firm value. This result aligns with recent studies highlighting the benefits of diversity in enhancing decision-making and providing broader perspectives, which can improve firm performance and value (Carter et al., 2003; Adams & Ferreira, 2009).

The negative coefficient of ownership control suggests that having a higher concentration of major shareholders could be associated with lower Tobin's Q. Large shareholders may exert more control, potentially prioritizing their interests over those of minority shareholders. This is consistent with studies suggesting that increased concentration of ownership can lead to conflicts of interest between major and minority shareholders (Shleifer & Vishny, 1997).

The sub-components of ESG show mixed and insignificant results in the final models, indicating that separating the ESG components does not reveal clear relationships with Tobin's Q in this analysis.

The models highlight important relationships, such as the negative impact of leverage and ESG scores, the benefits of female directors on the board, and the potential challenges posed by larger boards. These findings align with established theories like agency theory and trade-off theory while also reflecting ongoing debates in corporate governance and ESG investing.

Conclusions, Limitations and Future Research Lines

In conclusion, this study explores the significant relationship between corporate governance, environmental, social, and governance (ESG) practices, and financial performance. The findings contribute valuable insights into how governance structures and ESG initiatives influence a company's overall success. However, it is essential to recognize several practical limitations that companies face in implementing effective governance and sustainability practices.

One of the main limitations is the disparity in resources between companies. Smaller firms or those operating in emerging markets often struggle to allocate sufficient resources for comprehensive governance frameworks and ESG integration. Limited budgets and manpower restrict their ability to implement and maintain these practices effectively, which may hinder their financial performance. Additionally, navigating complex regulatory environments presents a significant challenge. Companies must comply with varying standards and practices across regions, which can be time-consuming and costly. These regulatory burdens can impact the smooth adoption of best governance and ESG practices.

Another limitation is the difficulty in measuring and reporting ESG performance accurately. Companies face challenges in collecting reliable data related to environmental, social, and governance factors. This can result in inconsistent reporting and gaps in understanding, ultimately affecting how stakeholders evaluate a company's performance. Furthermore, aligning diverse stakeholder expectations is another obstacle. Companies must balance competing demands from shareholders, employees, customers, and other parties, making it challenging to implement governance and ESG initiatives that satisfy all stakeholders equally.

For future research, it is recommended to focus on longitudinal studies that track changes in corporate governance and ESG practices over time. This could provide deeper insights into how these initiatives evolve and their long-term impact on financial performance. Additionally, sector-specific research could offer a more detailed examination of challenges faced by industries with unique governance and sustainability needs. Exploring the role of technology in supporting governance and ESG processes may also present opportunities for streamlining these practices and enhancing effectiveness. Comparative studies across different countries could further illuminate the influence of regional variations in regulatory frameworks and cultural expectations on corporate governance. Lastly, investigating the behavioral dynamics of board members and decision-making processes could provide valuable insights into how individual actions contribute to the success or failure of governance and ESG initiatives.

Addressing these limitations and focusing on these future research directions can help improve the implementation and effectiveness of corporate governance and ESG practices, ultimately driving better financial performance for companies.

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