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Do Board Mechanisms Moderate the Effect of ESG Disclosure and Competitive Advantage on Corporate Performance? Evidence from Selected ASEAN Markets

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ABSTRACT

This study examines the effects of Environmental, Social, and Governance (ESG) disclosure and competitive advantage on corporate performance by incorporating board mechanisms, namely gender diversity and board size, as moderating variables. The analysis focuses on firms operating in selected ASEAN markets during the 2020–2023 period. Using a purposive sampling approach, the study includes 112 firms listed on the Indonesia Stock Exchange (IDX), Bursa Malaysia (KLSE), and the Singapore Exchange (SGX). The data are analyzed using panel regression with a fixed-effects model in STATA 17. The quantitative findings show that ESG disclosure and competitive advantage have positive coefficients, with p-values of 0.000 < 1%. This indicates that both ESG disclosure and competitive advantage exert a positive and statistically significant influence on corporate performance, proxied by Tobin's Q. The regression coefficient for the CA × GD interaction is 0.424, with a t-test value of 5.78 and a p-value of 0.000 < 0.01. The regression coefficient for the ESG × BSIZE interaction is 0.003, with a t-test value of 2.49 and a p-value of 0.013 < 5%. The regression coefficient for the CA × BSIZE interaction is -3.812, with a t-test value of -8.16 and a p-value of 0.000 < 1%. Gender diversity and board size are found to moderate the relationship between the independent variables and corporate performance, although the moderating effects are only partial. Overall, the results suggest that an appropriate balance between ESG practices, competitive advantage, and effective board mechanisms is essential for enhancing corporate efficiency, reputation, and overall performance.

1. INTRODUCTION

In an increasingly competitive and sustainability-oriented global economy, corporate performance has become a critical benchmark for assessing a company's competitiveness, efficiency, and sustainability. Strong corporate performance reflects the effectiveness of business strategies in generating economic value, strengthening market positions, and attracting investor confidence. However, various regional reports indicated that many companies in the selected ASEAN region, particularly in Indonesia, Malaysia, and Singapore, still faced performance gaps due to low operational efficiency, fluctuating market values, and weak post-pandemic adaptation [1]. This phenomenon underscores the need for managerial strategies capable of sustainably enhancing productivity and corporate value.

In an effort to improve efficiency, many businesses have adopted the ESG framework, which stands for Environmental, Social, and Governance (ESG). Firms must embrace ESG practices to strengthen their market position, reduce operational risks, and attract sustainable investment opportunities [2, 3]. Firms that proactively implement ESG principles tend to exhibit superior market value and profitability, driven by resource efficiency and governance transparency [4, 5]. However, empirical evidence within the ASEAN region remained inconclusive; while some studies confirmed a positive relationship between ESG and corporate performance [6], others identified a weak effect attributed to disparate regulatory frameworks and divergent corporate cultures [7]. This inconsistency indicates a critical research gap that necessitates further investigation across countries with diverse institutional characteristics.

Conversely, competitive advantage remains a critical determinant of a firm's ability to achieve superior performance. It enables companies to generate added value through innovation, supply chain optimization, and differentiation strategies that strengthen their market position. In this study, the outcome of such advantages, corporate performance, is operationalized using the Return on Assets (ROA) metric [8]. Despite its importance, empirical studies in the ASEAN region continued to report inconsistent effects of competitive advantage on corporate performance, often attributed to external contingencies such as policy uncertainty and market volatility [9]. Consequently, this study focuses on analyzing the impact of competitive advantage on corporate performance, aiming to bridge the existing gap regarding the effectiveness of competitive strategies within regional markets.

ESG initiatives and competitive advantage are not mutually exclusive; rather, they serve as complementary pillars of a resilient and sustainable corporate strategy. Robust ESG implementation can strengthen corporate reputation and market trust, which subsequently enhances the effectiveness of promotional strategies and reinforces a firm's competitive position. Conversely, organizations possessing a strong competitive advantage are better positioned to strategically integrate sustainability principles into their core business models, thereby creating a synergistic effect [10].

PT Unilever Indonesia Tbk. serves as an example of the successful integration of ESG initiatives and competitive strategies within the ASEAN region. During the 2020–2023 period, Unilever experienced significant performance pressure stemming from the COVID-19 pandemic, which resulted in a sales decline of approximately 6%. However, the firm managed to achieve a performance recovery by intensifying its ESG implementation and pioneering environmentally friendly product innovation strategies [11]. Unilever's Sustainable Living Plan (USLP) program not only reduced carbon emissions by 50% but also strengthened consumer loyalty through recycled-based product lines, resulting in an increase in the company's ROA from 12% to 15% in 2023.

The phenomenon observed at PT Unilever mirrors a broader trend prevailing in the ASEAN region, where firms with deficient ESG governance and weak board mechanisms frequently experience performance stagnation and share price declines of up to 10%, often due to social issues such as labor disputes within supply chains [11]. Conversely, companies with streamlined boards and high levels of gender diversity demonstrated a superior capacity to mitigate the adverse impacts of the pandemic, as exemplified by Unilever Indonesia. This provides clear evidence that competitive advantage, supported by ESG implementation and strengthened by effective board governance, is not merely a theoretical concept but a practical strategy for building long-term corporate resilience and performance [11].

This research is of paramount importance as it emphasizes the role of ESG and competitive advantage as key drivers of corporate performance in the increasingly competitive and dynamic ASEAN landscape. To remain relevant and competitive in the market, firms must incorporate ESG into their core strategies in response to increasingly stringent ESG regulations and rising stakeholder expectations for sustainable business practices [12]. However, ESG implementation alone is insufficient without a robust competitive advantage to optimize resources and respond effectively to market dynamics [13]. Theoretically, this research extends the existing literature by examining the role of board mechanisms in strengthening the nexus between ESG, competitive advantage, and corporate performance. Practically, it offers strategic solutions for management in Indonesia, Malaysia, and Singapore [11], providing actionable recommendations for ASEAN firms to optimize board structures and ESG integration in achieving long-term sustainability and global competitiveness [14].

The uniqueness of this study lies in its multi-country comparative framework across ASEAN countries and the strategic integration of two moderating variables, namely gender diversity and board size, which have seldom been examined simultaneously in the existing literature [15]. Whether ESG and competitive advantage can be synergized with good governance to enhance corporate performance sustainably is the focus of this study's contextual and comprehensive assessment, in contrast to prior research that often focused on a specific country or variable [16, 17]. The use of samples from three ASEAN countries with distinct institutional and regulatory characteristics yields richer and more practically relevant findings for the development of business policies and strategies at the regional level [7, 11].

2. THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

2.1 Theoretical framework

Stakeholder theory provides a foundational framework that extends beyond the traditional view that companies are solely accountable to shareholders. According to Freeman [18], this theory asserted that a firm's long-term success and survival were determined by the extent to which it built and manages relationships with various groups interested in its operations. These parties, known as stakeholders, can influence the achievement of company goals and are also influenced by the outcomes of its activities.

In the context of this research, stakeholder theory explains the mechanism through which ESG disclosure influences company performance [19]. Transparently presenting ESG performance serves as a vital instrument of accountability to stakeholders. When a company consistently demonstrates a strong commitment to ESG principles, the market and society perceive it as an indication that the company is responsible for its social and environmental impacts rather than being solely profit-oriented [20].

A principal delegated power to an agent, and the agent was obligated to carry out certain responsibilities; agency theory provided the theoretical groundwork for comprehending this relationship [21]. Management, as the agent, had access to more detailed and extensive information than the shareholders, who were the principals, according to this theory. In the context of this study, Agency Theory is highly relevant in explaining the role of board mechanisms, namely board size and gender diversity, as instruments of good corporate governance to mitigate agency problems. These board mechanisms function as both monitors and strategic advisors, ensuring that management runs the company effectively and transparently.

Furthermore, according to the Resource-Based View (RBV) theory, an organization's competitive advantage and superior performance stem more from its internal resources and capabilities than from its external market position [22]. This theory holds that, to maintain a long-term competitive advantage, a business has to possess resources and competencies that are valuable, rare, unique, and highly organized, enabling it to maximize the value of those resources [22, 23].

Competitive advantage in this study is reflected by the firm's ability to utilize its assets efficiently to generate superior operational returns. Following the RBV theory, efficient asset utilization represents a strategic capability that may differentiate firms from competitors. Therefore, ROA is employed as a proxy for internal competitive capability rather than as a direct measure of market performance.

Within the framework of this study, the RBV is highly relevant in explaining how ESG practices and competitive advantage influence company performance. Strong ESG practices can be considered intangible resources that are valuable, rare, and difficult to imitate. Companies that adopt high ESG standards (e.g., environmental sustainability initiatives, employee welfare programs, and transparent governance) can build a strong reputation, increase stakeholder trust, and attract socially conscious investors. Ultimately, this creates a long-term competitive advantage that competitors focused solely on short-term profits would find difficult to replicate [24].

2.1.1 Corporate performance

The main way to evaluate an entity's capacity to accomplish its long-term objectives is by looking at its corporate performance, which is an all-encompassing indicator of its operational and strategic success. According to Whelan et al. [25], corporate performance was defined as the overall results of business activities that reflected the creation of value for shareholders and other stakeholders.

In contrast, corporate performance is measured using Tobin's Q, which captures market valuation and investors' expectations regarding the firm's future growth prospects. Accordingly, ROA and Tobin's Q represent different conceptual dimensions: accounting-based operational efficiency versus market-based firm valuation.

2.1.2 Environmental, Social and Governance

ESG is an assessment approach that examines a company's performance across three main dimensions: the environment, social aspects, and good corporate governance practices [26]. From an environmental perspective, the assessment focuses on how the company manages the impact of its activities on natural resources, including emissions control and energy efficiency.

2.1.3 Competitive advantage

The concept of competitive advantage was first comprehensively formulated by Porter [27], who conducted an in-depth analysis of strategic frameworks within the context of industrial competition. According to Porter [27], competitive advantage was defined as a condition in which a company could generate superior value for customers compared to its competitors through differentiation strategies, cost leadership, or a focus on specific market segments, without sacrificing long-term profitability.

2.1.4 Board mechanism

Board diversity encompasses a multi-faceted range of attributes, including gender, experience, and cultural background. Because each member offers a different perspective that can improve the company's oversight and decision-making processes, this diversity adds value [28].

Board size is a critical structural determinant that significantly influences the effectiveness of corporate monitoring and the quality of board-level deliberations. Collectively, these board characteristics serve as the primary mechanisms for ensuring that management remains accountable and aligned with broader stakeholder interests [29].

2.2 Hypothesis development

2.2.1 The influence of Environmental, Social, and Governance on the quality of corporate performance improvement

Within the RBV framework, ESG practices are conceptualized as unique, intangible assets that are difficult for competitors to replicate, thereby strengthening organizational capabilities and driving sustainable company performance [22]. Stakeholder theory, on the other hand, posited that businesses could better satisfy their stakeholders' expectations when they prioritized ESG factors. As a result, the company's credibility would increase, enabling it to achieve better performance through improved relationships with external parties [18]. Consequently, ESG is positioned not only as an ethical obligation but also as a business strategy that contributes to operational efficiency and long-term value creation for the company.

Businesses that prioritize ESG tend to perform better financially, according to existing research. Whelan et al. [25] meta-analyzed more than 2,000 studies and found that 90% of the positive or neutral associations between ESG and financial performance had a significant impact on profitability and stock value [25]. Similarly, Grewal et al. [30] demonstrated that companies with strong ESG commitments experienced a 4–6% increase in return on equity (ROE) compared to conventional companies, primarily through reduced reputational risk and increased innovation. Hongming et al. [31] also confirmed that ESG materiality substantially influenced market valuation, with companies with high ESG scores exhibiting more stable performance growth across various industries.

Based on the theoretical foundations of RBV and Stakeholder Theory, along with empirical evidence, ESG is expected to contribute positively to improving the quality of corporate performance by creating competitive advantage and meeting stakeholder expectations.

H1: *ESG has a positive effect on corporate performance.*

2.2.2 The influence of competitive advantage on the quality of corporate performance improvement

The RBV states that a company's competitive advantage is derived from its VRIO resources and capabilities, which stand for valuable, rare, difficult-to-imitate, and well-organized. This combination of factors enables firms to enhance corporate performance through operational efficiency and continuous innovation [22]. Complementing this, Stakeholder Theory suggested that competitive advantage achieved through strategies that considered the interests of external stakeholders could strengthen a company's market position and legitimacy, ultimately contributing to higher overall performance [18]. This dual approach emphasizes that competitive advantage is not solely the result of external factors such as market position but also the result of strategic internal management, which directly impacts long-term profitability and growth.

A competitive edge is positively correlated with company success, according to empirical studies. For instance, Whelan et al. [25] analyzed thousands of global firms and found that an internal resource-based competitive advantage strategy correlated with a 5–8% increase in ROA, primarily through product differentiation and operational efficiency. Similarly, Grewal et al. [30] showed that companies with strong competitive advantages experienced 7% higher revenue growth compared to competitors, driven by innovation and rapid market adaptation. Hongming et al. [31] also confirmed that the materiality of competitive advantage significantly impacted company valuation, with superior competitive positions providing greater performance stability across the manufacturing and service sectors. Synthesizing these theoretical foundations of RBV and Stakeholder Theory, along with empirical findings, competitive advantage is expected to positively contribute to improving the quality of corporate performance by creating added value and strengthening stakeholder relationships.

H2: *Competitive advantage has a positive effect on corporate performance.*

2.2.3 The impact of gender diversity on Environmental, Social, and Governance and improving corporate performance

According to the Agency Theory framework, gender diversity on the board of directors may help reduce conflicts between managers and shareholders. Diverse boards often provide more stringent oversight and a more objective decision-making process. This encourages the implementation of more disciplined ESG practices to mitigate agency risk and optimize shareholder value [21]. Stakeholder Theory complemented this perspective by emphasizing that gender-diverse leadership was better equipped to respond to varied stakeholder demands regarding environmental and social issues, thereby strengthening ESG and contributing to improved corporate performance through more harmonious relationships and an enhanced reputation [18]. This combined approach illustrates that gender diversity serves as a strategic internal control mechanism, linking good governance to sustainable performance.

Empirical evidence confirmed the positive influence of gender diversity on ESG and its impact on corporate performance. Al-Shaer and Zaman [32] found that a higher proportion of women on the board of directors significantly increased ESG disclosure by 12–18%, which correlated with increased ROE through reduced information asymmetry and agency risk.

Based on the theoretical foundations of Agency Theory and Stakeholder Theory, along with empirical evidence, gender diversity is expected to positively influence ESG, thereby supporting improved corporate performance by reducing agency conflicts and meeting stakeholder expectations.

H3: *Gender diversity strengthens the positive influence of ESG on corporate performance*.

2.2.4 The influence of gender diversity on competitive advantage and improved corporate performance

The level of gender diversity on a company's board of directors is a significant indicator of its competitive advantage. According to the RBV, this diversity is regarded as an asset that enhances the strategic decision-making process, thereby creating a sustainable competitive advantage [22]. Gender diversity on boards also enhances an organization's perspective and ability to identify broader market opportunities, understand the needs of diverse stakeholder groups, and create innovations relevant to social development.

Previous research consistently demonstrated that a diverse gender composition on a board of directors strengthened a company's competitive advantage. Ali et al. [33] found that increasing the proportion of women on a board of directors significantly increased competitive advantage scores by 10–15% through enhanced product innovation, which correlated with higher ROA in U.S. companies. This finding is reinforced by a recent paper by Nguyen et al. [34], which showed that gender diversity drove a stronger competitive advantage, resulting in revenue increases of up to 9% through better market understanding and reduced decision bias. A study by Wirawan and Budidarma [35] also revealed that board gender diversity significantly impacted competitive advantage, as diversity made companies more creative and innovative in navigating competitive market dynamics.

Based on these findings, it can be concluded that gender diversity plays a crucial role in encouraging companies to develop better strategies, increase creativity in decision-making, and identify new market opportunities. The competitive advantage created by gender diversity is expected to positively impact corporate performance, both in the short and long term.

H4: *Gender diversity strengthens the positive influence of competitive advantage on corporate performance.*

2.2.5 The effect of board size on Environmental, Social, and Governance and improving corporate performance

Boards with more members tend to provide greater oversight of management, which, according to Agency Theory, may lead to higher-quality decisions and improved corporate performance [21]. Meanwhile, Stakeholder Theory suggested that boards with more members could bring a wider variety of knowledge and perspectives to the table, making business decisions more responsive to sustainability challenges in general and ESG components in particular [18]. However, overly large boards also risk creating coordination issues and slowing down the decision-making process, which can ultimately reduce the effectiveness of ESG policy implementation.

Several previous studies have shown that board size influences ESG implementation and corporate performance. Handayani et al. [36], through a study of consumer goods companies in Indonesia, found that board size significantly contributed to increasing company value and reducing risk, including through strengthening corporate governance and more transparent ESG reporting. More broadly, Al-Shaer and Zaman [32] stated that boards with larger membership generally had a greater diversity of resources and expertise, enabling more effective oversight of sustainability issues and ultimately driving improvements in overall ESG performance. Treepongkaruna and Suttipun [16] emphasized that increasing board size could significantly reduce ESG controversies and strengthen sustainable governance practices, leading to an increase in a company's reputation and market value. This finding is also supported by the work of Lubis and Rokhim [37], who revealed that board size played a role in increasing ESG disclosure and contributing to better corporate performance. However, due to the interaction between the benefits and drawbacks of a larger board, the effect of board size on ESG implementation is often nonlinear or limited. I Gusti Agung Musa found that a larger board was associated with more successful companies, although the effect was context-dependent and not always statistically significant [35]. These studies indicate that overly large boards can experience coordination problems, ineffective communication, and slow decision-making processes. This condition can hinder corporate responsiveness to ESG challenges that require quick decisions and flexible adaptation, consistent with the statement by Yermack and Coles et al. [38, 39].

Despite these benefits, the effect of board size on ESG does not necessarily increase directly with the addition of board members; there is an optimal point at which board size provides maximum benefits before negative impacts begin to emerge. Recent work also suggested that while larger board sizes could increase diversity of perspectives and engagement in ESG initiatives, excessively large boards could hinder rapid and flexible strategic decision-making [16]. Therefore, companies need to consider the optimal board size to maximize the board's contribution to improving ESG performance and ultimately corporate performance [40].

H5: *Board size strengthens the positive effect of ESG on corporate performance. However, this effect is nonlinear (limited).*

2.2.6 The effect of board size on competitive advantage and improved corporate performance

Based on Agency Theory, a board with a larger number of members can strengthen its oversight and control functions over management, thereby helping to minimize potential conflicts of interest between managers and shareholders [21]. However, in the context of competitive advantage, some argue that excessively large boards can slow the decision-making process and reduce efficiency, ultimately hindering the creation of competitive advantage according to Eisenhardt [41]. From a RBV perspective, board size can be viewed as one of an organization's strategic resources. A proportional board composition supports the development of a company's core capabilities, enabling the company to maintain its competitive advantage through more efficient and innovative resource allocation [22]. Excessive board size can reduce the value of these resources by creating internal inefficiencies, thus weakening the company's ability to convert competitive advantage into superior performance [8]. An empirical study supported this, where analysis of manufacturing companies in South Asia showed that an optimal board size (between 7–11 members) significantly strengthened the relationship between competitive advantage and corporate performance through the RBV perspective, while larger sizes reduced the effectiveness of strategic capabilities by 15–20% due to coordination conflicts [3].

In Stakeholder Theory, larger boards have the potential to better represent diverse stakeholder interests, such as employees, customers, and the community, in decision-making, which in turn can strengthen competitive advantage through increased legitimacy and external support [18]. However, excessively large boards can trigger fragmentation of interests and conflicts among stakeholders, which hinder responsiveness to market dynamics and reduce the positive impact of competitive advantage on corporate performance according to Zhang et al. [42]. A study by Nguyen et al. [34] on multinational companies in ASEAN found that excessive board size negatively moderated the relationship between competitive advantage and corporate performance, with a reduction of up to 12% in performance metrics such as ROA, due to difficulties in integrating stakeholder perspectives in a structured manner.

In this context, board size acts as a moderating variable that can weaken the positive effect of competitive advantage on corporate performance. This means that, although competitive advantage directly contributes positively to company performance, an excessively large board size can reduce the effectiveness of this influence by hindering strategic decision-making and responsive policy implementation. Evidence suggests that excessively large boards are associated with lower company performance compared to optimally sized boards [43]. This evidence is further strengthened by a recent meta-analysis by Nguyen et al. [34], which shows that a similar pattern of negative effects persisted consistently in emerging market countries following the pandemic.

H6: *Board size weakens the positive effect of competitive advantage on corporate performance.*

Drawing on the theoretical framework established by previous literature reviews, this study aims to investigate how ESG disclosure and competitive advantage affect the financial outcomes of Singaporean, Malaysian, and Indonesian businesses. A previous study examined the effects of governance and operational efficiency, among other internal and external factors, on the performance of Indonesian manufacturing businesses Wijaya et al. [44]. It found that good management of environmental and social factors not only improved production efficiency but also contributed to overall performance improvement through moderating governance elements such as organizational structure. This study highlights that, in the manufacturing sector, the integration of sustainable practices can reduce operational risks and increase competitiveness, with empirical findings by Wijaya et al. [44]. showing a positive relationship between governance factors and financial performance.

This paper aims to test Lusmeida's findings [45] regarding the role of governance factors in driving sustainable performance. It expands the focus to the ASEAN regional context and adds competitive advantage as an independent variable. Furthermore, it emphasizes the competitive dimension that supports market adaptation amidst global challenges. The study focuses on the effects of ESG elements and competitive advantage on corporate performance. It is expected that board mechanisms, such as gender diversity and board size, may moderate these effects. The selection of these aspects is based on empirical evidence that ESG can improve corporate performance through transparency and accountability, while competitive advantages such as process innovation and market positioning provide long-term benefits in the ASEAN manufacturing sector [31].

The selection of board mechanisms as moderating variables aims to examine in more depth how a company's internal configuration, particularly in terms of gender diversity and board size, affects how ESG, competitive advantage, and corporate performance interact. The findings of the method that governance components mitigate the effect of sustainable practices on operational efficiency are consistent with this approach, which emphasizes the importance of moderating variables in the context of manufacturing issues [45]. This provides a basis for exploring the similar role of board mechanisms in enhancing ESG effectiveness regionally [34]. By considering board mechanisms, this paper is expected to provide insight into the critical role of governance in improving corporate performance through more transparent ESG disclosure and greater competitive advantage, particularly in the manufacturing sector, which is vulnerable to regional market fluctuations [26].

Control variables such as leverage, firm size, firm age, GDP, and inflation are expected to influence the results. These control variables are used to eliminate potential interference that may arise from different firm characteristics, as also applied in the analysis by Lusmeida [45], to ensure the validity of empirical findings related to manufacturing factors. This is supported by other research showing that firm size and leverage often moderate the relationship between ESG and performance in developing countries [45].

Based on theory, previous research, and conceptual descriptions, a conceptual framework can be developed for this study, as shown in Figure 1 below:

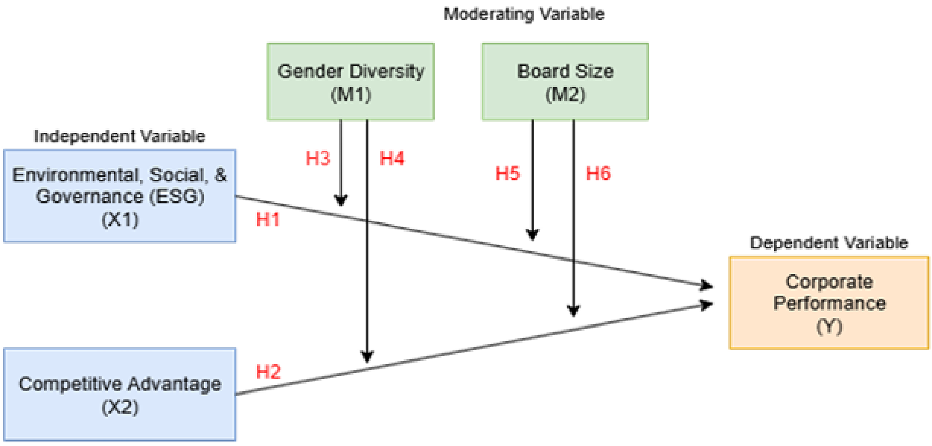

Figure 1. Conceptual framework

3. METHODS

This research uses secondary data and adopts a quantitative approach. The population of the study consists of companies listed on the Indonesia Stock Exchange (IDX), Bursa Malaysia (KLSE), and the Singapore Exchange (SGX). The observation period covers 2020 to 2023, focusing on companies operating in the manufacturing sector.

The manufacturing sector was selected due to its pivotal role in the ASEAN economy and its high exposure to ESG issues. Furthermore, this sector provides a robust context for examining how competitive advantage influences corporate performance in the post-COVID-19 era, a period marked by significant changes in regional governance regulations. The 2020–2023 timeframe was chosen to capture recent dynamics, as ESG data and board mechanisms have become more readily available and relevant for observing their impact on corporate performance [46, 47]. This population also ensures the availability of comprehensive secondary data from integrated databases such as Refinitiv, thus supporting the generalizability of the findings to the ASEAN context.

Table 1 describes the purposive sampling method of 112 companies across three countries with a four-year observation window (2020–2023), resulting in a total of 448 observations.

Table 1. Sample criteria

No	Sample	Amount
1	Manufacturing business entities listed on the IDX, KLSE, and SGX	622
2	Companies with zero (0) or negative (-) Tobin's Q data in 2020-2023	(12)
3	Companies with zero (0) or negative (-) ESG scores in 2020-2023	(32)
4	Companies with zero (0) or negative (-) ROA in 2020-2023	(188)
5	Companies with zero (0) gender diversity data in 2020-2023	(154)
6	Companies with zero (0) board size in 2020-2023	(124)
7	Number of company samples	112
8	Number of observations	4
9	Number of observation samples used	448

3.1 Variable measurement

Multiple types of variables, including dependent, independent, moderating, and control variables, are used in this research. Each variable's measurement scale is detailed in the following subsections, and the appendix contains a summary of the data used in this research.

The research in this area uses Tobin's Q, the ratio of a company's market value to its book value of assets, to evaluate corporate performance. Accounting performance and future development potential are two aspects that this indicator captures, making it a popular tool in management and finance research [48].

A Tobin's Q value of less than 1 ($Q < 1$) indicates that the company is undervalued because its book value exceeds its market value, thus attracting investor interest in purchasing its shares [48]. Conversely, if Tobin's Q is greater than 1 ($Q > 1$), the company is considered overvalued, which can motivate others to imitate its business model to achieve similar profit opportunities.

When evaluating a company's success in relation to its competitors and its long-term viability, Tobin's Q is a useful metric because it takes into account both the company's past financial performance and the market's expectations for its future.

Tobin's Q is measured using the following formula:

$$Tobins's\ Q = \frac{\text{market value equity} + \text{market liabilities}}{\text{Total Assets (Book Value)}}$$

3.1.1 Environmental, Social, and Governance

The ESG framework evaluates businesses based on their impact on society, their ability to preserve natural resources, and the quality of their internal management [26]. From an environmental perspective, the assessment focuses on how a company manages the impact of its activities on natural resources, including emissions control and energy efficiency.

A company's ESG score provides a numerical representation of its performance in these domains. The ESG variables were combined into a single total score for this study. Several metrics related to sustainable practices and good corporate governance are used to evaluate each component. Higher scores indicate better sustainability and governance performance, and ESG scores are typically presented on a scale of 1 to 100 [28].

Measuring ESG scores is crucial for providing a holistic picture of how a company manages risks and opportunities related to sustainability issues, thus serving as a useful evaluation tool for investors and other stakeholders [42]. The general ESG score measurement formula can be written as follows:

$$ESG\ Score = ESG\ score\ data\ provided\ by\ the\ revinitiv\ database$$

3.1.2 Competitive advantage

Competitive advantage reflects a company's ability to create strategies that differentiate its position from competitors and provide sustainable added value to consumers [27]. This strategy enables a company to build a strong brand identity, which is used as a tool to face business competition in a particular industry.

Competitive advantage is proxied by ROA, reflecting the firm's capability to utilize assets efficiently in generating operational returns. In this study, ROA is interpreted as an indicator of internal strategic efficiency rather than a direct measure of market-based corporate performance.

Conceptually, there are several ways to measure competitive advantage, including capital requirements, economies of scale, and premium pricing capability (PPC). However, ROA is considered the most relevant metric for characterizing competitive advantage in the context of manufacturing companies in ASEAN countries, particularly Indonesia, Malaysia, and Singapore. Based on total assets under management, ROA indicates how well a business generates profits [49]. ROA is a key indicator of a business's competitive advantage because it allows a quantitative assessment of a company's capacity to utilize its assets to generate profits [50]. ROA is an important metric for competitive advantage as it shows how well a firm is performing in a competitive industrial environment, where profitability is a constant challenge. The ROA operational formula used in this research is:

$$ROA = \frac{Net\ Income}{Average\ Operating\ Assets}$$

3.1.3 Gender diversity

Gender diversity in the board of commissioners' structure is the moderating variable used in this article, and its impact on the relationship between the independent and dependent variables will be examined. Board diversity can take various forms, including gender, experience, and cultural background. Because each member offers a different perspective that can improve the company's oversight and decision-making processes, this diversity adds value [28].

Using the following formula, the gender diversity moderating variable is determined as the proportion of female board members in a given company:

$$Gender\ diversity = \frac{Number\ of\ Female\ Board}{Total\ Number\ of\ Board\ Member} \times 100$$

3.1.4 Board size

State that the size of the board of commissioners can influence how well a company is monitored and how decisions are made, potentially moderating the relationship between factors that influence organizational performance [29].

The size of the board of commissioners is measured based on the total number of board commissioners.

$$Board\ Size = Number\ of\ Board\ commissioners$$

3.1.5 Control variables

The research used leverage, business size, firm age, inflation, and ΔGDP as control variables.

1. Leverage

A company's level of dependence on debt as a source of funding is reflected in its leverage [51]. A company's financial risk, particularly the risk of difficulty servicing debt, increases with the amount of debt. The Debt-to-Equity Ratio (DER) can be used to calculate leverage as follows:

$$DER = \frac{Total\ Liabilities}{Total\ Assets}$$

2. Firm size

In this study, firm size is measured by the total value of a company's assets expressed in a specific currency. Total assets represent the overall economic resources owned and controlled by the company, including current and non-current assets used to support business operations. A higher total asset value generally indicates a larger scale of operations and greater capital investment within the firm. These resources can be utilized to optimize operational activities, expand business capacity, improve efficiency, and support strategic growth initiatives. Therefore, firm size, as reflected by total assets, is often associated with a greater ability to generate revenue, enhance competitiveness, and increase overall firm value [52]. Therefore, total assets are an appropriate metric.

$$Firm\ size = In\ (Total\ Assets)$$

3. Firm age

Firm age is a measure of how long a company has been operating since its founding. Company age is often used in business and financial writing to describe a company's level of experience and stability in facing market dynamics [49].

The number of years that have passed since the year of observation is subtracted from the year the business was created to get the firm's age. The method for determining the age of a company is:

$$Age = Year\ of\ study - year\ of\ company\ founding$$

4. Gross Domestic Product Growth (ΔGDP)

The total value of finished goods and services produced by all economic actors in a country during a specific time period, usually a year or a quarter, is expressed by gross domestic product (GDP). GDP growth is measured by the percentage change in a country's GDP between periods [53].

To address differences in economic scale between countries, GDP growth is measured using the formula below [53].

$$\Delta GDPt = \frac{GDPt - GDPt - 1}{1}$$

5. Inflation

The percentage change in the consumer price index from the previous period, expressed as a percentage per year, is used in this study to assess inflation [54].

$$Inf = \frac{CPI - CP1_{t-1}}{CPI_{t-1}}$$

3.2 Data analysis method

The data analysis method used in this study is multiple regression using panel data. This method first involves testing the model using the Hausman and Chow tests, then determining whether to use fixed effects, common effects, or random effects.

This study uses moderating variables, resulting in two empirical equations.

Empirical Eq. (1) (Direct Effect Model) is as follows:

$$\begin{aligned} CP_{i,t} &= \alpha + \beta_1 ESG_{i,t} + \beta_2 CA_{i,t} + \beta_3 GD_{i,t} + \\ &\beta_4 BSIZE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 SIZE_{i,t} + \\ &\beta_7 AGE_{i,t} + \beta_8 \Delta\mathrm{GDP}_{i,t} + \beta_9 INF_{i,t} + \in_{i,t} \end{aligned} \quad (1)$$

Empirical Eq. (2): Moderation (Interaction) Model - to determine the interaction of the moderating variable with the independent variable used in this study.

$$\begin{aligned} CP_{i,t} &= \alpha + \beta_1 ESG_{i,t} + \beta_2 CA_{i,t} + \beta_3 GD_{i,t} + \beta_4 BSIZE_{i,t} \\ &+ \beta_5 ESG^{*} GD_{i,t} + \beta_6 CA^{*} GD_{i,t} + \beta_7 ESG^{*} BSIZE_{i,t} + \\ &\beta_8 CA^{*} BSIZE_{i,t} + \beta_9 LEV_{i,t} + \beta_{10} SIZE_{i,t} + \beta_{11} AGE_{i,t} \\ &+ \beta_{12} \Delta\mathrm{GDP}_{i,t} + \beta_{13} INF_{i,t} + \in_{i,t} \end{aligned} \quad (2)$$

where,

CP = Corporate Performance;
α = Constant;
β1-12 = Regression Coefficient;
ESG = Environmental, Social, and Governance;
CA = Competitive Advantage;
GD = Gender Diversity;
BSIZE = Board Size;
Lev = Leverage;
Size = Company Size;
Age = Company Age;
ΔGDP = Gross Domestic Product Growth;
INF = Inflation;
$\varepsilon_{i,t}$ = Error term = company i in year t.

4. RESULTS

The descriptive statistics for 448 observations, including 112 samples during the four-year investigation period, are summarized in Table 2. To better understand the trends and patterns of each study variable, these descriptive statistics provide an overview of their characteristics.

Based on the results presented in Table 2, the research variables exhibit considerable variation. Corporate Performance (CP) has an average of 1.481 with a standard deviation of 1.602, indicating significant performance differences between companies. Competitive Advantage (CA) has an average of 0.076 with low variation, while ESG has an average of 46.966 with a high standard deviation (18.380), indicating significant differences in scores. Gender Diversity (GD) and Board Size (BSIZE) exhibit moderate variation, with averages of 27.852 and 7.384, respectively. Leverage shows very high variation, with an average of 0.732, while Size is relatively stable, with an average of 20.386. Age shows significant differences between companies. Meanwhile, macroeconomic variables (ΔGDP and INF) have very small averages and limited variation, indicating relatively low variation within the sample.

Table 2. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
CP	448	1.481	1.602	0.19	11.06
ESG	448	46.966	18.380	6.46	88.58
CA	448	0.076	0.076	0	0.44
GD	448	27.852	12.863	10	75
BSIZE	448	7.384	2.056	2	15
Lev	448	0.732	1.370	0	17.14
Size	448	20.386	1.525	17.21	23.93
Age	448	35.989	19.159	5	105
ΔGDP	448	0.028	0.423	-0.05	0.1
INF	448	0.026	0.015	0	0.07

Table 3 explains the results of the coefficient of the F-determination test for panel regression Models 1 and 2.

Table 3. Results of coefficient determination test of Model 1 and Model 2

Model	R-Squared	Adj R-Squared
I	0.377	0.364
II	0.5019	0.4870

Based on Table 3, R-Squared for Model I is 0.377, which indicates that model variables account for 37.7% of the variance in corporate performance and that other, non-model factors account for the remaining variance. When compared to Model I (Adjusted R-Squared 0.364), Model II's R-Squared and Adjusted R-Squared values of 0.5019 and 0.4870, respectively, show that it has more explanatory power. Overall, both models perform quite well, but Model II provides stronger explanatory power, especially with the presence of interaction variables that enhance the model's ability to explain company performance.

Table 4 displays the results of the F test of Models 1 and 2.

Table 4. Results of statistics test of F of Models 1 and 2

Model	F-Test	Prob > F
I	29.47	0.000
II	33.65	0.000

Based on Table 4, all three thresholds of significance (1%, 5%, and 10%) are satisfied by Models I and II, since their respective Probability > F values are 0.000 (<0.001). Overall, the regression model is appropriate for this research since these findings show that the independent factors significantly affect the dependent variable at the same time.

Tests of the null hypothesis for Model 1, the one in which the independent and moderating factors do not interact, are detailed in Table 5.

Based on Table 5, the findings of the test support the first hypothesis (H1), which states that ESG significantly impacts corporate performance in a positive way (p-value = 0.000, <1% significance level). A higher ESG score indicates that the firm is performing well. In addition, the second hypothesis

(H2) is accepted because competitive advantage (CA) positively and significantly affects corporate performance (p-value 0.000, coefficient 9.817). This indicates that increased corporate competitiveness contributes to improved corporate performance.

Table 5. Results of the hypothesis test of Model 1

CP	Coef.	Std. Error	t	P > |t|
ESG	0.024	0.004	5.86	0.000***
CA	9.817	0.838	11.71	0.000***
GD	0.008	0.005	1.67	0.095*
BSIZE	-0.115	0.032	-3.59	0.000***
Lev	-0.061	0.045	-1.37	0.172
SIZE	-0.022	0.050	-4.43	0.000***
ΔGDP	0.312	1.503	0.21	0.835
Age	-0.008	0.003	-2.61	0.009***
INF	5.970	4.531	1.32	0.188
_cons	4.929	0.980	5.03	0.000***

Table 6 describes the results of hypothesis testing for Model 2, the model with interactions between the independent variables and moderating variables.

Table 6. Results of hypothesis test of Model 2

CP	Coef.	Std. Error	t	P > |t|
ESG	-0.008	0.012	-0.68	0.496
CA	27.880	4.307	6.47	0.000***
GD	-0.018	0.013	-1.44	0.151
BSIZE	-0.029	0.082	-0.36	0.722
Lev	-0.061	0.404	-1.51	0.131
SIZE	-0.017	0.046	-3.81	0.000***
ΔGDP	0.094	1.351	0.07	0.944
Age	-0.009	0.003	-2.91	0.004**
INF	5.882	4.141	1.42	0.156
ESG x GD	-7.360	0.000	-0.03	0.976
CA x GD	0.424	0.073	5.78	0.000***
ESG x BSIZE	0.003	0.002	2.49	0.013**
CA x BSIZE	-3.812	0.467	-8.16	0.000***
_cons	4.070	1.130	3.60	0.000***

Due to the lack of a statistically significant interaction between ESG and GD (p = 0.976), Table 6 concludes that gender diversity (GD) does not modify the relationship between ESG characteristics and corporate performance. This disproves hypothesis 3. The findings provide credence to hypothesis 4, demonstrating that GD enhances the influence between CA and corporate performance. This is supported by a substantial and positive interaction between CA and GD (p = 0.000). Supporting hypothesis 5, we find that BSIZE moderates the positive and statistically significant association between ESG and company performance (p = 0.013). Last but not least, BSIZE moderates the CA-performance connection considerably, albeit negatively (p = 0.000), lending credence to hypothesis 6 that larger boards have a dampening influence on CA's impact on performance.

5. DISCUSSION AND IMPLICATIONS

5.1 Discussion

The t-test provides statistical support for the idea that ESG factors significantly and favorably affect corporate performance. The results suggest that when ESG norms are prioritized, organizational performance also improves [30]. The RBV provides an explanation for this finding by arguing that ESG is a valuable and hard-to-replicate strategic asset [22]. Furthermore, ESG also supports sustainable competitive advantage through effective resource management [22]. From a Stakeholder Theory perspective, ESG reflects a company's responsibility to its stakeholders [18]. The implementation of ESG can increase stakeholder legitimacy and trust in the company [55]. Strong stakeholder support contributes to stability and improved corporate performance [56].

This research aligns with findings showing that ESG is positively correlated with a company's profitability and market value [25]. ESG commitment is also associated with better financial performance and higher returns [30]. Furthermore, companies with high ESG scores tend to experience more stable market value growth [31]. However, some studies have reported non-significant relationships in specific market contexts, where similar results also indicated an insignificant relationship between ESG and performance.

Overall, this research confirms that ESG plays a crucial role in creating added value and improving company performance by strengthening internal efficiency and external stakeholder relationships [18, 57].

The t-test results indicate that competitive advantage has a positive and statistically significant effect on corporate performance, thereby supporting the proposed hypothesis. These findings suggest that companies with stronger competitive advantages tend to achieve higher market valuations, as reflected in an increase in Tobin’s Q. This implies that firms possessing superior resources, innovation capabilities, operational efficiency, or strategic differentiation are better positioned to create value and strengthen investor confidence. Consequently, competitive advantage plays an important role in enhancing overall corporate performance and sustaining long-term growth [31]. That valuable and hard-to-imitate internal resources are the basis of competitive advantage is a central tenet of the RBV Theory, which this discovery lends credence to [22].

Strong competitive advantages, such as innovation and operational efficiency, can increase profitability and company value [30]. Competitive advantage-based strategies also help companies maintain greater stability in the face of market pressures [31]. However, research suggests that the effect of competitive advantage is not always significant, particularly in highly volatile sectors [42]. These differences in results are influenced by industry characteristics and varying economic conditions.

Having a competitive edge is essential for a company's success and value, according to this study. This is especially true in business settings that are reasonably stable.

Findings from the t-test disprove the claim that gender diversity reduces the effect of ESG on business performance. This shows that gender diversity on boards of directors does not improve the association between ESG and business value, according to Tobin's Q. This finding contradicts Agency Theory, which suggests that a more diverse board would improve oversight and management [21].

Contrary to previous findings, our data show that having more female board members does not influence a company's bottom line [32]. Similar findings also indicate that gender diversity can improve a company's reputation and profitability [58]. These differences in results are likely influenced by different country contexts and organizational structures. In some Asian companies, female representation is still limited to non-executive positions, resulting in a relatively small impact on strategic decisions [34].

Countries with inclusive governance cultures and sophisticated sustainability rules have a more substantial moderating influence of gender diversity, according to this study's findings. Thus, gender diversity is ineffective as a moderating variable in this research, as it is still just symbolic and does not make a real contribution to corporate decision-making.

The results of the second hypothesis test lead us to believe that gender diversity amplifies the positive effect of competitive advantage on business success. As seen in Tobin's Q, this study suggests that gender diversity on boards of directors may enhance a company's ability to convert its competitive edge into greater market value. In theory, these results support the RBV, which argues that a diverse workforce is better able to provide novel ideas and sustainable advantages [22].

Previous research has shown that gender diversity can strengthen the relationship between competitive strategy and performance by increasing innovation [34]. Gender diversity has also been reported to increase the effectiveness of decision-making and a company's strategic flexibility [35]. However, there is research that finds that gender diversity does not always have a positive impact on performance due to potential coordination conflicts within the board [59].

These differences in results may be influenced by cultural contexts and industry characteristics. Overall, these findings confirm that gender diversity acts as a reinforcing factor, increasing the effectiveness of competitive advantage in driving company performance.

The results of the t-test support the hypothesis and demonstrate that ESG has a higher effect on business performance with a larger board. Consequently, bigger boards provide more support for the relationship between ESG practices and corporate performance, as measured by Tobin's Q. The findings are consistent with Agency Theory, which emphasizes the critical role of the board's monitoring in minimizing agency conflicts [21]. Stakeholder Theory, which states that a board with more members may better reflect the interests of a wider variety of stakeholders, is also supported by the results [18].

Previous research has shown that larger board size can strengthen ESG implementation by increasing oversight capacity and diversity of expertise [37]. Similar results have also been found in the context of corporate governance, where board size supports the effectiveness of sustainability implementation [38]. However, findings suggest that excessively large boards can reduce decision-making effectiveness due to coordination constraints [39]. This difference may be influenced by company characteristics and governance conditions in each country [16].

The results of this study confirm that board size serves as a significant moderator, strengthening the positive relationship between ESG and company performance (H5), with effectiveness remaining dependent on the quality of coordination and internal board efficiency.

Furthermore, Board Size has been shown to weaken the positive effect of competitive advantage on corporate performance, thus supporting the hypothesis. This suggests that larger boards may reduce the effectiveness of firms in transforming competitive advantage into higher market performance, as reflected in Tobin’s Q. From the perspective of the RBV, although competitive advantage represents a valuable strategic resource, excessive board size may create coordination difficulties, slower decision-making processes, and communication inefficiencies that hinder the firm’s ability to respond strategically to market opportunities. Consequently, the strategic benefits derived from efficient asset utilization and internal capabilities become less effectively translated into superior market valuation [22].

Previous research has shown that balanced board size can enhance a company's coordination and strategic capabilities. Similar findings also indicate that appropriate board size helps companies leverage competitive advantages more effectively [8]. However, some research has found that large boards can decrease efficiency and performance due to increased coordination problems [43]. This difference may be influenced by different governance characteristics and organizational circumstances.

Overall, the results of this study confirm that an optimal board size can significantly strengthen the relationship between competitive advantage and company performance, especially when supported by an effective and well-coordinated board structure.

5.2 Implications

5.2.1 Practical implications

Practically, the empirical findings of this study offer several strategic recommendations for corporate management, regulators, and investors:

1) For investors and stakeholders in the ASEAN region, this study confirms that companies with strong ESG performance, strong competitive advantages, and effective board mechanisms have more stable and sustainable financial prospects. Therefore, responsible investment decisions need to consider ESG scores, competitive advantage strategies, and the effectiveness of board mechanisms in ensuring transparent and accountable governance. With comprehensive ESG-based implementation and assessment, both companies and investors can jointly promote the creation of a competitive, sustainable, and long-term value-driven ASEAN business ecosystem.

2) For internal management, strengthening competitive advantage can be achieved through continuous innovation, developing environmentally friendly products, and improving operational efficiency. Companies need to ensure that their competitive strategies focus not only on profit but also on creating value for all stakeholders, thereby supporting business sustainability amidst the pressures of globalization and the green transition.

3) For corporate governance structures, research shows that gender diversity and proportional board size can strengthen oversight effectiveness and the quality of strategic decisions. Therefore, companies are advised to expand female representation on boards of directors and optimize the number of board members to ensure neither too large nor too small, to maintain a balance between coordination and effectiveness.

4) For policymakers and capital market regulators, this research underscores the necessity for more stringent and standardized ESG disclosure mandates across the IDX, KLSE, and SGX. Regulators should encourage increased participation of women in the board of directors as part of efforts to strengthen sustainable corporate governance.

5.2.2 Theoretical implications

The results of the t-test support the hypothesis and demonstrate that ESG has a higher effect on business performance with a larger board. Consequently, bigger boards provide more support for the relationship between ESG practices and corporate value, as measured by Tobin's Q. The findings are consistent with Agency Theory, which emphasizes the critical role of the board's monitoring in minimizing agency conflicts [21]. Stakeholder Theory, which states that a board with more members may better reflect the interests of a wider variety of stakeholders, is also supported by the results [22]. The findings of this study support the view that a well-balanced set of ESG practices can enhance a firm's productivity, credibility, and market valuation. Effective ESG performance may strengthen stakeholder confidence, improve operational efficiency, and increase investor attractiveness, which ultimately contributes to better corporate performance. In addition, a strong competitive advantage is shown to increase Tobin's Q, indicating that firms with superior strategic positioning and internal capabilities are more likely to strengthen their market position within the ASEAN-5 region. Therefore, these empirical results are consistent with RBV theory, which argues that sustainable success is driven by valuable internal resources and capabilities, as reflected in ESG implementation and competitive strategy [30, 31].

Second, the findings of this study also provide important support for Agency Theory, particularly through the acceptance of H4, which examines the moderating role of board size in the relationship between competitive advantage and corporate performance. According to Agency Theory, conflicts of interest may arise between managers and shareholders due to differences in objectives and information asymmetry. Therefore, governance mechanisms are needed to monitor managerial actions and ensure that decisions are aligned with shareholders' interests. One of these mechanisms is board size. A larger board may provide stronger oversight, broader expertise, and more effective strategic supervision, enabling firms to utilize their competitive advantages more efficiently. As a result, the positive impact of competitive advantage on corporate performance can be strengthened through an effective board structure [21].

The effectiveness of competitive advantage in improving business performance is strengthened by a proportional board size, according to the research findings. According to agency theory, this validates the board's function as an internal oversight tool that can mitigate agency conflicts and increase the effectiveness of business strategies [3].

In support of H3, which investigates how gender diversity affects the connection between competitive advantage and corporate performance, the third result is that the study supports stakeholder theory. Every strategic choice, according to this idea, should take into account the needs of different stakeholders [18]. The research findings indicate that gender diversity on the board of directors can enrich perspectives, increase social legitimacy, and strengthen the effectiveness of competitive strategies in creating corporate value. Thus, these results extend the empirical evidence of Stakeholder theory that diversity at the managerial level is not only an issue of equality, but also a strategic resource that has an impact on improving corporate performance [33, 35].

6. CONCLUSIONS

This study finds that ESG has a positive and significant effect on corporate performance, particularly through higher market value and better operational efficiency. This indicates that companies implementing strong ESG practices are more likely to gain stakeholder trust, improve reputation, and create sustainable long-term value. Therefore, ESG should be viewed not only as a compliance requirement, but also as a strategic factor that supports business growth.

Competitive advantage is also found to positively and significantly influence corporate performance. Companies with strong innovation, efficient operations, and clear strategic differentiation tend to perform better than competitors. This suggests that firms should continuously strengthen their internal capabilities to maintain profitability and market position.

Regarding moderating variables, gender diversity does not significantly strengthen the relationship between ESG and corporate performance. This may imply that board diversity alone is not sufficient to maximize the benefits of ESG unless supported by active participation and effective decision-making roles. However, gender diversity does strengthen the relationship between competitive advantage and corporate performance, indicating that diverse boards may contribute broader perspectives, creativity, and better strategic decisions.

In addition, board size strengthens the influence of ESG and competitive advantage on corporate performance. Larger boards may provide more expertise, experience, and oversight capacity, enabling firms to manage sustainability challenges and strategic opportunities more effectively. These findings support prior studies showing that effective corporate governance is essential for improving business outcomes while pursuing sustainability and competitiveness.

However, this study has limitations. The observation period of 2020–2023 coincided with the COVID-19 pandemic, which created significant economic uncertainty, changes in consumer behavior, policy shifts, and market volatility. These conditions may have affected company performance and caused abnormal fluctuations in the data. As a result, some findings may reflect short-term crisis conditions rather than normal long-term trends.

For future research, longer observation periods are recommended to capture the long-term effects of ESG and governance variables. Researchers may also use qualitative methods such as interviews or case studies to better understand ESG implementation and board processes. In addition, mixed-methods approaches could provide deeper insights into the internal and external factors influencing sustainability initiatives and competitive advantage at the corporate level.

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