Research Article

Environmental, Social, Governance Performance Score on Firm Value of Thai Listed Firms: The Analysis of the Moderating Role of Board Independence

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ABSTRACT

The objective of this study is to examine the relationship between environmental, social, and governance (ESG) performance scores and firm value. Additionally, it investigates the role of board independence as a moderating variable in this relationship. The authors hypothesize that board independence modulates the relationship between ESG and firm value. We used a sample of 523 firm-year observations from listed companies on the Thai Stock Exchange (SET) that revealed ESG information in the Bloomberg database between 2017 and 2022. Multiple regression analysis and Hayes' Process macro were used for data analysis.

The results indicate that (1) ESG, environmental, and social performance scores have a significant positive impact on firm value, and (2) Board independence has a positive significant impact, as a moderating variable, on the relationship between ESG performance scores and firm value. The study suggests that ESG performance demonstrates a stronger association with firm value when the board independence ratio exceeds the industry average. This finding contributes to the improvement of good corporate governance mechanisms. An independent board of directors serves as a shareholder representative, facilitating an additional layer of supervision. They collaborate with executives to manage ESG matters with clarity and impartiality, thereby maximizing benefits for all stakeholders in a sustainable manner.

Keywords: ESG, Board Independence, Firm Value, Hayes' Process Macro

บทความวิจัย

คะแนนการดำเนินงานด้านสิ่งแวดล้อม สังคม การกำกับดูแลกิจการ ที่มีต่อมูลค่ากิจการของบริษัทจดทะเบียนไทย : การวิเคราะห์อิทธิพลของตัวแปรกำกับความเป็นอิสระคณะกรรมการบริษัท

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บทคัดย่อ

งานวิจัยนี้มีวัตถุประสงค์ เพื่อตรวจสอบความสัมพันธ์ของคะแนนการดำเนินงานด้านสิ่งแวดล้อม สังคม และการกำกับดูแลกิจการ (ESG) ที่มีต่อมูลค่ากิจการ ตลอดจนตรวจสอบบทบาทของความเป็นอิสระของคณะกรรมการบริษัทในฐานะตัวแปรกำกับของความสัมพันธ์ดังกล่าว โดยผู้เขียนตั้งสมมติฐานงานวิจัยว่าความเป็นอิสระของคณะกรรมการบริษัทมีอิทธิพลเป็นตัวแปรกำกับต่อความสัมพันธ์ระหว่าง ESG และมูลค่ากิจการ โดยกลุ่มตัวอย่างคือ บริษัทจดทะเบียนในตลาดหลักทรัพย์ไทย (SET) ที่มีการเปิดเผยข้อมูล ESG ในฐานข้อมูล Bloomberg ในระหว่างปี พ.ศ. 2560–2565 รวมทั้งสิ้นจำนวน 523 ตัวอย่าง และวิเคราะห์ข้อมูลโดยใช้การวิเคราะห์การถดถอยเชิงพหุ และ Hayes' Process macro

ผลการวิจัยพบว่า (1) คะแนนการดำเนินงานด้าน ESG, ด้านสิ่งแวดล้อม และด้านสังคม มีผลกระทบเชิงบวกอย่างมีนัยสำคัญต่อมูลค่ากิจการ และ (2) ความเป็นอิสระของคณะกรรมการบริษัทมีอิทธิพลในเชิงบวกในฐานะตัวแปรกำกับอย่างมีนัยสำคัญต่อความสัมพันธ์ระหว่างการดำเนินงานด้าน ESG และมูลค่ากิจการ การศึกษาชี้ให้เห็นว่าการดำเนินงานด้าน ESG จะมีความสัมพันธ์ต่อมูลค่ากิจการที่แข็งแกร่งขึ้นเมื่อสัดส่วนความเป็นอิสระของคณะกรรมการ

อยู่ในระดับค่าเฉลี่ยของอุตสาหกรรมเป็นต้นไป การค้นพบนี้ช่วยยกระดับกลไกการกำกับดูแลกิจการที่ดี เนื่องจากการมีคณะกรรมการที่มีความเป็นอิสระ จะเป็นตัวแทนของผู้ถือหุ้นที่จะมาช่วยกำกับดูแลอีกชั้นหนึ่ง และจะทำงานร่วมกับผู้บริหารในการจัดการเรื่อง ESG ให้มีความชัดเจน เป็นกลาง และก่อประโยชน์สูงสุดกับผู้มีส่วนได้ส่วนเสียทุกภาคส่วนอย่างยั่งยืน

คำสำคัญ: ESG ความเป็นอิสระคณะกรรมการ มูลค่ากิจการ Hayes' Process Macro

1. INTRODUCTION

Environmental, social, and governance (ESG) performance has emerged as one of the most prominent topics in the investment arena in recent years. There has been a significant surge in searches for the term "ESG investing" on Google (Figure 1), indicative of its growing importance. ESG principles have become the new standard for conducting business, and many countries are beginning to incorporate ESG standards and regulations into their operations (Aboud & Diab, 2018). Consequently, businesses worldwide must pay close attention to these developments, particularly concerning environmental issues, which have reached critical levels, and human rights issues, which have become obstacles to international trade (Alareeni & Hamdan, 2020). Moreover, ethical considerations and transparency in business practices long-standing standards have gained even greater significance. Therefore, companies are strategically prioritizing ESG initiatives. The COVID-19 pandemic has further accelerated improvements in ESG governance within large companies and has fostered a deeper understanding of their role and impact on society (KPMG, 2020). ESG gained prominence in the financial world following the 2005 United Nations Global Compact report, which emphasized the importance of considering companies' ESG factors in investment decisions (Bradley, 2021). Integrating ESG factors into business operations not only leads to a reduction in environmental impact but also enhances social responsibility and corporate governance (Bodhanwala & Bodhanwala, 2023). Furthermore, it can enhance financial efficiency and long-term value for companies. Presently, investors worldwide utilize ESG criteria to evaluate their investments, assessing companies' long-term sustainability and competitiveness (Velte, 2020; Murdoch, 2022;.Chininga et al., 2023)

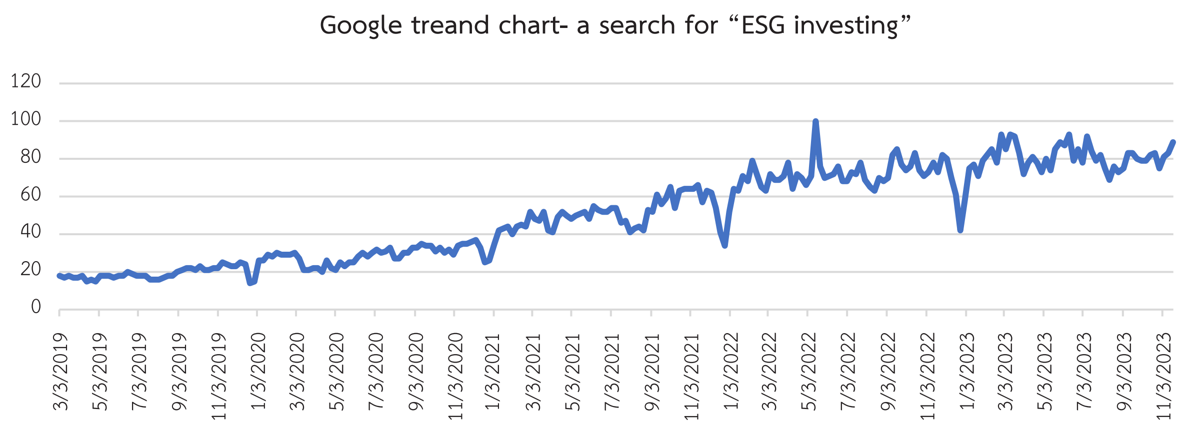


Figure 1 Google trend chart – a search for "ESG investing" over the last five years.
Source(s): https://trends.google.com/trends/explore?date=today%205-y&q=ESG%20investing&hl=th

While the consideration of ESG factors is widely accepted, questions persist regarding whether ESG performance will indeed yield a positive impact on firm value or overall performance. In particular, there is uncertainty about which dimensions of ESG exert the greatest influence and whether businesses with strong ESG performance can outperform their competitors in creating value. Numerous studies have explored the relationship between ESG and firm value (Melinda & Wardhani, 2020; Eng et al., 2022; Rastogi et al., 2024), with the majority identifying a positive correlation between ESG and firm value. However, investors still require a comprehensive understanding of how to judiciously utilize ESG data across all dimensions, as some studies have yielded contradictory findings. For instance, Maji & Lohia (2023) discovered that ESG operations not only fail to generate added value but also have a negative impact on operating results. Similarly, Bodhanwala & Bodhanwala (2023) found no significant relationship between ESG and operating performance or firm value, while Singh & Jaiwani (2023) observed a positive correlation between ESG performance and firm value in developed countries, contrasting with a negative correlation in developing nations. Deloitte (2022) summarized the results of a study utilizing data from companies listed in the ASX200 stock index, representative of the Australian Stock Exchange, spanning from 2019 to 2021. The findings indicate a “size effect,” wherein larger companies exhibit higher ESG scores. Moreover, there exists a positive correlation between ESG score, total shareholder returns, and firm value. Specifically, environmental scores exhibit the strongest relationship with total shareholder returns, while social scores demonstrate the greatest impact on increased firm value.

Similarly, Manapreechadeelert et al. (2024) investigated ESG practices in Thai listed companies, aligning with Deloitte (2022) findings regarding the “size effect.” In smaller companies, ESG practices tend to have a negative effect on performance, contrasting with the positive relationship observed in larger companies. However, the presence of proficient senior executives with efficient management skills can reverse this trend. Their influence, acting as a controlling variable, allows ESG operations to positively impact firm value, similar to the findings of Suttipun et al. (2023), who investigated ESG in Thai listed companies. They discovered that female board members, acting as a governance variable, significantly influence ESG and performance, underscoring the importance of corporate governance mechanisms in driving ESG performance.

The Board of directors serves as a crucial mechanism for corporate governance, driving ESG initiatives across strategies, policies, goals, operations, and outcomes. It plays a pivotal role in overseeing risk management, engaging stakeholders, and ensuring the transparent disclosure of significant ESG information to the public. Collaborating closely with the company’s executive team, the board works collectively to advance ESG efforts efficiently, aiming to achieve predetermined objectives

(Almaqtari et al., 2023; Almaqtari et al., 2023; Menicucci & Paolucci, 2023). Board independence stands out as a key attribute ensuring that the company's strategic direction remains aligned with the interests and expectations of its stakeholders. An independent board fosters operations aimed at safeguarding stakeholders' interests, thereby mitigating conflicts of interest and proxy issues. Consequently, independent boards are more inclined to undertake tasks and disclose ESG information, thus addressing asymmetric information challenges (Menicucci & Paolucci, 2023).

Therefore, this study investigates the governance influence of board independence to offer fresh insights into the relationship between ESG performance and the valuation of Thai listed companies. It contributes to the existing literature by addressing a previously overlooked aspect. To the best of the authors' knowledge, the moderating role of board independence has been neglected in examining this connection, leaving a gap in understanding the extent to which board independence shapes the relationship between ESG performance and firm value. Consequently, this research aids in enhancing corporate governance mechanisms within companies by emphasizing the importance of developing ESG performance to enhance value and sustain long-term investment returns. ESG data plays a crucial role in shaping sustainability plans, improving performance, and attracting funding sources. Investors increasingly expect companies to proactively adopt responsible measures across all dimensions of ESG, thereby prioritizing businesses with strong ESG performance.

This paper is structured as follows: Section 2 provides the background for this study, reviewing previous literature and developing testable hypotheses empirically. Section 3 outlines the research design, including data and sample selection, variable measurement, and model specification. Section 4 presents the empirical results. Section 5 concludes the research, while Section 6 offers suggestions for future research and discusses limitations.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 ESG and Firm Value

The relationship between environmental, social, and governance (ESG) performance and firm value has been examined through various theories, with a notable focus on stakeholder theory (Freeman, 1984) in empirical research. According to this concept, ESG contributes to building a company's credibility by demonstrating its commitment to stakeholders and showcasing responsible business operations aimed at sustainable growth. Additionally, it reflects the company's approach to managing relationships and services in terms of corporate governance, aiming to establish efficient, transparent, and auditable management practices while considering stakeholders (Velte, 2020; Bodhanwala & Bodhanwala, 2023; Maji & Lohia, 2023). Such practices have a positive impact not only on listed companies but also on the domestic economy, fostering steady and sustainable growth. Listed companies prioritize business growth while enhancing societal and environmental well-being. However, besides stakeholders, capital serves as another crucial factor nurturing a business's survival and growth. When companies receive investment, they are expected to generate profits. However, in today's complex business landscape filled with challenges such as fluctuating markets and environmental concerns, sustainability cannot be solely evaluated based on profits. Businesses must strike a balance between profitability and societal impact. Positive operating results encompass more than just financial gains; they also encompass sustainable operations (Velte, 2020). When stakeholders are satisfied with a company's performance, it translates into increased firm value (Freeman, 2010; Singh & Jaiwani, 2023; Suttipun et al., 2023).

Most empirical research on ESG and firm value indicates a positive relationship (Aboud & Diab, 2018; Buallay et al., 2020; Melinda & Wardhani, 2020; Ademi & Klungseth, 2022; Chininga et al., 2023; Suttipun et al., 2023). However, conflicting results also exist in the literature. For instance, Bodhanwala & Bodhanwala (2023) examined the relationship between ESG and firm value during the Covid-19 pandemic and found no significant relationship between ESG and firm value. They suggested that investors were more focused on factors like debt, return on assets, and dividend payments during the crisis rather than ESG performance scores. Similarly, Alhawaj et al., (2023) failed to find a relationship between ESG and firm value, regardless of whether the study focused on developed or emerging countries. Additionally, some studies have even reported a negative impact between ESG and firm value. For example, Singh & Jaiwani (2023) found that in developing countries, ESG performance is negatively correlated with firm value. Similarly, Manapreechadeelert et al., (2024) discovered that in small companies in Thailand, ESG operations are perceived as having high costs compared to the anticipated benefits, particularly in terms of the expenses associated with altering internal systems and the data collection and analysis processes.

However, stakeholder theory and the majority of past empirical research suggest a positive relationship between ESG and firm value. This is attributed to the fact that ESG operations are associated with mitigating both risk dimensions, enhancing competitive potential, and gaining acceptance from stakeholders. This stakeholder acceptance directly impacts the long-term survival and sustainable growth of businesses. Based on the foregoing discussion, the first hypothesis is formulated as follows:

***H1**. There is a significant positive impact of ESG score on the firm value.*

In addition to utilizing the total score of ESG elements, this study also examines each sub-component within each area: environmental (E), social (S), and corporate governance (G) performance.

2.2 Environment and Firm Value

Environmental issues are escalating, exerting a critical impact on the lives and livelihoods of all living organisms on Earth. From global warming and pollution to floods, droughts, and erratic weather patterns, the challenges are manifold (Menicucci & Paolucci, 2023). The current issue of toxic dust PM 2.5 further exacerbates the situation, demanding attention from both public and private entities to find solutions and address this crisis (Bodhanwala & Bodhanwala, 2023). As a result, commitment to environmental protection has emerged as a strategic imperative for all companies. Driven by regulatory frameworks and pressure from stakeholders, companies are compelled to prioritize long-term sustainable value creation (Dkhili, 2023). This entails focusing on environmental stewardship, including efforts to reduce carbon dioxide emissions, promote recycling, and increase the utilization of renewable energy sources. By doing so, companies not only enhance their market position but also contribute to the broader societal well-being (Al Amosh & Khatib, 2022). It is increasingly recognized that a company's success should not be solely measured by economic gains but also by its achievements in environmental conservation. This holistic approach to success aligns with the notion that environmental preservation benefits society as a whole (Radhouane et al., 2018; Al Amosh & Khatib, 2022; Al-Hattami, et al., 2023).

The benefits derived from environmental initiatives and the dissemination of information to external stakeholders are reflected through stakeholder theory. This theory posits that a company is a complex network of interconnected relationships among various stakeholders (Freeman, 1984). By establishing environmental performance objectives, companies can adopt operations that address the needs of all stakeholder groups in a balanced manner. These stakeholders include government agencies, society, local communities, investors, customers, partners, directors, and employees (Alareeni & Hamdan, 2020). The company's overarching mission is to foster understanding and instill confidence in its current and future environmental endeavors. By doing so, it aims to encourage engagement, meet expectations on critical issues, foster positive relationships, and cultivate networks with stakeholders (Yekini et al., 2019; Ye et al., 2023).

Disclosing environmental performance information can enhance a company's value by providing valuable insights to a wide range of stakeholders and meeting their information needs, particularly in response to societal demands for environmentally responsible business practices (Meng et al., 2014; Qiu et al., 2016). Research by Samy El-Deeb et al. (2023) and Suttipun et al. (2023) has shown a positive relationship between environmental performance and firm value, while Radhouane et al., (2018) have demonstrated that environmental performance can serve as a filter for assessing the credibility of environmental disclosure, thereby bolstering external stakeholders' confidence. However, contrasting findings have been reported by Qiu et al. (2016), who did not observe any relationship between environmental performance and firm value.

Based on data from SET (2023), it was observed that Thai listed companies are proactively addressing and managing security risks, particularly those related to ESG, such as climate change risks and emerging risks anticipated in the future. Moreover, they are innovating to meet consumer needs and adapt to the rapidly evolving environmental landscape. These companies are setting objectives for environmental stewardship, optimizing energy and water usage, and implementing effective waste management practices. These initiatives also serve as positive signals to investors. Consequently, this gives rise to the sub-hypothesis H1a as follows:

***H1a**. There is a significant positive impact of environmental score on the firm value.*

2.3 Social Operations and Firm Value

Adherence to human rights principles entails nurturing employees through their professional development and prioritizing health and safety in the workplace. Moreover, active involvement in community development initiatives underscores a company's dedication to societal well-being (Aboud & Diab, 2018). Social performance serves as a form of transparency that can earn a company the respect of its employees, thereby gradually enhancing its efficiency, performance, and overall value (Cormier et al., 2011). Companies that engage in extensive social disclosure tend to cultivate a stronger reputation and deeper connections with stakeholders and related parties, ultimately resulting in a higher firm value (Gray et al., 1995). This encompasses various aspects, including occupational health and safety management, labor and employment practices such as board diversity, fair remuneration, gender equality, ethical considerations, and the social objectives embedded within the company's ethos (Said & ElBannan, 2024).

Another benefit of social activities and disclosures by firms is their support and application of agency theory, which aims to mitigate conflicts between shareholders and top management, consequently enhancing firm value (Samy El-Deeb et al., 2023). Additionally, as highlighted by An & Liu (2023), disclosures regarding employee rights can influence a company's image, potentially leading to increased sales and long-term financial success (Jouber, 2022). According to stakeholder theory, when a firm's actions align with the values of its stakeholders, the perception of the firm tends to be positive. Enhancing employee well-being contributes to firm value, as employees are pivotal contributors and stakeholders in firms. Furthermore, a local community's concern for employee welfare can impact local businesses. Local social norms regarding employee rights can exert external pressure on businesses as the community advocates for a more employee-friendly society (Mu et al., 2024).

In 2022, it was observed that Thai listed companies prioritize the respect for human rights in line with United Nations principles, both within their organizations and in their dealings with business partners (SET, 2023). They are prepared to establish working groups to manage risks that may arise and actively work to prevent violations. There has been an increase in attention to labor rights and community rights, coupled with efforts to enhance employees' skills and potential at all levels through various training programs. Additionally, companies are receptive to employee feedback, organizing internal competitions to encourage innovation and implementing policies that prioritize employee safety by involving them in risk assessments and implementing preventive measures (Suttipun et al., 2023). Moreover, there is a strong emphasis on community development initiatives aimed at fostering careers by employing individuals from the community and providing them with relevant knowledge and expertise aligned with business operations. This approach is aimed at creating sustainable income and opportunities for the community (SET, 2023). Consequently, this leads to the sub-hypothesis H1b as follows:

***H1b**. There is a significant positive impact of social score on the firm value.*

2.4 Corporate Governance Operations and Firm Value

Strong corporate governance mechanisms are essential for ensuring sustainable performance, with a robust internal control system typically resulting in heightened attention to shareholder needs. The Stock Exchange of Thailand places considerable emphasis on corporate governance, viewing it as a means to enhance value and foster the sustainable growth of listed companies. Moreover, it serves as a tool for monitoring and evaluating executive performance, enabling executives to operate at their full potential and generate maximum benefit for the company. This approach is underpinned by Agency Theory (Jensen, 1983), which underscores the importance of considering various stakeholders' interests that impact the company's objectives, such as customers, competitors, and communities, as supported by stakeholder theory (Freeman, 1984).

Previous studies suggest a strong relationship between corporate governance and firm value. For instance, Maji & Lohia (2023) discovered a positive impact of governance scores on firm value. Similarly, Alareeni & Hamdan (2020) found that corporate governance disclosure positively influences firms' market performance, indicating an increase in the firm's asset market value (Tobin's Q). Additionally, Suttipun et al. (2023) demonstrated the effect of governance performance on the valuation of Thai listed firms from 2015 to 2019. Their findings revealed that the governance score significantly and positively influences Tobin's Q, underscoring the importance of high corporate governance standards in enhancing firm performance to the benefit of shareholders and other stakeholders, thereby ensuring the firm's continuity. However, Carvalho et al., (2021) found no evidence to suggest that Tobin's Q predicts corporate governance practices.

Thai listed companies receive support from the Thai Stock Exchange in enhancing corporate governance, underscoring the significance of continuous development for listed companies to achieve growth of high quality across all dimensions. This initiative aims to enhance the competitiveness of Thai listed companies on the international stage (SET, 2023). Consequently, this research seeks to ascertain whether companies with strong corporate governance, as evidenced by high evaluation scores, experience an increase in firm value. These findings underscore the importance of considering governance scores for companies operating in Thailand. Therefore, this leads to the following sub-hypothesis, H1c:

H1c. *There is a significant positive impact of governance score on the firm value.*

2.5 Moderating Effect of Board Independence on ESG and Firm Value

Board independence plays a significant role in influencing the relationship between ESG performance and firm value (Brinette et al., 2023). For instance, while ESG practices can positively impact a company's financial performance and value creation, the extent of these effects is contingent upon the independence of the board. Enhanced transparency in board performance can instill greater confidence among stakeholders regarding the effectiveness of a company's ESG initiatives. Conversely, inadequate representation of independent directors may diminish confidence in a company's ESG operations, casting doubts on its performance and business value. According to agency theory, board independence constitutes a crucial element of effective corporate governance mechanisms (Almaqtari et al., 2023; Almaqtari et al., 2023; Menicucci & Paolucci, 2023). Independent directors play a pivotal role in ensuring the sustainability of the organization by mitigating potential conflicts of interest within the executive branch (Disli et al., 2022). By actively engaging in driving ESG initiatives and intensifying monitoring efforts, independent external directors can address ESG-related issues within listed companies, thereby fostering improvements and resolving concrete sustainability challenges (Rastogi et al., 2024). Consequently, this fosters an environment conducive to sound corporate governance practices and responsible operations. Furthermore, independent boards are expected to oversee the long-term success of the company and align the interests of various stakeholders (Disli et al., 2022).

In recent years, there has been a growing interest in exploring the relationship between ESG factors and firm performance and value. One area of particular interest is the potential moderating effect of board independence on this relationship. The purpose of this study is to investigate the

ESG and to examine the impact of ESG reporting and board independence on the firm value of listed companies in the Stock Exchange of Thailand (SET). Suttipun et al. (2023) explored how female board members moderate the relationship between ESG and firm performance among companies listed in Thailand. Their findings suggest that higher levels of female board representation strengthen the association between ESG factors and firm performance. The study revealed that companies with strong ESG practices and a significant presence of female board members tend to outperform their peers in terms of corporate performance. Additionally, robust corporate governance practices support the credibility of the link between ESG performance and financial outcomes. Effective corporate governance is shown to enhance ESG's financial success and bolster stakeholder confidence in the financial reporting of ESG-engaged firms (Almaqtari, Elsheikh, Al-Hattami, et al., 2023).

As previously noted, strong interdependencies exist between corporate governance and a firm's ESG activities, implying that corporate governance may moderate the ESG-firm value link (Albitar et al., 2020). However, it is believed that board qualifications will have the greatest impact on ESG projects' performance. In particular, stakeholder theory (Freeman, 1984) and agency theory (Jensen, 1983) may explain how board independence variables affect ESG and business value. It is common for board independence to increase efficient governance in organizations when decisions are made without bias or personal interests (Brinette et al., 2023). Board independence plays a larger supervisory role in firm performance (Brinette et al., 2023). Board independence encourages transparency and trust while prioritizing stakeholder requirements. consideration.

According to Nguyen & Thanh (2022), the board of directors' independence encourages social responsibility disclosure and increases the company's sustainability. Independent boards of directors must prioritize stakeholder requirements while maintaining the company's market validity. Disli et al. (2022) study found that boards with more independent directors are more inclined to emphasize sustainability activities. Furthermore, Al Amosh & Khatib (2022) found firms with highly autonomous boards are more inclined to participate in ESG efforts. According to Ortas et al. (2017) analysis of 87 published research papers, firms with a large number of independent directors are more likely to prioritize stakeholder requests and ESG criteria. Specifically, they assert that the presence of independent external directors on the board enhances oversight and safeguards the interests of shareholders. According to Ntim & Soobaroyen (2013), independent board members increase management supervision by allowing executives to participate in long-term ESG activities that may benefit their firms' financial performance. They are stronger at involving diverse stakeholders and employ more sensitive tactics that balance short-term and long-term priorities, resulting in a positive moderating effect on the relationship between ESG and firm value (Al Amosh & Khatib, 2022).

Therefore, board independence is perceived as a key component of good corporate governance, capable of exerting a significant influence on the strength of the relationship between ESG scores and firm value. Consequently, the following assumptions are proposed:

***H2**: Board independence has a positive significant effect on the relationship between ESG and firm value.*

Tobin's Q is the most often used measure of a firm's value in research to date. Because this study focuses on market value for firm value, Tobin's Q ratio is an appropriate depiction. Tobin's Q compares the market value of total assets to the total book value of all assets held by the firm (Aboud & Diab, 2018). Tobin's Q is a market-based indicator that estimates a company's future profitability. This external market-evaluated indicator can be used to determine a company's value and growth potential. A greater Tobin's Q implies that investors have a higher evaluation of the company, suggesting that the company may have more future growth opportunities (Alareeni & Hamdan, 2020).

2.6 Conceptual Framework

Figure 2 illustrates the relationship among the four types of variables: independent variables (ESG performance, environmental aspect: ENV, social aspect: SOC, and corporate governance aspect: GOV), dependent variable (firm value: FV), governance variable (Board Independence: BIND), and control variables (Firm Size: SIZE, Firm Leverage: LEV, Firm Growth: SGR, and Return on Equity: ROE).

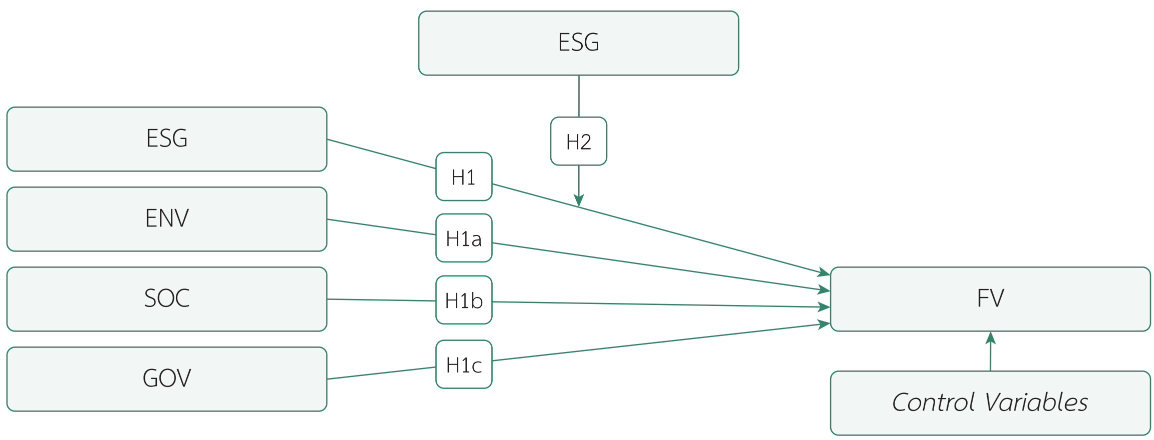


Figure 2 Conceptual framework

Source(s): Created by authors.

3. RESEARCH METHODOLOGY

3.1 Sample Selection and Data Collection

The initial sample group for this research comprises a total of 643 companies listed on the Stock Exchange of Thailand (SET). The study period spans from 2017 to 2022, aiming to provide comprehensive information covering the period before the economic crisis (the COVID-19 situation) from 2017 to 2019, and during the economic crisis in the subsequent three years from 2020 to 2022. This timeframe is chosen to reflect the continuous operation of ESG initiatives in Thai listed companies both before and during the economic crisis. In 2017, Thai listed companies ranked 10th in the global stock market, standing as the sole representative from Asia and one of only two stock exchanges from Emerging Markets to achieve such a ranking. This underscores the quality of Thai listed companies, which are comparable to the standards of developed capital markets. Furthermore, there was a significant expansion in information disclosure starting from 2016, with an increase of 62.5 percent, as reported by Corporate Knights (2017). Finally, Bloomberg assigns ESG scores, with weights of 33.33%, to the ENV, SOC, and GOV factors, indicating the importance of each factor. The scores range from 0 to 100, where 0 denotes the poorest performance and 100 is the highest. Detailed information regarding sample selection is presented in Table 1.

Table 1 Sample Selection

Sample Selection Criteria	Observations (Firm-Years)	Companies
Number of companies listed on the Thai Stock Exchange (SET) Rehabilitation Companies were excluded.	3,858	643
Excluded (1) companies in the financial industry group	408	68
(2) companies with no ESG score report on the Bloomberg database.	2,670	445
(3) companies with negative shareholders' equity.	38	7
(4) companies with Outliers	219	18
Total Sample	523	105

Source(s): Created by authors.

As shown in Table 1, it is evident that a significant number of companies did not disclose their ESG score information, amounting to as much as 77.39 percent (calculated from the data after deducting companies in the financial industry = 2,670/3,450). This incomplete information poses a limitation to the research objectives. Additionally, there were 36 instances of negative shareholders' equity data, which could potentially affect the calculation of Tobin's Q (reference), along with data containing outlier values.

The data were analyzed through Mahalanobis Distance and Boxplot methods for outliers identification (Rampasso et al., 2023), resulting in a research sample of 523 observations. This sample consisted of 138 observations from the service industry, 127 from the resource industry, 124 from the real estate and construction industry, 52 from the agriculture and food industry, 46 from the technology industry, 31 from the industrial product industry, and 5 from the consumer product industry.

3.2 Study Variables

This study focuses on examining the relationship between ESG performance and the firm value of companies listed on the Thai Stock Exchange, as well as the influence of board of directors' independence as a moderator variable. Four types of variables, including control variables, will be utilized to analyze the relationship between these variables. The details of these variables are presented in Table 2.

Table 2 A linkage of the three approaches

Types	Variables	Measurement	Abbreviation	Reference
Dependent Variable	Firm Value	Tobin's Q (total market value of firm/total asset value of firm)	FV	Bodhanwala & Bodhanwala (2023); Said & ElBannan (2024)
Independent Variables	ESG Score	Bloomberg's ESG Disclosure Scores	ESG	Alareeni & Hamdan (2020); Ademi & Klungseth (2022); Buallay & Al Marri, (2022); Menicucci & Paolucci (2023); Said & ElBannan (2024)
	I. Environmental Score		ENV	
	II. Social Score		SOC	
	III. Governance Score		GOV	

Table 2 A linkage of the three approaches (Cont.)

Types	Variables	Measurement	Abbreviation	Reference
Moderating Variable	Board Independence	Independent board members/ Total board members	BIND	Al Amosh & Khatib, (2022) Almaqtari, Elsheikh, Al-Hattami, et al., (2023); Menicucci & Paolucci (2023)
Control Variables	Firm Size	Logarithm of total assets	SIZE	Melinda & Wardhani (2020); Ademi & Klungseth (2022); Buallay & Al Marri, (2022); Bodhanwala & Bodhanwala, (2023); Menicucci & Paolucci (2023); Said & ElBannan (2024)
	Firm Leverage	Total Debt/Total Equity	LEV	
	Firm Growth	The annual rate of change in the sales volume each year	SGR	
	Return on Equity	EBIT/Average total equity	ROE	

Notes: Data are available from the sources identified in the paper. The SETSMART database provides financial statement disclosures, while Bloomberg provides ESG disclosure scores and ratings. Units of variable measurement: ESG, ENV, SOC, GOV (Score); BIND, SGR, ROE (%); FV, LEV; (Ratio); FS (millions Bath), lnSIZE – The natural logarithm of total assets.
Source(s): Created by authors.

3.3 Model Specification

This study examines the research hypotheses through multiple regression and Hayes' PROCESS macro. The Hayes' PROCESS macro can effectively test and visualize how a moderator influences the relationship between an antecedent and an outcome variable. By leveraging both the pick-a-point approach and the Johnson-Neyman technique, we gain comprehensive insights into the conditional effects of moderator variables (Hayes, 2022).

The multiple regression analysis to test sub-hypotheses (H1a, H1b, H1c) and Process regression analysis Hayes (2018) to test the main hypotheses (H1, H2), incorporating Year fixed effects and Industry fixed effects. The model employed to test sub-hypotheses regarding the impact of environmental, social, and corporate governance scores on firm value is tested with models 1 to 3, as follows.

Sub-hypothesis (H1a)

$$FV_{it} = \beta_0 + \beta_1 ENV_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 GROWTH_{it} + \beta_5 ROE_{it} + \text{Year/Industry Fixed Effects} + \varepsilon_{it} \quad (1)$$

Sub-hypothesis 1b (H1b)

$$FV_{it} = \beta_0 + \beta_1 SOC_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 GROWTH_{it} + \beta_5 ROE_{it} + \text{Year/Industry Fixed Effects} + \varepsilon_{it} \quad (2)$$

Sub-hypothesis (H1c)

$$FV_{it} = \beta_0 + \beta_1 GOV_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 GROWTH_{it} + \beta_5 ROE_{it} + \text{Year/Industry Fixed Effects} + \varepsilon_{it} \quad (3)$$

We examined simple moderation using “Model 1” in Process (Model templates for PROCESS for SPSS) analysis (Hayes, 2018), as shown in Table 6. We added ESG scores, board independence, firm value, and control variables as covariates to the process macro. We used 5,000 bias-corrected bootstrap samples and 95 percent confidence intervals in the model (Preacher and Hayes, 2008). To test hypotheses (H1 and H2) that the ESG score impacts firm value, and, more specifically, whether board independence variables moderate the relationship between ESG and firm value.

Hypothesis (H1, H2)

$$FV_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 BIND_{it} + \beta_3 ESG_{it} * BIND_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 GROWTH_{it} + \beta_7 ROE_{it} + \text{Year/Industry Fixed Effects} + \varepsilon_{it} \quad (4)$$

For company i in year t, where FV is the dependent variable (Firm Value), β_0 is the Model constant, β_{1-7} is the coefficient estimating the parameters of the independent and controlled variables, and ε represents the error term.

ESG*BIND is a two-way interaction between ESG and board Independence.

4. DATA ANALYSIS AND DISCUSSION

4.1 Descriptive Statistics

Table 3 A linkage of the three approaches

Variables	Obs	Mean	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis
FV	523	2.137	1.592	0.407	8.778	1.801	3.021
ESG	523	49.632	14.238	17.450	81.620	0.201	–0.737
ENV	523	32.925	25.179	0.000	89.100	0.321	–1.023
SOC	523	33.011	14.440	6.770	72.640	0.482	–0.385
GOV	523	83.809	7.991	57.870	98.620	–1.530	2.671
BIND	523	44.750	11.193	33.333	80.000	0.948	0.084
lnSIZE	523	17.668	1.490	13.790	21.950	0.115	–0.252
LEV	523	1.245	0.779	0.107	3.068	0.654	–0.488
SGR	523	6.407	17.854	–23.330	43.990	0.144	–0.744
ROE	523	17.884	17.261	–72.900	91.920	0.229	7.733

Note: This table presents the number of observations, pooled mean, standard deviation, minimum and maximum of the dependent variables (firm value: FV), independent variables (environmental social governance score: ESG, environmental score: ENV, social score: SOC, governance score: GOV), moderator variable (board independent: BIND) control variables (firm size: InSIZE, firm leverage: LEV, firm growth: SGR). The sample consists of 523 firm-year observations from 2017 to 2022, representing 105 individual public firms in Thailand. Units of variable measurement: ESG, ENV, SOC, GOV (Score); BIND, SGR, ROE (%); FV, LEV; (Ratio); FS (millions Bath), lnSIZE – The natural logarithm of total assets.
Source(s): Created by authors.

Table 3 presents descriptive statistics to explore the empirical distribution of the variables included in this study. Firm value (Tobin's Q) statistics depict the existence of both high- and low-market value firms (8.778 and 0.407, respectively), with a mean value of 2.137. However, the observed skewness values suggest that the distribution of the variables is not highly skewed. The mean value of the overall ESG score is found to be 49.632, indicating that the sampled Thai-listed companies disclose less than the average ESG information required by Bloomberg. Regarding each measure of ESG, the score on governance issues has the highest mean of 83.809. However, the scores on social and environmental issues are considerably lower, with means of 33.011 and 32.925, respectively. The range for all three components of ESG is also very high, ranging from around 0 to 98.620, indicating that some firms disclose very little ESG information, while others disclose more.

An independent director is a non-executive member who does not have a pecuniary relationship with the company. They must be independent of the major shareholders or a group of major shareholders and the company's executives. SET requires that at least one-third of the board be independent directors. The mean of board independence is 44.75% of the sampled Thai-listed companies, ranging from around 33.33% to 80%.

The range for leverage shows that some companies use a higher proportion of debt capital in their capital structure, while others use none. The average leverage is 1.245 times that of high- and low-debt capital (3.068 and 0.107, respectively). Sales growth ranges from -23.33% to 43.99%, implying that our sample consists of companies with both negative and positive sales growth. The univariate statistics of ROE range from –72.9% to 91.92%, demonstrating the existence of both profitable and loss-making firms in the sample. A logarithmic transformation was applied to total assets to normalize the data (Skewness = 6.201 and Kurtosis = 47.793, indicating a non-normal distribution).

To obtain a clearer understanding of ESG performance, including its three components, we utilize boxplots. For the overall ESG, environmental, and social scores, Figure 3 illustrates that the size of the box is nearly identical across the sample. This suggests that the spread of ESG scores is consistent, although there are some outliers for governance scores. However, the placement of the median within the box suggests that the distribution is symmetrical for the sample.

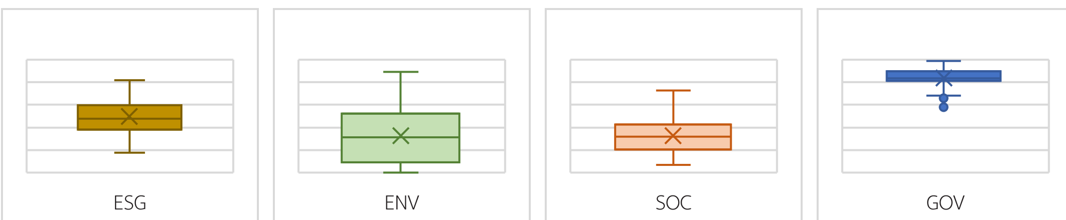


Figure 3 Block plots of ESG score

Source(s): Created by authors

4.2 Correlation Matrix

Table 4 Correlation Matrix

	ESG	ENV	SOC	GOV	BIND	lnSIZE	LEV	SGR	ROE	FV
ESG	1.000									
ENV	.961**	1.000								
SOC	.926**	.843**	1.000							
GOV	.619**	.451**	.477**	1.000						
BIND	.199**	.219**	.151**	0.079	1.000					
lnSIZE	.657**	.637**	.602**	.407**	.192**	1.000				
LEV	.146**	.117**	.160**	.103*	0.011	.365**	1.000			
SGR	0.050	0.075	0.019	−0.013	.105*	0.080	.150**	1.000		
ROE	.099*	.103*	.090*	0.065	0.055	0.038	0.001	.299**	1.000	
FV	0.041	0.073	0.042	−0.076	0.081	−.191**	−.188**	0.039	.379**	1.000

Notes: ***, ** and * indicate significance at 1%, 5% and 10% level, respectively, by two-tailed test
Source(s): Created by authors

Table 4 presents the results of the bivariate correlation between all the covariates used in our study to assess the possibility of multicollinearity. The analysis of the matrix reveals a significant positive correlation among the ESG components. The correlation coefficients between the three ESG variables and the overall score are quite high. The author could not simultaneously test ESG, ENV, SOC, and GOV, so the author separated these variables without including them in the same model to meet the multiple regression requirements. Furthermore, the size of a firm is also positively correlated with the ESG components, indicating that large-sized firms have higher ESG scores. However, in our model test, no correlation exceeds 0.8, indicating no serious issue of multicollinearity among the variables (Hair, 2009). Nonetheless, we compute the VIF to reassess the severity of multicollinearity, and the mean VIF values for each model are presented in the respective tables. The results also indicate that multicollinearity is not a problem in the present context.

4.3 Results of the Multiple Regression Analysis

Multiple regression analysis was employed to test the research hypotheses, where regression models (Models 1–3) were formulated to investigate the components of ESG on firm value. The results in Panels A–C of Table 5 summarize the testing of sub-hypotheses (H1a–H1c).

The regression results of Models 1, 2, and 3 are presented in Table 5. They show the impact of the components of ESG on firm value after controlling for the effects of other explanatory variables. We observe a positive impact of the environmental (ENV) and social (SOC) scores on firm value. Specifically, the impact of ENV and SOC on firm value is found to be significant at the 1% level. This positive influence of environmental and social performance on firm value aligns with findings from earlier research in different contexts, indicating that firms with high scores on environmental and social indicators achieve greater wealth. This finding is supported by Alareeni & Hamdan (2020), Chininga et al. (2023) and Samy El-Deeb et al. (2023). However, the governance score shows an insignificant relationship with firm value, as noted by Chininga et al., (2023) and Suttipun et al., (2023). ***Hence, the research supports H1a and H1b but invalidates H1c***.

Regarding the control variables of firm characteristics in the three models, the coefficient of the firm size and leverage is found to be significantly negative. Additionally, the coefficient of ROE is positively significant, while the coefficient of sales growth is found to be insignificant on firm value.

The observed adjusted R^2 values and significant F-statistics across the three models advocate for the goodness of fit of the model used. The results indicate that the model is valid and there is a significant impact of the ENV and SOC scores on firm value, explaining 42.73% and 41.05% of the change in the dependent variable, respectively.

Table 5 Impact of the Components of ESG on Firm Value (Model 1–3)

Tobin's Q	β	Std. Err	*t*-stat.	*P* > *t*	[95% conf	Interval]
Panel (A): The impact of ENV on firm value						
Constant	6.16232	0.87966	7.005	0.000**	4.43408	7.89056
ENV **(H1a)**	0.01835	0.00316	5.804	0.000**	0.01214	0.02456
lnSIZE	–0.28816	0.05224	–5.516	0.000**	–0.39081	–0.18552
LEV	–0.19946	0.07539	–2.645	0.008**	–0.34758	–0.05133
SGR	–0.33841	0.35114	–0.964	0.336^{NS}	–1.02828	0.35145
ROE	2.72962	0.33466	8.156	0.000**	2.07213	3.38711
Included industry and time (year) fixed effects, Adjusted R^2 42.73%, *F*-stat 25.342** Durbin-Watson 1.873, VIF 1.100–1.325						

Table 5 Impact of the Components of ESG on Firm Value (Model 1–3) (Cont.)

Tobin's Q	β	Std. Err	*t*-stat.	*P* > *t*	[95% conf	Interval]
Panel (B): The impact of SOC on firm value						
Constant	4.81052	0.81872	5.876	0.000**	3.20202	6.41903
SOC **(H1b)**	0.02167	0.00507	4.277	0.000**	0.01172	0.03163
lnSIZE	–0.21804	0.04993	–4.367	0.000**	–0.31613	–0.11994
LEV	–0.25334	0.07551	–3.355	0.001**	–0.40170	–0.10498
SGR	–0.23476	0.35834	–0.655	0.513 NS	–0.93877	0.46926
ROE	2.76518	0.34003	8.132	0.000**	2.09712	3.43323
Included industry and time (year) fixed effects, Adjusted R^2 41.05%, *F*-stat 23.717** Durbin-Watson 1.888, VIF 1.082–1.297						

Tobin's Q	β	Std. Err	*t*-stat.	*P* > *t*	[95% conf	Interval]
Panel (C): The impact of GOV on firm value						
Constant	3.43577	0.81003	4.242	0.000**	1.84434	5.02720
GOV **(H1c)**	–0.00509	0.00753	–0.676	0.499 NS	–0.01988	0.00970
lnSIZE	–0.08599	0.04544	–1.892	0.059 NS	–0.17525	0.00328
LEV	–0.27715	0.07672	–3.612	0.000**	–0.42789	–0.12642
SGR	–0.42378	0.36304	–1.167	0.244 NS	–1.13703	0.28946
ROE	2.96157	0.34448	8.597	0.000**	2.28478	3.63836
Included industry and time (year) fixed effects, Adjusted R^2 38.97%, *F*-stat 21.834** Durbin-Watson 1.8781, VIF 1.073–1.221						

Notes: ** indicate significant 1% level, respectively, NS: not significant.
Source(s): Created by authors

4.4 Results of the Process Regression Analysis

Table 6 Process regression analysis of the impact of ESG score on firm value using board independent as a moderating variable

Tobin's Q	β	*SE*	*t*-stat.	*P > t*	[LLCI	ULCI]
Panel (A): The impact of ESG on firm value, and effects of board independent						
Constant	6.8884	0.9509	7.244	0.000**	5.0202	8.7567
ESG (H1)	0.0220	0.0054	4.047	0.000**	0.0113	0.0328
BIND	–0.1479	0.5630	–0.263	0.793^{NS}	–1.2541	0.9582
ESG∗BIND (H2)	0.1880	0.0333	5.643	0.000**	0.1225	0.2534
lnSIZE	–0.3032	0.0528	–5.743	0.000**	–0.4069	–0.1995
LEV	–0.1466	0.0753	–1.947	0.052^{NS}	–0.2946	0.0013
SGR	–0.3260	0.3464	–0.941	0.347^{NS}	–1.0065	0.3545
ROE	2.6527	0.3296	8.049	0.000**	2.0052	3.3002
Included industry and time (year) fixed effects, Adjusted R^2 46.67%, *F*-stat 31.848** R^2-change 3.37%						
Panel (B): Conditional effects of board independent						
Interaction levels of BIND	**Effect**	**SE**	***t*-stat.**	***P > t***	**[LLCI**	**ULCI]**
Low	0.0010	0.0070	0.1438	0.8858	–0.0128	0.0148
Average	0.0220	0.0054	4.0471	0.0001	0.0113	0.0328
High	0.0431	0.0062	6.9819	0.0000	0.0310	0.0552
Moderator value(s) defining Johnson-Neyman significance region (s)						
Value		% below			% above	
0.3927		39.9618			60.0382	

Source(s): Created by authors.

Notes: ** indicate significant 1% level, respectively, NS: not significant.

The first hypothesis explores the impact of the ESG score on firm value, considering the aggregate overall score values that encompass environmental, social, and governance components. As depicted in Table 6, Panels A, the model confirms that the ESG score indeed significantly influences the company's value. The results reveal a positive relationship between ESG and firm value, with a coefficient value of 0.022 for Bloomberg's assessment of the firm's ESG score. These findings suggest a correlation between ESG and market performance metrics. Investors tend to perceive companies with exemplary environmental and social standards as offering greater investment stability and fostering stronger relationships with stakeholders. Moreover, as a corporation's environmental and social performance improves, investors' perception of the company is bolstered, thereby enhancing its standing, market position, and overall performance (Samy El-Deeb et al., 2023). ***Hence, the research supports H1***.

Furthermore, as shown in Table 6, Model (4) was employed to explore the influence of ESG on firm value with board independence as a moderating variable. The analysis revealed that board independence moderates the positive correlation between ESG and firm value, suggesting that the impact of ESG on firm value becomes more pronounced with higher levels of board independence. ***Hence, the research supports H2***. Specifically, the study found that the favorable effect of ESG on firm value was heightened when board independence reached an average or above-average level (0.39 times or 39.27% and above), while no statistically significant effect was observed when board independence fell below average. The results demonstrated that the coefficient increased from 0.022 to 0.188 with the inclusion of board independence in the model, indicating that an independent board could enhance the credibility of ESG performance, potentially boosting investor confidence and mitigating information risk. One noteworthy finding of the study revealed a negative association between total assets, or firm size, and firm value in the context of Thai-listed companies. The phenomenon whereby smaller businesses exhibit higher market valuations than larger ones may help elucidate this observation.

Moreover, the explanatory power of the model increased to 46.67% of the change in the dependent variable. It is noteworthy that board independence plays a crucial role in enhancing firm value, as higher levels of board independence are associated with improved performance. In a study by Manosoonnthorn & Srijunpetch (2016) on the Thailand stock market, it was found that increased board independence positively impacted firm performance. Similarly, Tran (2021) emphasized the synergistic effect of CSR and board independence on profitability, with significant positive outcomes observed in large companies across 20 countries in Asia, America, and Europe.

4.5 Additional Analysis

To verify the empirical results, we conducted an additional analysis to examine whether the relationship between the ESG score and firm value is influenced by board independence. We re-estimated the main models, dividing Thai-listed companies into two clusters based on their classification of mandatory environment disclosure (Resources and Property & Construction industry) and voluntary environment disclosure (Agro & Food, Consumer Products, Industrials, Services, and Technology industry) due to significant variations in environmental scores within the sample.

Table 7 seeks to summarize the additional analysis relevant to the regression modeling of moderating effects. The results of these additional regressions were consistent with those of the main analysis. Specifically, the regression results for companies with voluntary environmental disclosure confirmed a positive relationship between board independence, ESG score, and firm value. However, the results were insignificant for companies with mandatory environmental disclosure, particularly in the resources, property, and construction industries. The significant environmental impacts associated with these industries have prompted calls for an enhanced focus on ESG practices from various stakeholders. With investors and consumers increasingly expressing concerns about ESG issues, legal, regulatory, and reporting requirements are evolving rapidly, including in Thailand.

Table 7 Process regression analysis of mandatory environment disclosure and voluntary environment disclosure

Tobin's Q	β	***SE***	***t*-stat.**	***P > t***	**[LLCI**	**ULCI]**
Panel (A): The mandatory environment disclosure, Observations = 251 Samples						
Constant	5.1027	0.8950	5.702	0.000	3.3396	6.8658
ESG	0.0059	0.0040	1.460	0.146^{NS}	–0.0020	0.0138
BIND	–0.6605	0.4670	–1.414	0.159^{NS}	–1.5806	0.2596
ESG*BIND	0.0262	0.0299	0.876	0.382^{NS}	–0.0327	0.0850
lnSIZE	–0.1989	0.0498	–3.994	0.000**	–0.2970	–0.1008
LEV	–0.0296	0.0698	–0.425	0.672^{NS}	–0.1672	0.1079
SGR	0.6724	0.3095	2.173	0.031*	0.0627	1.2821
ROE	1.0526	0.3677	2.863	0.005**	0.3283	1.7770
Included industry fixed effects, R^2 44.46%, *F*-stat 4.886** R^2-change 2.60%						

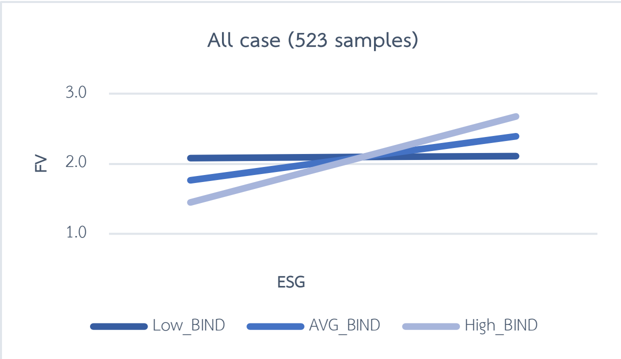
Table 5 Impact of the Components of ESG on Firm Value (Model 1–3) (Cont.)

Tobin's Q	β	*SE*	*t*-stat.	*P* > *t*	[LLCI	ULCI]
Panel (B): The voluntary environment disclosure, Observations = 272 Samples						
constant	15.7945	1.795	8.7991	0.000	12.2598	19.3291
ESG	–0.1589	0.0252	–6.3182	0.000**	–0.2085	–0.1094
BIND	–19.6766	2.5927	–7.5892	0.000**	–24.782	–14.5711
ESG*BIND	0.4531	0.0502	9.0193	0.000**	0.3542	0.5521
lnSIZE	–0.3656	0.0812	–4.5009	0.000**	–0.5256	–0.2057
LEV	–0.2277	0.1156	–1.9701	0.050**	–0.4553	–0.0001
SGR	–0.9256	0.5379	–1.7207	0.087[NS]	–1.9848	0.1337
ROE	2.8807	0.4538	6.3484	0.000**	1.9872	3.7743
Include Time (year) fixed effects, R^2 49.90%, *F*-stat 21.4956** R^2-change 15.74%						

Interaction levels of BIND	Effect	SE	*t*-stat.	*P* > *t*	[LLCI	ULCI]
Low	–0.0079	0.0113	–0.7012	0.4838	–0.0302	0.0143
Average	0.0371	0.0092	4.0121	0.0001	0.0189	0.0553
High	0.0880	0.0099	8.8950	0.0000	0.0685	0.1075

Moderator value(s) defining Johnson-Neyman significance region (s)		
Value	% below	% above
0.3934	48.8971	51.1029

Notes: ** indicate significant 5% and 1% level, respectively, NS: not significant.



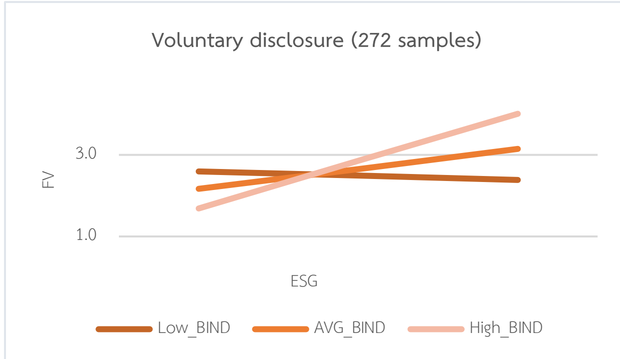


Figure 4 The moderating effect of board independence in the relationship between ESG score and firm value when "board independence" is "low", "average," and "high."

Source(s): Created by authors.

4.6 Summary of the Hypothesis Testing Results

Table 8 presents a summary of the findings from testing the research hypotheses

H. No	Hypothesis	Result
H1	There is a significant positive impact of ESG score on the firm value	Supported
H1a	There is a significant positive impact of environment score on the firm value	Supported
H1b	There is a significant positive impact of social score on the firm value	Supported
H1c	There is a significant positive impact of governance score on the firm value	Rejected
H2	The board independent has a positive significant effect on the relationship between ESG and firm value	Supported

Source(s): Created by authors

5. CONCLUSIONS AND CONTRIBUTION

This study analyzed the impact of ESG on firm value (Tobin's Q) by recognizing board independence as a moderator variable. Agency theory and stakeholder theory indicate that the ESG-firm value link will be mainly influenced by board independence variables. We selected listed corporations from Bloomberg (523 firm-years observations) covering the firm years 2017-2022. The findings from our moderation analysis are of primary importance as they offer a new perspective on how ESG influences firm value, especially targeting those with average or above-average industry board independence. Additionally, no study has additional analysis of empirical results through both mandatory and voluntary disclosures to observe clearer connectivity between the two. Hence, this study significantly augments the existing literature on the topic and its contribution.

Based on the results of this study, overall ESG, environmental, and social components have a positive and significant effect on firm value in the Thai stock market, consistent with stakeholder theory. This theory suggests that a firm's ESG practices can positively impact its reputation, company image, and financial value by meeting stakeholder needs and gaining societal legitimacy and support (Freeman, 1984). Investors are increasingly considering ESG considerations in investment decisions, favoring firms that emphasize ESG, likely resulting in better stock prices and market values (Aboud & Diab, 2018; Radhouane et al., 2018; Samy El-Deeb et al., 2023). In contrast, this study shows that firms with higher corporate governance scores did not exhibit better stock market performance. Corporate governance is a management tool within the business, providing the foundation for the organization to advocate for a decent corporate governance system over the years. Furthermore, relative to its social and environmental activities, its running expenses are low, and its operations are rather similar to those of other businesses at the fundamental level, so there is no appreciable correlation with the company's worth (Said & ElBannan, 2024). While the direct relationship between corporate governance scores and immediate company value might not be significant, excellent governance practices contribute to a company's long-term health and stability. They promote a culture of accountability and openness, which can attract investors, reduce risks, and perhaps contribute to improved financial performance over time. Thus, corporate governance remains an essential component of overall corporate strategy and sustainability.

Moreover, the study highlights the importance of board independence as a moderating variable in the relation between the ESG score and firm value, reinforcing the results and making them more robust. This lends credence to the theoretical aspect that independent boards facilitate better monitoring, leading to better firm value (Almaqtari, Elsheikh, Al-Hattami, et al., 2023).

The analysis indicates a positive and significant relationship between ESG, specifically environmental and social aspects, and firm value. This suggests that investors in the Thai market attach great significance to the ESG of firms and are inclined to invest in those demonstrating high ESG (Suttipun et al., 2023). However, the pattern indicates an increasing acknowledgment of the significance of ESG factors in evaluating a company's overall performance and worth (Meng et al., 2014). In the Thai stock market, firms can gain a competitive edge and distinguish themselves by disclosing their ESG, particularly given the increasing recognition and desire for sustainable practices among stakeholders (Freeman, 1984). Consequently, firms must improve their ESG performance disclosure protocols and effectively convey their ESG accomplishments and undertakings to the general public in a transparent and trustworthy manner.

This study highlights the significance of board independence in moderating the correlation between ESG and firm value. This suggests that the accuracy and reliability of ESG information are pivotal for investors to evaluate the ESG performance of firms and make well-informed investment choices (Aboud & Diab, 2018; Samy El-Deeb et al., 2023; Said & ElBannan, 2024). ESG should align with board independence and meet stakeholders' demands, emphasizing the significance of communicating information regarding companies' ESG to avoid tensions with stakeholders (Disli et al., 2022). Moreover, independent boards seek to enhance their reputation through sustainability activities, recognizing the importance of strengthening legitimacy and educating owners about the importance of ESG disclosure in gaining trust with stakeholders (Menicucci & Paolucci, 2023). Additionally, board independence affects attitudes by aligning interests with those of stakeholders, fostering positivity.

The congruence of these results with stakeholder theory suggests that the disclosure of ESG performance can serve as a strategic instrument for firms to manage their associations with stakeholders (Freeman, 1984). ESG performance aligned with stakeholder expectations is crucial, and such disclosure should accurately reflect the environmental and social aspects of the firm's operations (Samy El-Deeb et al., 2023). Hence, firms must actively participate in stakeholder communication, incorporate feedback mechanisms to recognize significant environmental, social, and governance concerns, and effectively manage stakeholder interests (Meng et al., 2014). Moreover, firms should implement a proactive strategy toward disclosing their ESG performance by establishing clear objectives, benchmarks, and metrics and providing updates on advancements and obstacles, demonstrating dedication to sustainability. Furthermore, board independence can be defined as engaging in significant ESG measures to improve the company's reputation and strategic credibility. This increases investor trust, lowers agency costs, and improves firm performance (Jensen, 1983).

Furthermore, the findings of this paper align with the trend toward increased ESG disclosure and sustainability concerns in emerging markets like the Thai Stock Exchange. The Thailand government's recent efforts to promote sustainability and corporate responsibility, including the introduction of new ESG reporting criteria and guidelines, may have contributed to the favorable correlation between ESG and firm value. However, this study offers further evidence of the connection between voluntary non-financial ESG disclosures and corporate value, reinforcing the notion that ESG is becoming a significant factor in financial markets. Additionally, this study emphasizes the importance of board independence in reinforcing the relationship between ESG and firm value. For academia, this study contributes to the expanding body of literature on ESG and firm value by presenting evidence from the Thai context, which can inform future research in the field. Moreover, this study underscores the significance of considering the role of board independence in the association between ESG and firm value, suggesting a promising area for future investigation.

For practitioners, this study implies that firms in the Thai context should prioritize enhancing their ESG performance, as it can positively influence firm value. Furthermore, the study underscores the importance of maintaining a high level of board independence, which can further strengthen the positive correlation between ESG and firm value. These findings could assist firms in the Thai context in making informed decisions regarding their ESG strategies and their relationship with board independence.

6. SUGGESTIONS FOR LIMITATIONS AND FUTURE RESEARCH

This study has several limitations. Firstly, the sample used was selected using a specific method that relied on Bloomberg's ESG Disclosure Scores, which only covered 22.61 percent of the total. Consequently, it cannot be claimed that the sample is fully representative of the ESG landscape, as there are companies that implement ESG practices and disclose this information in their annual reports but were not evaluated by Bloomberg. These companies, mostly small listed entities, were not included in the sample, limiting the generalizability of the research findings, particularly to small businesses.

Moreover, the ESG Score is heavily influenced by the Governance Score, with the sample's lowest score being 57.87 points, while the Environmental and Social Scores have lower scores of 0 and 6.77 points, respectively. However, upon testing, it was found that the Governance score has no discernible relationship with firm value. Consequently, users of ESG data from Bloomberg should exercise caution when utilizing the data. It is important to consider not only the overall ESG score but also the scores in its subcomponents, namely environmental and social scores.

This paper is subject to data limitations. The findings are based on a small sample of Bloomberg's ESG disclosure scores (105 publicly listed non-financial Thai companies). A sample bias may exist. Future research may examine ESG data that follows guidance from other agencies, such as the SET ESG Ratings and the GRI Related Financial Disclosure, for their impact on firm valuation. Future research may also examine sustainability disclosures provided by companies in other countries, such as New Zealand, the UK, and Singapore, that are advancing sustainability disclosure reporting.

REFERENCES

Aboud, A., & Diab, A. (2018). The impact of social, environmental and corporate governance disclosures on firm value. *Journal of Accounting in Emerging Economies, 8*(4), 442–458.

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

Al Amosh, H., & Khatib, S. F. A. (2022). Ownership structure and environmental, social and governance performance disclosure: The moderating role of the board independence. *Journal of Business and Socio-Economic Development, 2*(1), 49–66.

Alareeni, B. A., & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate Governance: The International Journal of Business in Society, 20*(7), 1409–1428.

Albitar, K., Hussainey, K., Kolade, N., & Gerged, A. M. (2020). ESG disclosure and firm performance before and after IR: The moderating role of governance mechanisms. *International Journal of Accounting & Information Management, 28*(3), 429–444.

Alhawaj, A., Buallay, A., & Abdallah, W. (2023). Sustainability reporting and energy sectorial performance: Developed and emerging economies. *International Journal of Energy Sector Management, 17*(4), 739–760.

Almaqtari, F. A., Elsheikh, T., Abdelkhair, F., & Mazrou, Y. S. A. (2023). The impact of corporate environmental disclosure practices and board attributes on sustainability: Empirical evidence from Asia and Europe. *Heliyon, 9*(8), e18453.

Almaqtari, F. A., Elsheikh, T., Al-Hattami, H. M., & Mishra, N. (2023). The impact of board characteristics on environmentally friendly production: A cross-country study in Asia and Europe. *Journal of Cleaner Production, 392*, 136257.

An, Y., & Liu, X. (2023). Local attention to employees' rights and firm value: Evidence from China. *International Review of Economics & Finance, 84*, 382–394.

Bodhanwala, S., & Bodhanwala, R. (2023). Environmental, social and governance performance: Influence on market value in the COVID-19 crisis. *Management Decision, 61*(8), 2442–2466.

Bradley, B. (2021). *ESG Investing for Dummies*. John Wiley & Sons, Inc. Retrieved from https://www.maruey.com/book/show-product/2168

Brinette, S., Sonmez, F. D., & Tournus, P. S. (2023). ESG controversies and firm value: Moderating role of board gender diversity and board independence. *IEEE Transactions on Engineering Management. 71*(2), 4298–4307.

Buallay, A., & Al Marri, M. (2022). Sustainability disclosure and its impact on telecommunication and information technology sectors' performance: Worldwide evidence. *International Journal of Emergency Services, 11*(3), 379–395.

Buallay, A., Fadel, S. M., Al-Ajmi, J. Y., & Saudagaran, S. (2020). Sustainability reporting and performance of MENA banks: Is there a trade-off? *Measuring Business Excellence, 24*(2), 197–221.

Chininga, E., Alhassan, A. L., & Zeka, B. (2023). ESG ratings and corporate financial performance in South Africa. *Journal of Accounting in Emerging Economies, ahead-of-print*(ahead-of-print).

Corporate Knights. (2017). *Measuring Sustainability Disclosure: Ranking the World's Stock Exchanges*. Retrieved from https://www.corporateknights.com/wp-content/uploads/2021/08/SSE2017Final.pdf

de Carvalho, A. G., Dal'Bó, F., & Sampaio, J. (2021). Determinants of corporate governance practices in Brazil. *Emerging Markets Review, 48*, 100771.

Deloitte. (2022). *Does ESG impact company valuations? An Australian perspective*. Retrieved from https://www.deloitte.com/au/en/services/consulting/blogs/esg-impact-company-valuations.html

Disli, M., Yilmaz, M. K., & Mohamed, F. F. M. (2022). Board characteristics and sustainability performance: Empirical evidence from emerging markets. *Sustainability Accounting, Management and Policy Journal, 13*(4), 929–952.

Dkhili, H. (2023). Does environmental, social and governance (ESG) affect market performance? The moderating role of competitive advantage. *Competitiveness Review: An International Business, 34*(2), 327–352.

Eng, L. L., Fikru, M., & Vichitsarawong, T. (2022). Comparing the informativeness of sustainability disclosures versus ESG disclosure ratings. *Sustainability Accounting, Management and Policy Journal, 13*(2),

Freeman, R. (1984). *Strategic management: A stakeholder approach*.

Freeman, R. E. (2010). *Strategic management: A stakeholder approach*. Cambridge university press.

Hair, J. F. (2009). *Multivariate data analysis*. Pearson.

Hayes, A. F. (2018). Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. *Communication Monographs, 85*(1), 4–40.

Hayes, A. F. (2022). *Introduction to Mediation, Moderation, and Conditional Process Analysis. A Regression-Based Approach* (3rd ed.). Guilford Press.

Jensen, M. C. (1983). Organization theory and methodology. *Accounting Review*, 319–339.

Jouber, H. (2022). Women leaders and corporate social performance: Do critical mass, CEO managerial ability and corporate governance matter? *Management Decision, 60*(5), 1185–1217.

KPMG. (2020). *KPMG 2020 CEO Outlook: COVID-19 Special Edition*. Retrieved from https://assets.kpmg.com/content/dam/kpmg/xx/pdf/2020/09/kpmg-2020-ceo-outlook.pdf

Maji, S. G., & Lohia, P. (2023). Environmental, social and governance (ESG) performance and firm performance in India. *Society and Business Review, 18*(1), 175–194.

Manapreechadeelert, P., Dampitakse, K., & Ngudgratoke, S. (2024). Small listed firm's insights: Increasing importance of "managerial efficiency" on the relationship between ESG and financial performance. *Journal of Business, Economics and Communications, 19*(1).

Manosoonnthorn, W., & Srijunpetch, S. (2016). Characteristics of boards of directors and audit committees in relation to performance of companies: Having announced initial public offerings. *Journal of Accounting Profession, 12*(35), 21–33.

Melinda, A., & Wardhani, R. (2020). The Effect of Environmental, Social, Governance, and Controversies on Firms' Value: Evidence from Asia. In W. A. Barnett & B. S. Sergi (Eds.), *Advanced Issues in the Economics of Emerging Markets, 27*(3), 147–173.

Meng, X. H., Zeng, S. X., Shi, J. J., Qi, G. Y., & Zhang, Z. B. (2014). The relationship between corporate environmental performance and environmental disclosure: An empirical study in China. *Journal of Environmental Management, 145*, 357–367.

Menicucci, E., & Paolucci, G. (2023). The influence of Italian board characteristics on environmental, social and governance dimensions. *Management Decision, 61*(10), 3082–3105.

Mu, H.-L., Xu, J. and Chen, S. (2024). "The impact of corporate social responsibility types on happiness management: a stakeholder theory perspective", *Management Decision, 62*(2), 591–613.

Murdoch, A. (2022). *Link between ESG and profitability exists: New research*. Retrieved from https://capitalmonitor.ai/sector/tech/link-between-esg-investment-exists-new-research/

Nguyen, L.-T., & Thanh, C.-L. (2022). The influence of board characteristics on environmental performance: Evidence from East Asian manufacturing industries. *International Journal of Emerging Markets, 17*(10), 2702–2720.

Ntim, C. G., & Soobaroyen, T. (2013). Corporate governance and performance in socially responsible corporations: New empirical insights from a Neo-Institutional framework. *Corporate Governance: An International Review, 21*(5), 468–494.

Ortas, E., Álvarez, I., & Zubeltzu, E. (2017). Firms' board independence and corporate social performance: A meta-analysis. *Sustainability, 9*(6), 1006.

Qiu, Y., Shaukat, A., & Tharyan, R. (2016). Environmental and social disclosures: Link with corporate financial performance. *The British Accounting Review, 48*(1), 102–116.

Radhouane, I., Nekhili, M., Nagati, H., & Paché, G. (2018). The impact of corporate environmental reporting on customer-related performance and market value. *Management Decision, 56*(7), 1630–1659.

Rampasso, I. S., Quelhas, O. L. G., Ganga, G. M. D., Pavan Serafim, M., Simão, V. G., Costa, L. F. M., & Anholon, R. (2023). Sustainability practices in manufacturing companies: Analysis of an emerging economy. *Benchmarking: An International Journal, 30*(9), 3382–3407.

Rastogi, S., Singh, K., & Kanoujiya, J. (2024). Firm's value and ESG: the moderating role of ownership concentration and corporate disclosures. *Asian Review of Accounting, 32*(1), 70–90.

Said, M. T., & ElBannan, M. A. (2024). Do ESG ratings and COVID-19 severity score predict stock behavior and market perception? Evidence from emerging markets. *Review of Accounting and Finance, 23*(2), 222–255.

Samy El-Deeb, M., Ismail, T. H., & El Banna, A. A. (2023). Does audit quality moderate the impact of environmental, social and governance disclosure on firm value? Further evidence from Egypt. *Journal of Humanities and Applied Social Sciences, 5*(4), 293–322.

SET. (2023). *ESG impact assessment report: THSI 2022*. Retrieved from https://setsustainability.com/libraries/1168/item/esg-impact-assessment-report-thsi-2022

Singh, K., & Jaiwani, M. (2023). ESG and share price volatility in energy sector firms: Does the development phase of countries matter? *International Journal of Energy Sector Management, ahead-of-print*(ahead-of-print). https://doi.org/10.1108/IJESM-05-2023-0033

Suttipun, M., Khunkaew, R., & Wichianrak, J. (2023). The Impact of Environmental, Social and Governance (ESG) Reporting and Female Board Members on Financial Performance: Evidence from Thailand. *Journal of Accounting Profession, 19*(61), 90–111.

Tran, H. T. (2021). The link between independent directors and firm's performance: The moderating role of corporate social responsibility. *Corporate Governance: The International Journal of Business in Society, 21*(5), 831–844.

Velte, P. (2020). Does CEO power moderate the link between ESG performance and financial performance? *Management Research Review, 43*(5), 497–520. https://doi.org/10.1108/MRR-04-2019-0182

Ye, Y., Yang, X., & Shi, L. (2023). Environmental information disclosure and corporate performance: Evidence from Chinese listed companies. *Heliyon, 9*(12), e22400.

Yekini, K., Adelopo, I., Wang, Y., & Song, S. (2019). Post-regulation effect on factors driving environmental disclosures among Chinese listed firms. *Accounting Research Journal, 32*(3), 477–495.