JRAK
Jurnal Riset Akuntansi Kontemporer

FIRM SIZE, BOARD CHARACTERISTICS AND ESG PERFORMANCE: EVIDENCE FROM INDONESIA

https://journal.unpas.ac.id/index.php/jrak/index

Annisa Nur Hanifah ✉[1], **Rozmita Dewi Yuniarti Rozali**[2]
[1,2]Master of Accounting Science, Faculty of Economics and Business Education Universitas Pendidikan Indonesia, Indonesia
Corresponding Author: annisa_nurh@upi.edu ✉[1]
Jalan Dr. Setiabudhi No. 229, Bandung, West Java, Indonesia

Article Info

History of Article
Received: 27/6/2026
Revised: 12/8/2026
Accepted: 17/8/2026
Available Online: 27/10/2026

Jurnal Riset Akuntansi Kontemporer
Volume 18, No. 2, October 2026,
Page 370-388
ISSN 2088-5091 (Print)
ISSN 2597-6826 (Online)

https://doi.org/10.23969/jrak.v18i2.57731

Keywords: board gender diversity; corporate governance; esg performance; firm size: indonesia

Abstract

Growing pressure for corporate sustainability highlights the critical need to understand how governance structures drive corporate environmental, social, and governance (ESG) practices. Utilizing data from 38 Indonesian listed firms between 2020 and 2024, this research analyzed how firm size mediates the impact of board characteristics (size, independence, and gender diversity) on ESG performance. A total of 190 firm-year observations sourced from Refinitiv were analyzed using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach. The results indicated that larger and more independent boards positively influenced firm size, whereas board gender diversity unexpectedly exhibited a negative effect. Crucially, firm size significantly drove ESG performance and acted as a vital mediating mechanism across all board characteristics. These robust results demonstrated that the impact of board governance on sustainability outcomes was heavily channeled through organizational scale, providing critical perspectives for policymakers and managers in emerging markets.

INTRODUCTION

In recent years, sustainability issues have become a major concern for companies, investors, regulators, and society (Wang & Zhu, 2024). Corporate operational activities, particularly in the mining, energy, manufacturing, and plantation sectors, often generate environmental degradation resulting from water and air pollution, deforestation, greenhouse gas emissions, and ecosystem degradation

(Wahyuningrum et al., 2026). The criteria for assessing a firm's market value have shifted significantly; rather than focusing exclusively on bottom-line financial gains, stakeholders now scrutinize a company's sustainable impact. This multidimensional accountability is commonly measured through integrated Environmental, Social, and Governance (ESG) metrics (Zhao, 2024)

In Indonesia, the urgency of ESG implementation has increased significantly following the issuance of Financial Services Authority Regulation (POJK) No. 51/POJK.03/2017 concerning sustainable finance, which obliges publicly listed and public companies to publish sustainability reports as part of their accountability and transparency practices (Prihandono & S. Yuniarti, 2023). Nevertheless, the quality of ESG implementation varies considerably across companies, highlighting the need to identify the factors that influence corporate ESG performance (Darsono & Ma'la, 2024). Saraswati et al. (2024) revealed that the number of Indonesian companies actively engaged in ESG reporting and measurement remained relatively limited compared to global trends. World Economics (2024) indicated that only a small proportion of Indonesian companies had achieved a low ESG risk rating, while the majority remained in the medium- to high-risk categories. Recent evidence further indicated that ESG performance among Indonesian companies remained heterogeneous rather than uniformly strong. The Katadata ESG Insight 2024 reported an average ESG score of 52.3 among the top ten Indonesian companies assessed, with Environmental, Social, and Governance scores of 48.5, 54.2, and 54.1, respectively (Katadata, 2024). The relatively lower Environmental score compared with the Social and Governance dimensions suggested that environmental performance remained an area requiring further improvement.

Evidence at the company level also demonstrated substantial variation in ESG performance. In October 2024, S&P Global assigned an ESG score of 44 out of 100 to GoTo Gojek Tokopedia (GOTO), compared with scores of 28 for Grab and 21 for Sea Limited (Pardana, 2024). These differences illustrated that ESG performance could vary considerably among companies operating in the Indonesian market. At the same time, the 2024 Asia Sustainability Reporting Rating (ASRRAT) showed that several Indonesian companies had achieved the Platinum and Gold categories for sustainability reporting, indicating that some firms had developed relatively advanced sustainability reporting practices (NCSR, 2024). Taken together, these findings suggested that ESG performance in Indonesia during 2024 could be characterized as heterogeneous, with some firms demonstrating relatively strong sustainability practices while others continued to exhibit considerable room for improvement. This variation provided an important basis for examining the organizational and governance factors that might explain differences in ESG performance across firms.

The increasing attention to ESG does not necessarily imply that ESG performance has become uniformly strong among Indonesian companies (Dewi, 2023). Instead, recent evidence suggests that ESG practices and outcomes remain heterogeneous across firms (Aresteria et al., 2024). A systematic literature review conducted in Indonesia highlighted the increasing urgency of ESG implementation while also identifying limitations in the availability and adequacy of ESG-related information and data (Dwijayanti et al., 2025). This situation creates an important research question: if ESG has become increasingly important for companies and stakeholders, why do substantial differences in ESG performance continue to exist among Indonesian firms? The answer may lie partly in the internal governance structures of companies. The board plays an important role in supervising management, providing strategic advice, accessing external resources, and responding to stakeholder expectations (Ngadin & Prastyantini, 2025). Therefore, differences in board characteristics may contribute to differences in a firm's ability to develop and implement ESG-related strategies.

Through the lens of Resource Dependence Theory, corporate boards serve as vital instruments that equip organizations with valuable resources, professional expertise, information, and networks that help organizations adapt to and manage increasingly complex business environments (Tien, 2020) Therefore, board size, board independence, and board gender diversity are widely recognized as key corporate governance mechanisms that influence how effectively firms formulate and implement sustainability-related decisions (Githaiga & Kosgei, 2023). The growing adoption of ESG practices in Indonesia has encouraged firms to establish more competent and diverse boards capable of addressing sustainability challenges (Sari & Nadhira Fitriani, 2024). Larger boards are believed to provide greater

expertise, experience, and access to external resources necessary to support ESG strategies (Ngadin & Prastyantini, 2025; Treepongkaruna et al., 2024; Yin & Xu, 2025). Despite their potential benefits, larger boards may experience greater coordination and communication complexities, leading to less efficient decision-making processes and reduced organizational performance (Arsh et al., 2025). The varying findings across existing studies demonstrate that board size continues to be a debated governance factor in ESG research. This debate is especially relevant in Indonesia, where organizations are under mounting pressure to improve governance effectiveness and enhance the transparency of sustainability-related disclosures.

The Indonesian government has strengthened corporate governance practices through Financial Services Authority Regulation (POJK) No. 33/POJK.04/2014, which mandates that independent commissioners constitute at least 30% of the total board of commissioners in publicly listed companies (Nisa Afifa et al., 2022). This requirement highlights the strategic role of board independence in reinforcing oversight mechanisms and reducing potential agency conflicts between managers and shareholders. Despite this regulatory emphasis, the contribution of independent commissioners to ESG performance remains inconclusive. In a previous study, empirical backing was provided that expanding the ratio of independent commissioners catalyzed the elevation of corporate ESG metrics (Chang, 2023; Li & Guo, 2022; Marheni et al., 2024). In contrast, Rahmadani et al. (2023) reported that the effect differed across firms and industries, indicating that the relationship between board independence and ESG performance remained open to further investigation.

Board gender diversity has become an increasingly important issue at both the global and national levels (Young, 2022). Although Indonesia has not implemented mandatory female board quotas as adopted in several European countries, investors and other stakeholders have increasingly encouraged greater female representation in strategic corporate positions (Ahmad et al., 2024). Empirical insights from Juniarti & Jie (2024) revealed that the representation of female leaders within Indonesian boardrooms remained notably constrained. This baseline reality stands in contrast to evidence from Surbakti & Sari (2024), which demonstrated that heightened boardroom gender diversity drove superior ESG outcomes, particularly through enhanced governance frameworks. These insights suggested that integrating female directors into core leadership structures elevated overall governance quality and streamlined the execution of sustainability targets. Even so, the broader academic landscape remained fragmented; several investigations have documented an inconsequential link between board diversity and ESG progress. Abdelkader et al. (2024) attributed this divergence to a lack of critical mass, arguing that when female executives remain heavily underrepresented, their leverage to steer long-term policy and strategic sustainability choices is significantly diminished. Given this scholarly impasse, there was a clear imperative to conduct deeper empirical inquiries into how board diversity shaped sustainability outcomes, particularly within the Indonesian corporate domain.

Beyond boardroom configurations, organizational scale functions as a pivotal determinant in driving a company's ESG outcomes. Companies with larger organizational scales often benefit from superior financial capacity, technological capabilities, and human capital, allowing them to pursue sustainability strategies more effectively (Dzeraviaha, 2023). Furthermore, large corporations tend to attract greater attention from stakeholders, including investors, regulatory authorities, media outlets, and society at large, thereby increasing the pressure to demonstrate superior ESG performance (Gregory, 2024). By contrast, smaller firms frequently struggle with resource limitations that restrict their capacity to develop and execute ESG initiatives effectively (Gómez Martínez et al., 2024).

To comprehensively explain the drivers of corporate sustainability, this study integrates three foundational theoretical lenses: Resource Dependence Theory (RDT), Agency Theory, and Stakeholder Theory. Through the lens of Resource Dependence Theory, corporate boards serve as vital instruments that equip organizations with valuable resources, professional expertise, information, and networks necessary to manage complex external environments (Domínguez-CC & Barroso-Castro, 2019). Simultaneously, Agency Theory emphasizes that robust board characteristics reinforce oversight mechanisms, reducing potential agency conflicts and information asymmetry between opportunistic managers and shareholders regarding long-term sustainability investments (Gul & Ng, 2017). Finally, Stakeholder Theory dictates that modern corporations do not operate in a vacuum; they face mounting

pressures from a broad web of internal and external stakeholders (including regulators, communities, and investors) to secure institutional legitimacy by embedding ESG practices into their core operations (Hassn, 2018).

Drawing upon the perspective of Resource Dependence Theory, effective board characteristics can assist firms in acquiring the resources necessary to expand their operational scale. Boards characterized by an optimal size, a high degree of independence, and adequate gender diversity are more likely to enhance monitoring quality and facilitate greater access to external networks and resources (Chiyachantana et al., 2021). These conditions may subsequently contribute to firm growth, thereby strengthening the firm's ability to implement ESG strategies effectively (Gregory, 2024). Accordingly, firm size may function as an intermediary mechanism linking board characteristics to ESG performance.

Despite a burgeoning body of research on board attributes and sustainability metrics, a cohesive consensus in the current literature has yet to be established. In particular, prior research has produced contradictory findings regarding whether board size, board independence, and board gender diversity effectively improve ESG performance (Marheni et al., 2024; Surbakti & Sari, 2024). This static assumption overlooks the practical reality that board decisions require an operational and physical transmission channel to manifest into substantive ESG outcomes. A boardroom cannot directly execute carbon emission reductions or social welfare programs without first shaping the organization's resource capacity and operational scale. Second, existing empirical literature has focused overwhelmingly on examining the isolated, direct relationships that board size, director independence, and boardroom gender diversity share with ESG performance, with limited investigation into the mechanisms through which these board attributes translate into sustainability outcomes. Such an approach implicitly assumes that board governance mechanisms influence sustainability outcomes directly. However, this perspective overlooks the possibility that board characteristics may affect ESG performance through organizational capabilities developed over time. Consequently, the underlying mechanism explaining how board governance translates into superior ESG performance remains insufficiently understood.

Third, while organizational scale is universally acknowledged as a primary determinant of ESG outcomes, extant literature has conventionally restricted its role to that of a control variable, leaving its potential function as an intervening mediating mechanism largely unexamined. In line with Resource Dependence Theory, board characteristics facilitate access to strategic resources, external networks, and managerial expertise that contribute to organizational growth. As firms become larger, they gain greater financial capacity, technological resources, and stakeholder visibility, which subsequently enhance their ability to implement ESG initiatives. Therefore, firm size may represent an important transmission channel linking board governance and ESG performance. Nevertheless, empirical evidence examining this mediating role remains extremely limited, particularly in emerging economies such as Indonesia.

Therefore, this study addresses this significant limitation by introducing firm size (organizational scale) as a strategic mediating mechanism, shifting the paradigm from a mere control variable to an active intervening pathway. Drawing upon the integration of our three core theories, effective board configurations (RDT) and disciplined independent oversight (Agency Theory) enable a firm to secure high-quality external capital, expand market networks, and make robust strategic investments that systematically expand the firm's operational size and asset base. Subsequently, as the firm scales up, it attracts heightened public visibility and intense scrutiny from external pressures (Stakeholder Theory), while simultaneously accumulating the vast financial, technological, and human resources required to institutionalize substantive, high-cost ESG initiatives.

Consequently, the originality and contribution of this investigation lie in moving beyond incremental direct-effect models. By positioning firm size as a mediator, this study establishes a comprehensive framework that explicitly demonstrates how strategic boardroom governance structures are systematically translated into superior sustainability outcomes through the accumulation of organizational capacity over time. Using data from Indonesian publicly traded enterprises spanning the 2020–2024 timeframe, this research offers a pioneering vantage point on the ways strategic corporate

governance drives sustainability success by fostering corporate expansion and strategic resource accumulation. The research hypotheses and model (Figure 1) are presented below.

H1: Board size exerts a significant influence on firm size.
H2: Board Independence has a significant influence on firm size.
H3: Board gender diversity has a significant influence on firm size.
H4: Firm size has a significant effect on ESG performance.
H5: Firm size serves as an intervening pathway through which board size affects ESG Performance
H6: Firm size serves as an intervening pathway through which board independence affects ESG performance
H7: Firm size serves as an intervening pathway through which board gender diversity affects ESG performance.

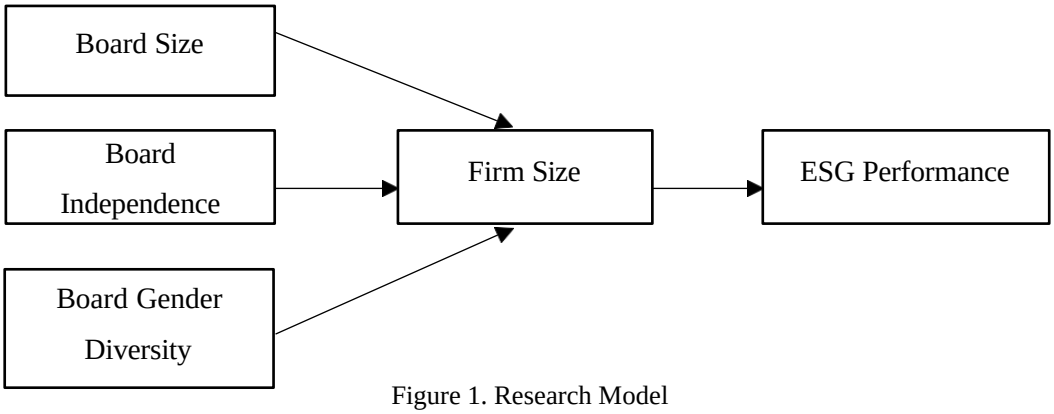

Figure 1. Research Model

METHOD

The research population comprises companies listed on the Indonesia Stock Exchange (IDX) from 2020 to 2024. To ensure high data quality and statistical rigor, a purposive sampling method was implemented based on specific, predefined operational criteria. The systematic sample selection and data screening process were conducted based on the following sequential criteria (see Table 1):

Table 1. Sample Selection Criteria

Criteria	Total Companies
Public companies continuously listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 timeframe.	295
Companies that did not publish full annual reports and corporate governance data (including detailed metrics on board size, independent commissioners, and female board members) and environmental, social, and governance (ESG) performance data available in the Refinitiv Eikon database from 2020 to 2024.	(257)
Number of companies that meet the criteria	38
Observation years	5 years
Number of observations in the research	190

Furthermore, a rigorous data screening protocol was applied to identify missing values, data anomalies, and extreme outliers before running the structural model. Variables measured with financial figures (such as Total Assets, ROA, and ROE) were converted using standardized scores (Z-scores) to identify statistical outliers. Observations with extreme standard deviations ($Z > 3.0$) were flagged as outliers. Since the final 38 firms demonstrated highly consistent financial and governance records across the 5-year balanced panel without exhibiting erratic structural spikes, no observations required deletion, leaving a final clean dataset of 190 firm-year observations.

This study employed five main variables, namely board size, board independence, board gender diversity, firm size, and ESG performance, as presented in Table 2. To isolate the primary relationships under investigation, this research integrates several control variables to mitigate potential confounding factors. Specifically, corporate profitability is employed as a control measure, evaluated through two distinct financial metrics: return on assets (ROA) and return on equity (ROE).

The analysis is conducted using Structural Equation Modeling–Partial Least Squares (SEM-PLS) through SmartPLS software. To properly evaluate the complex relationships among multiple constructs, this study adopted the SEM-PLS approach. In particular, this study explores the direct and indirect relationships between board characteristics, firm size, and ESG performance, with firm size acting as a mediating variable. SEM-PLS enables the estimation of multiple causal relationships within a single model, making it more efficient than conventional stepwise regression approaches (Hair et al., 2022)

Second, SEM-PLS possesses strong predictive capabilities and is particularly suitable for theory development in emerging research areas, notably in relation to institutional governance and sustainability systems in developing economies such as Indonesia. This approach not only evaluates the significance of structural relationships, but also facilitates the evaluation of a model's capacity to explain and predict endogenous constructs (Hair et al., 2022).

To verify the robustness of the findings, several supplementary analyses were undertaken. The model was first re-estimated without the profitability controls (ROA and ROE). In addition, firm size was operationalized using an alternative binary measure based on the classification of issuers stipulated in Financial Services Authority Regulation (POJK) No. 43/POJK.04/2020. Under this regulation, issuers with total assets not exceeding IDR 50 billion were classified as small-scale issuers. Accordingly, firms with total assets above IDR 50 billion were coded as 1 (non-small-scale firms), whereas those with total assets of IDR 50 billion or below were coded as 0 (small-scale firms). This alternative operationalization was employed to assess whether the mediation results were robust to a different measurement of firm size.

Table 2. Research Variable

Variables	Definition	Indicators	References
Board Size	The overall composition of a company's governing board, represented by the combined number of directors and commissioners.	*Board size*= Total number of board members	(Lahlou, 2018)
Board Independence	The percentage of independent directors capable of objective corporate monitoring.	$Board\ Independent = \frac{Total\ number\ of\ board\ independence}{Total\ number\ of\ board\ members}$	(Haldar et al., 2018)
Board Gender Diversity	The degree to which women are represented on the board of directors and commissioners.	$Board\ Gender\ Diversity = \frac{Total\ number\ of\ female\ board\ membe}{Total\ number\ of\ board\ members}$	(Baghdadi et al., 2023a)
Firm Size	The overall magnitude of a firm, commonly proxied by total assets, sales, or market value.	Total Assets	(Dang et al., 2018)
ESG Performance	A measure of a company's performance in environmental, social, and governance dimensions, reflecting the extent of sustainability integration within organizational practices.	Refinitiv ESG Score (ESG_Score)	(Melinda & Wardhani, 2020)

RESULTS

As presented in Table 3, the descriptive statistics summarize the key characteristics of the characteristics of each variable included in the study.

Table 3. Descriptive Statistics

Variables	N	Mean	Median	Min	Max	Std. Deviation
Board Size	190	6.405	6.000	3.000	12.000	2.052
Board Independence	190	43.021	40.000	15.385	100.000	14.592
Board Gender Diversity	190	7.565	0.000	0.000	42.857	9.986
Total Assets	190	10.861.590.077	3.241.907.478	282.139.354	102.071.962.536	20.567.485.457
ESG Score	190	48.015	49.174	8.162	86.296	19.826
ROA	190	0.116	0.075	-0.521	0.615	0.140
ROE	190	0.271	0.187	-0.236	3.548	0.406

Source: processed output from SmartPLS 4 (2026)

Regarding board characteristics, the Board Size variable records a mean of 6.405, a median of 6.000, a minimum value of 3.000, a maximum value of 12.000, and a standard deviation of 2.052. These results indicate that the sampled firms have, on average, approximately six board members, with relatively low variation in board size across companies. The Board Independence variable exhibits a mean value of 43.021%, a median of 40%, a minimum value of 15.385%, a maximum value of 100%, and a standard deviation of 14.592. This suggests that, on average, the proportion of independent board members exceeds the minimum requirement established by regulators, although considerable variation remains across firms. Meanwhile, the Board Gender Diversity variable reports a mean value of 7.565%, a median of 0.000%, a minimum value of 0.000%, a maximum value of 42.857%, and a standard deviation of 9.986. A median value of zero suggests that the majority of sampled firms do not include women on their boards. This finding highlights the low representation of female directors and commissioners among Indonesian listed companies.

The Firm Size variable, represented by Total Assets, records an average value of IDR 10,861,590.077 million and a median value of IDR 3,241,907.478 million. The observed values range between IDR 282,139.354 million and IDR 102,071,962.536 million, while the standard deviation amounts to IDR 20,567,485.457 million. The substantial difference between the mean and median values indicates the presence of several exceptionally large firms, resulting in a positively skewed (right-skewed) distribution. Meanwhile, the ESG Score variable has a mean value of 48.015, a median of 49.174, a minimum value of 8.162, a maximum value of 86.296, and a standard deviation of 19.826. These results suggest that the ESG performance of Indonesian firms remains at a moderate level, with considerable variation across companies. Regarding the control variables, Return on Assets (ROA) has a mean value of 0.116, a median of 0.075, a minimum value of −0.521, a maximum value of 0.615, and a standard deviation of 0.140. During the observation period, some companies experienced losses, as evidenced by the negative minimum value.

Similarly, Return on Equity (ROE) has a mean value of 0.271, a median of 0.187, a minimum value of −0.236, a maximum of 3.548, and a standard deviation of 0.406. The relatively large gap between the minimum and maximum values suggests substantial variation in shareholder returns among the sampled firms.

Table 4. Validity and Reliability

Construct	Item	Loading Factor	A	CR	AVE
Board Size	Board Size	1.000	1.000	1.000	1.000
Board Independence	Independent Board Members	1.000	1.000	1.000	1.000
Board Gender Diversity	Board Gender Diversity	1.000	1.000	1.000	1.000
Firm Size	Total Assets	1.000	1.000	1.000	1.000
ESG Performance	ESG Score	1.000	1.000	1.000	1.000
Profitability	ROA	0.985	0.869	0.925	0.862
	ROE	0.868			

Source: processed output from SmartPLS 4 (2026)

The reliability and convergent validity of the operationalized constructs were verified using the established guidelines by Hair et al. (2022). The evaluation involved a meticulous check of factor loadings, Cronbach's alpha, composite reliability (CR), and average variance extracted (AVE). The data tabulated in Table 4 confirmed that all measurement items fell within the acceptable statistical ranges. These high-quality indices reflected superior internal consistency and sound convergent validity, ensuring that the measurement model was well-suited for path analysis.

Table 5. Discriminant Validity - Fornell–Larcker framework

	Board Gender Diversity	Board Independence	Board Size	ESG Performance	Firm Size	Profitability
Board Gender Diversity	1.000					
Board Independence	0.066	1.000				
Board Size	0.050	-0.155	1.000			
ESG Performance	-0.084	-0.036	0.297	1.000		
Firm Size	-0.082	0.246	0.327	0.335	1.000	
Profitability	0.070	0.117	-0.100	0.014	-0.202	0.928

Source: processed output from SmartPLS 4 (2026)

The assessment of discriminant validity was conducted to verify that no two constructs share identical empirical space. Based on the Fornell–Larcker framework, this specification dictates that the square root of the average variance extracted (AVE) for each dimension must exceed the correlation values it shares with other constructs (Hair et al., 2022). The empirical results presented in Table 5 demonstrated that all latent variables successfully satisfied this requirement. Because the square roots of the AVE values consistently surpassed the corresponding cross-construct correlations, these findings confirmed the distinctiveness of each dimension, thereby establishing robust discriminant validity.

Table 6. Discriminant Validity - Heterotrait-Monotrait Ratio (HTMT)

	Board Gender Diversity	**Board Independence**	**Board Size**	**ESG Performance**	**Firm Size**	**Profitability**
Board Gender Diversity						
Board Independence	0.066					
Board Size	0.050	0.155				
ESG Performance	0.084	0.036	0.297			
Firm Size	0.082	0.246	0.327	0.335		
Profitability	0.112	0.161	0.100	0.024	0.179	

Source: processed output from SmartPLS 4 (2026)

This study evaluated discriminant validity using the Heterotrait-Monotrait (HTMT) ratio of correlations. According to Hair et al. (2022), discriminant validity is established when all HTMT ratios are strictly below the conservative threshold of 0.850. As presented in Table 6, the computed HTMT ratios ranged from 0.024 to 0.335, safely within the acceptable statistical boundaries. Since the governance indicators and firm size are measured as single-item constructs, their HTMT ratios align with the correlation coefficients but fully satisfy the empirical requirements. These outcomes confirm that all constructs are empirically distinct, ensuring that the structural model analysis is free from multicollinearity issues.

To evaluate the explanatory power of the structural model, the coefficient of determination (R2) was examined. As presented in Table 7, the R2 value for Firm Size is 0.211, indicating that 21.1% of the variance in organizational scale is explained by board characteristics (size, independence, and gender diversity). Crucially, the R2 value for ESG Performance is 0.112, which implies that firm size explains 11.2% of the total variance in corporate sustainability outcomes in Indonesia.

Table 7. R- Squared (R2)

	R-square	R-square adjusted
ESG Performance	0.112	0.108
Firm Size	0.211	0.199
Profitability	0.041	0.036

Source: processed output from SmartPLS 4 (2026)

In addition, the Goodness-of-Fit (GoF) measure was employed to evaluate the overall performance of the proposed model. This index integrates the quality of the measurement model and the predictive capability of the structural model. Specifically, the GoF value is derived from the geometric mean of the average AVE and the average coefficient of determination (R^2) of the endogenous variables, thereby offering an overall indication of model fit, explanatory power, and construct validity (Hair et al., 2022). To determine the model's explanatory strength, the Goodness-of-Fit (GoF) index is categorized into three threshold levels. First, a GoF less than 0.250 represents a low fit, showing weak explanatory performance. Second, a value between $AVE \times R2AVE \times R2AVE \times R2AVE \times R20.250$ and 0.360 indicates a moderate fit, meaning the observed phenomena are adequately explained. Lastly, a GoF above 0.360 signifies a high fit, pointing to substantial agreement between the theoretical model and empirical data. The GoF value is derived from the following equation:

$$GoF = \sqrt{\overline{AVE} \times \overline{R^2}} \quad \text{..... (1)}$$

$$GoF = \sqrt{0.977 \times 0{,}162} \quad \text{..... (2)}$$

$$GoF = 0{,}398 \quad \text{.....(3)}$$

With a computed GoF value of 0.398, the research model exceeds the benchmark for a high-level fit. This result indicates that the proposed model has robust explanatory capability and is highly consistent with the empirical evidence. Moreover, the result confirms that both the measurement and structural models perform satisfactorily, providing a sound basis for further analysis and hypothesis evaluation.

Table 8. PLS Prediction

	Q2 Predict	PLS-SEM_RMSE	PLS-SEM_MAE	LM_RMSE	LM_MAE
Total Assets	0.062	0.278	0.158	0.270	0.166
ESG Score	0.034	19.580	16.786	19.311	16.511

Source: processed output from SmartPLS 4 (2026)

A PLS-Predict analysis was carried out to further verify the predictive power of the proposed framework. As shown in Table 8, the Q2predict values are 0.034 for ESG Performance and 0.062 for Firm Size. Since both values are greater than zero, the model demonstrates predictive relevance and is capable of predicting observations outside the estimation sample (Hair et al., 2022). Additionally, contrasting the PLS-SEM approach with the baseline linear model reveals contrasting outcomes. For ESG Performance, the PLS-SEM model produces a slightly higher RMSE value (19.580) than the LM benchmark (19.311), indicating that the linear model performs marginally better in predicting ESG scores. Similarly, for the Firm Size variable, the PLS-SEM RMSE value (0.278) is slightly higher than the LM value (0.270).

In addition to RMSE, predictive performance was also evaluated using Mean Absolute Error (MAE). The results indicate that for ESG Performance, the MAE value of the PLS-SEM model (16.786) is slightly higher than that of the benchmark linear model (16.511), suggesting that the linear model provides marginally more accurate predictions. In contrast, for Firm Size, proxied by total assets, the PLS-SEM model yields a lower MAE value (0.158) than the benchmark model (0.166). While the linear model slightly outperforms the PLS-SEM model in predicting ESG Performance, the PLS-SEM model provides more accurate predictions for Firm Size based on the MAE criterion. Therefore, following Hair et al. (2022), the model can be considered to exhibit low to moderate predictive power, indicating that it is capable of predicting future observations but does not consistently outperform a benchmark linear model.

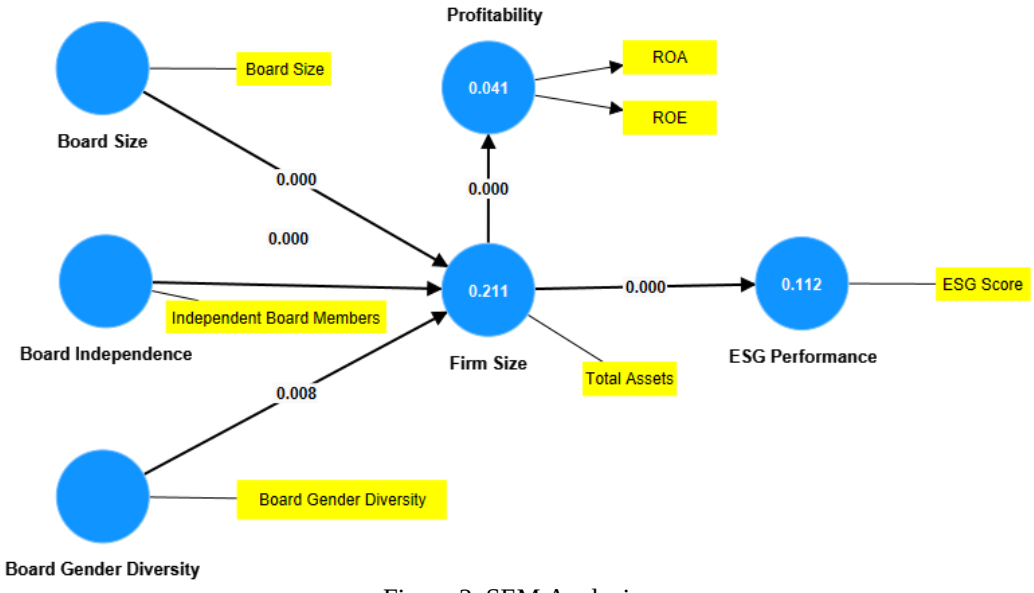

Figure 2. SEM Analysis

Source: Data processed via SmartPLS 4 software (2024)

Multicollinearity was diagnosed via Variance Inflation Factors (VIF) before evaluating the research hypotheses. Following benchmarks established by Hair et al. (2022), VIF values under 3 confirm the absence of common method bias and severe multicollinearity. Table 9 indicates that all constructs satisfied this criterion, demonstrating that collinearity poses no threat to the validity of the parameters. Consequently, the study proceeded to the structural model analysis to test the proposed direct paths. The PLS-SEM outcomes, including the path coefficients and the overall model framework, are illustrated in Figure 2.

Table 9. Collinearity Statistics (VIF)

	VIF
Board Gender Diversity	1.000
Board Size	1.000
ESG Score	1.000
Independent Board Members	1.000
ROA	2.436
ROE	2.436
Total Assets	1.000

Table 10. Direct Effect Analysis

Direct Effect	**Path Coefficients**	**t-statistic**	**p-values**
Board Size à Firm Size	0.381***	8.738	0.000
Board Independence à Firm Size	0.313***	5.879	0.000
Board Gender Diversityà Firm Size	-0.122***	2.673	0.008
Firm Size à ESG Performance	0.335***	6.682	0.000
Profitability à Firm Size	-0.202***	7.493	0.000

Note: ***, **, and * represent significance at 1%, 5%, and 10%, respectively. Source: Primary data processed via SmartPLS 4 (2026)

Subsequent to the structural model evaluation, a bootstrapping technique was applied to test the proposed hypotheses based on path coefficients (β), t-values, and p-values. The results in Table 10 indicate that H1, H2, and H4 are supported, while H3 is not. Board size significantly and positively affected firm size ($\beta = 0.381$, $t = 8.738$, $p < 0.010$), confirming H1. Board independence also yielded a positive and significant effect on firm size ($\beta = 0.313$, $t = 5.879$, $p < 0.010$), supporting H2. On the other hand, board gender diversity displayed a significant negative effect on firm size ($\beta = -0.122$, $t = 2.673$, $p < 0.010$), leading to the rejection of H3. Furthermore, firm size positively and significantly influenced ESG performance ($\beta = 0.335$, $t = 6.682$, $p < 0.010$), which sustained H4. Finally, the value indicates that the combination of board size, independence, and gender diversity explains 21.1% of the total variance in firm size. Meanwhile, firm size explains 11.2% of the variance in ESG performance. These findings suggest that the proposed model possesses satisfactory explanatory power in predicting the endogenous variables. In addition, the control variables, namely return on assets (ROA) and return on equity (ROE), were found to be statistically significant, indicating that profitability also contributes to explaining variations in firm size and ESG performance.

To ascertain the mediating role of firm size between board attributes and ESG performance, indirect effects were tested (see Table 11). Hypotheses H5 and H6 are fully supported, as firm size significantly transmits the indirect effects of both board size ($\beta = 0.128$, $t = 4.928$, $p < 0.010$) and board independence ($\beta = 0.105$, $t = 3.903$, $p < 0.010$) onto ESG performance. Furthermore, the indirect relationship involving board gender diversity is also statistically significant ($\beta = -0.041$, $t = 2.418$, $p < 0.050$), which validates H7.

Table 11. Indirect Effect Analysis

Indirect Effects	Path Coefficients	t-statistic	p-values
Board Sizeà Firm Sizeà ESG Performance	0.128***	4.928	0.000
Board Independenceà Firm Sizeà ESG Performance	0.105***	3.903	0.000
Board Gender Diversityà Firm Sizeà ESG Performance	-0.041**	2.418	0.016

Note: ***, **, and * represent significance at 1%, 5%, and 10%, respectively.

To assess the stability of the empirical findings, two robustness analyses were conducted. First, the structural model was re-estimated after excluding the profitability control variables (ROA and ROE) to examine whether the estimated relationships depended on firms' financial performance. Second, firm size was operationalized using an alternative binary measure (firms with total assets above IDR 50 billion were coded as 1, whereas those with total assets of IDR 50 billion or below were coded as 0), allowing us to evaluate whether the mediation results were sensitive to the operationalization of organizational scale. Across both alternative specifications, the direction, significance, and relative magnitude of the direct and indirect effects remained largely unchanged. More importantly, the mediating effect of firm size remained statistically significant, suggesting that the proposed mediation mechanism was robust and not driven by a particular model specification or measurement approach.

Table 12. Robustness Test

Direct Effect	Path Coefficients	t-statistics	p-values
Board Size à Firm Size	0.077***	3.567	0.000
Board Independence à Firm Size	0.084***	3.929	0.000
Board Gender Diversityà Firm Size	-0.041***	2.816	0.005
Firm Size à ESG Performance	1.119***	8.800	0.000
Indirect Effect			
Board Sizeà Firm Sizeà ESG Performance	0.086***	3.397	0.001
Board Independenceà Firm Sizeà ESG Performance	0.094***	3.564	0.000
Board Gender Diversityà Firm Sizeà ESG Performance	-0.046***	2.672	0.008

Note: ***, **, and * represent significance at 1%, 5%, and 10%, respectively.

DISCUSSION

The empirical results provide evidence of a positive and significant relationship between board size and firm size. Based on 190 firm-year observations from 38 Indonesian listed companies, board size ranges from 3 to 12 members, with an average of 6.41 members. Most firms have five to seven board members, indicating that relatively moderate board sizes are common in the sample.

The descriptive analysis generally shows that firms with larger boards tend to have larger asset bases. For example, firms with eight board members record an average firm size of approximately 34.10 billion, compared with 1.67 billion for firms with three board members. However, the relationship is not perfectly linear, suggesting that board size does not mechanically determine asset growth. Rather, larger boards may reflect greater organizational complexity and resource requirements.

This positive relationship is consistent with Resource Dependence Theory, which views the board as a source of strategic resources that support organizational growth (Fernandez et al., 2019). Larger boards can provide broader networks, diverse expertise, information, and access to external resources, enabling firms to strengthen their resource base and capitalize on growth opportunities (Cristea et al.,

2022; Yin & Xu, 2025). The finding is also consistent with Ngadin & Prastyantini (2025), who reported a positive association between board size and firm characteristics. Thus, larger boards may support firm expansion by enhancing access to resources and strategic opportunities.

To further examine the relationship between board characteristics and firm size, firms were classified based on the minimum 30% proportion of independent commissioners. Of the 190 firm-year observations, 156 (82.1%) met or exceeded the threshold, while 34 (17.9%) fell below it. At the firm level, 20 of the 38 companies consistently met the threshold throughout the observation period. Firms meeting the requirement had a higher average firm size (12.60 billion) than those below the threshold (2.87 billion), with median values of 3.47 billion and 2.21 billion, respectively. This pattern complements the structural results showing a positive and significant effect of board independence on firm size, although the descriptive comparison should be interpreted as an empirical tendency rather than evidence of causality.

The positive relationship is consistent with Agency Theory, which suggests that independent directors strengthen monitoring and reduce agency conflicts (Hu, 2022). Stronger oversight can increase investor and creditor confidence and facilitate access to external capital, thereby supporting corporate expansion (Jiraporn & Lee, 2018). This finding is consistent with Uribe-Bohorquez et al. (2018) and Lasmi et al. (2024), who emphasized the role of board independence in strengthening governance and supporting organizational development.

In contrast, board gender diversity shows a negative relationship with firm size. This finding may reflect the institutional and cultural context of emerging markets, where women's participation in corporate leadership remains constrained (Cabeza-García et al., 2019). Female directors may have limited influence over strategic decisions due to tokenism and traditional board recruitment networks (Cook & Glass, 2018; Tyrowicz et al., 2020). Therefore, the contribution of gender diversity to firm expansion may depend not only on the number of female directors but also on their substantive participation and influence in strategic decision-making (Abdelkader et al., 2024).

The findings show that board characteristics have significant but heterogeneous relationships with firm size. Board size and board independence have positive effects, with coefficients of 0.381 and 0.313, respectively, while board gender diversity has a negative effect ($\beta = -0.122$). Board size therefore represents the strongest association with firm size, suggesting that larger boards may provide broader expertise, networks, and access to strategic resources. Board independence also supports larger firm size through stronger monitoring, governance credibility, and stakeholder confidence. This finding is supported by the descriptive evidence, where firms meeting the 30% independence threshold have a higher average firm size (12.60 billion) than those below the threshold (2.87 billion).

In contrast, the negative association between board gender diversity and firm size does not imply that female representation inherently constrains firm growth. Rather, it may reflect the institutional and organizational context in which female representation remains relatively limited and may not yet translate into substantive influence over strategic decisions. Overall, the findings indicate that board characteristics affect organizational scale through different mechanisms, including resource access, monitoring effectiveness, and the substantive influence of directors.

Furthermore, firm size has a positive and significant effect on ESG performance. This finding is consistent with Stakeholder Theory, as larger firms face greater pressure from investors, regulators, communities, and other stakeholders to adopt sustainable practices (Hassn, 2018). Larger firms also possess greater financial, technological, and human resources to implement ESG initiatives, strengthen disclosure, and develop effective governance mechanisms (Drempetic et al., 2020). Thus, organizational scale can facilitate firms' capacity to achieve stronger ESG performance.

Larger firms tend to face greater public scrutiny and stakeholder pressure, encouraging them to maintain legitimacy through stronger ESG practices (Peixoto et al., 2022). Their greater financial, technological, and human resources also enable them to invest more effectively in sustainability initiatives and ESG disclosure (Zhang & Kakabadse, 2022). This finding is consistent with Gómez-Carrasco et al. (2021), who identify firm size as an important determinant of ESG performance. Thus, larger organizational scale can strengthen firms' capacity to achieve better ESG outcomes.

The R^2 for ESG Performance (0.112) is relatively low, but this does not diminish the significance of the structural relationships identified. ESG performance is multidimensional and influenced by broader institutional, regulatory, industry, and market factors beyond board characteristics and firm size. Since this study focuses on the mediating mechanism of firm size, the results remain useful for explaining how corporate governance can contribute to ESG outcomes.

The results further show that board size has a positive indirect effect on ESG performance through firm size. Consistent with Resource Dependence Theory, larger boards can provide broader expertise, knowledge, and external networks that support organizational growth and access to resources (Aguilar-Fernández & Otegi-Olaso, 2018). As firms grow, their increased financial and managerial capacity can be directed toward ESG initiatives. This finding is consistent with Domínguez-CC & Barroso-Castro (2019) and Gregory (2024), supporting the view that firm size acts as an important mechanism linking board size to ESG performance.

Similarly, board independence has a positive indirect effect on ESG performance through firm size. This finding suggests that independent directors can strengthen corporate oversight and facilitate organizational growth, which subsequently enhances firms' capacity to implement ESG practices. From an Agency Theory perspective, independent directors can reduce agency conflicts and strengthen governance effectiveness, thereby supporting the organizational conditions necessary for improved ESG performance.

The mediating role of firm size indicates that board independence contributes to ESG performance beyond its direct governance function. Independent directors strengthen transparency, accountability, and oversight, which can support organizational growth, stakeholder confidence, and access to external resources (Hu, 2022). As firms expand their financial and operational capacity, they become better positioned to implement ESG initiatives. This finding is consistent with Domínguez-CC & Barroso-Castro (2019) and Moisello et al. (2024), who emphasize the role of independent directors in strengthening governance and sustainability disclosure.

In contrast, board gender diversity has a negative indirect effect on ESG performance through firm size. This result may reflect the limited representation and substantive influence of women in Indonesian corporate boards, as indicated by the median gender diversity value of zero. From Agency Theory and Resource Dependence Theory, the benefits of gender diversity depend on female directors having meaningful authority and participation in strategic decision-making (Zainal Abidin et al., 2025). Limited representation may lead to tokenism, reducing their influence on corporate growth and resource allocation (Baghdadi et al., 2023b).

However, this finding does not imply that gender diversity is inherently detrimental to ESG performance. Rather, its effectiveness may depend on organizational culture, women's substantive participation, and their influence over strategic decisions (Cook & Glass, 2018). Thus, the findings highlight the importance of moving beyond numerical representation toward meaningful inclusion in corporate governance (Abdelkader et al., 2024). The mixed evidence in prior studies, including positive findings reported by Ariadi et al. (2024) and Adeola & Ajasa-Adeoye (2025), further suggests that the effect of board gender diversity is highly context-dependent, particularly in emerging markets where female representation remains limited.

This study extends the corporate governance literature by identifying firm size as an intervening mechanism linking board characteristics to ESG performance. By integrating Resource Dependence Theory, Agency Theory, and Stakeholder Theory, the findings suggest that board characteristics may influence sustainability outcomes not only directly but also through firms' organizational and resource capacity. However, the relatively low explanatory power for ESG performance ($R^2 = 0.112$) indicates that ESG outcomes are also shaped by broader institutional and external factors. Furthermore, the negative indirect effect of board gender diversity through firm size highlights the context-dependent nature of gender diversity and suggests that its contribution to ESG performance may vary across institutional, cultural, and organizational settings.

The findings provide practical insights for companies, regulators, and investors. For companies, optimizing board composition, particularly board size and director independence, can support organizational capacity and ESG implementation. Regulators should strengthen corporate governance

requirements, particularly regarding board independence and governance transparency, while supporting corporate capacity-building to facilitate ESG adoption. For investors, board characteristics can serve as additional indicators when evaluating firms' governance quality and long-term ESG potential. Overall, the findings emphasize the importance of aligning corporate governance structures with organizational capacity and sustainability objectives.

CONCLUSION

This study successfully achieved its objective of examining the influence of board size, board independence, and board gender diversity on ESG performance through the mediating role of firm size. The findings demonstrate that board size and board independence positively affect firm size, which subsequently enhances ESG performance, while board gender diversity exhibits a negative indirect effect through firm size. These results highlight the importance of firm size as a key mechanism linking corporate governance characteristics to sustainability outcomes.

This study contributes to the corporate governance and ESG literature by demonstrating that firm size mediates the relationship between board characteristics and ESG performance, extending Resource Dependence Theory, Agency Theory, and Stakeholder Theory. Practically, the findings suggest that appropriate board size and stronger board independence can enhance organizational capacity and support ESG implementation, while regulators should strengthen governance standards and transparency to promote sustainable corporate practices.

Despite these contributions, this study encountered several limitations during the data collection and analysis process. First, the availability of consistent ESG performance data and corporate governance information restricted the number of firms that could be included in the final sample. The study ultimately obtained data from 38 Indonesian listed firms, resulting in 190 firm-year observations for the 2020–2024 period. This data availability constraint may reduce the statistical variation captured in the analysis and should therefore be considered when interpreting the empirical findings. Second, the study relies on ESG performance data obtained from the Refinitiv database. Differences in ESG assessment methodologies and data availability across firms may affect the comparability of ESG performance measures.

Future research could expand the sample across industries, countries, and longer periods to improve the generalizability of the findings. Researchers may also employ alternative ESG data sources and examine additional governance and firm-specific factors, such as institutional ownership, board expertise, CEO characteristics, and regulatory pressure. Further studies could also investigate the contextual factors underlying the negative indirect effect of board gender diversity and conduct cross-country comparisons to examine how institutional differences shape the governance–ESG relationship.

REFERENCES

Abdelkader, M. G., Gao, Y., & Elamer, A. A. (2024). Board Gender Diversity and ESG Performance: The Mediating Role of Temporal Orientation in South Africa Context. *Journal of Cleaner Production, 440*, 140728. https://doi.org/10.1016/j.jclepro.2024.140728

Adeola, I. K., & Ajasa-Adeoye, F. Z. (2025). Board Gender Diversity and Corporate Social Responsibility. *In Sustainable Economic Development (). Springer Nature Switzerland*, 469–497. https://doi.org/10.1007/978-3-031-96224-0_17

Aguilar-Fernández, M. E., & Otegi-Olaso, J. R. (2018). Firm Size and the Business Model for Sustainable Innovation. *Sustainability*, *10*(12). https://doi.org/10.3390/su10124785

Ahmad, G. N., Iranto, D., Siregar, E., & Sebayang, D. A. (2024). Female in the Boardroom and Firm Performance: An Insight of Indonesia's Firms. *Revista Finanzas y Política Económica, 16*(1), 47–63. https://doi.org/10.14718/revfinanzpolitecon.v16.n1.2024.3

Aresteria, M., Sulestiyono, D., & Utami, Y. L. (2024). Regulation and Corporate Environment Social Governance Score in Indonesia. *Proceeding of International Conference on Business,*

Economics, Social Sciences, and Humanities, *7*(1), 914–924. https://doi.org/10.34010/icobest.v7i.603

Ariadi, D., Serly, & Susanto, A. (2024). Does Gender Diversity Among the Board of Directors Significantly Affect a Company's Financial Performance? Jurnal Manajemen, 15(1). 14–29. https://doi.org/10.32832/jm-uika.v15i1.15271

Arsh, M., Ansari, M. S., Ahmad, G., Enam, M., Tabash, M. I., & Al-Absy, M. S. M. (2025). Unveiling the Corporate Governance Dynamics: Exploring the Nexus of Board Composition, Audit Committee Attributes, Foreign Ownership, and Firm Performance in an Emerging Market. *Cogent Business & Management*, *12*(1). https://doi.org/10.1080/23311975.2025.2468876

Baghdadi, G. A., Safiullah, M., & Heyden, M. L. M. (2023). Do Gender Diverse Boards Enhance Managerial Ability? Journal of Corporate Finance, 79. 102364. https://doi.org/10.1016/j.jcorpfin.2023.102364

Baghdadi, G. A., Safiullah, M., & Heyden, M. L. M. (2023). Do Gender Diverse Boards Enhance Managerial Ability? Journal of Corporate Finance, 79. 102364. https://doi.org/10.1016/j.jcorpfin.2023.102364

Cabeza-García, L., Del Brio, E. B., & Rueda, C. (2019). Legal and Cultural Factors as Catalysts for Promoting Women in the Boardroom. *BRQ Business Research Quarterly*, *22*(1), 56–67. https://doi.org/10.1016/j.brq.2018.06.004

Chang, J. (2023). The Role of Independent Directors in Ensuring Good Corporate Governance. *Frontiers in Business, Economics and Management*, *12*(1), 7–11. https://doi.org/10.54097/fbem.v12i1.13618

Chiyachantana, C. N., Pattanawihok, S., & Prasarnphanich, P. (2021). Board Composition, Board Diversity and Stock Performance. *International Journal of Business & Economics (IJBE)*, *6*(2), 76–87. https://doi.org/10.58885/ijbe.v06i2.076.cc

Cook, A., & Glass, C. (2018). Women on Corporate Boards: Do They Advance Corporate Social Responsibility? Human Relations, 71(7). 897–924. https://doi.org/10.1177/0018726717729207

Cristea, M., Noja, G. G., Thalassinos, E., Cîrciumaru, D., Ponea, C. Ștefan, & Durău, C. C. (2022). Environmental, Social and Governance Credentials of Agricultural Companies-The Interplay with Company Size. *Resources*, *11*(3). https://doi.org/10.3390/resources11030030

Dang, C., (Frank) Li, Z., & Yang, C. (2018). Measuring Firm Size in Empirical Corporate Finance. *Journal of Banking & Finance*, *86*, 159–176. https://doi.org/10.1016/j.jbankfin.2017.09.006

Darsono, S. N. A. C., & Ma'la, A. (2024). Impact of ESG Practices on Sustainable Companies Performance in Indonesia. *BALANCE: Economic, Business, Management and Accounting Journal*, *21*(1), 65–75. https://doi.org/10.30651/blc.v21i1.20333

Dewi, A. K. (2023). The Effect of Environmental, Social, and Governance (ESG) Disclosure on the Company's Market Value in Indonesia. *Jurnal Pamator: Jurnal Ilmiah Universitas Trunojoyo*, *16*(3), 608–619. https://doi.org/10.21107/pamator.v16i3.19923

Domínguez-CC, M., & Barroso-Castro, C. (2019). Board Resources and Firm Performance in SMEs (). 115–125. https://doi.org/10.1007/978-3-030-00677-8_10

Drempetic, S., Klein, C., & Zwergel, B. (2020). The Influence of Firm Size on the ESG Score: Corporate Sustainability Ratings Under Review. *Journal of Business Ethics*, *167*(2), 333–360. https://doi.org/10.1007/s10551-019-04164-1

Dwijayanti, N. M. A., Hudaya, R., Dewi, T. K., & Surya, L. P. L. S. (2025). *Penerapan ESG bagi Perusahaan: Systematic Literature Review*. *Owner*, *9*(2). https://doi.org/10.33395/owner.v9i2.2618

Dzeraviaha, I. (2023). The Impact of Firm Size on Environmental Sustainability: The Assessment Based on the Analysis of Cost Structure. *Business Strategy & Development*, *6*(1), 20–32. https://doi.org/10.1002/bsd2.221

Fernandez, W. D., Thams, Y., & Lehrer, M. (2019). What Does Board Capital Really Bring to the Table? American Journal of Business, 34(3/4). 134–147. https://doi.org/10.1108/AJB-09-2018-0050

Githaiga, P. N., & Kosgei, J. K. (2023). Board Characteristics and Sustainability Reporting: A Case of Listed Firms in East Africa. *Corporate Governance: The International Journal of Business in Society*, *23*(1), 3–17.

Gómez Martínez, R., Medrano-Garcia, M. L., & Amo Navas, D. (2024). Evaluating ESG Performance: The Influence of Firm Size and Gender Diversity. *Small Business International Review*, *8*(2). https://doi.org/10.26784/sbir.v8i2.693

Gómez-Carrasco, P., Guillamón-Saorín, E., & Osma, B. (2021). Stakeholders Versus Firm Communication in Social Media: The Case of Twitter and Corporate Social Responsibility Information. *European Accounting Review*, *30*(1), 31–62. https://doi.org/10.1080/09638180.2019.1708428

Gregory, R. P. (2024). The Influence of Firm Size on ESG Score Controlling for Ratings Agency and Industrial Sector. *Journal of Sustainable Finance & Investment*, *14*(1), 86–99. https://doi.org/10.1080/20430795.2022.2069079

Gul, F. A., & Ng, A. C. (2017). *Agency Costs of Free Cash Flows and Investments in Business Sustainability*. SSRN Electronic Journal. https://doi.org/10.2139/ssrn.3003629

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (third Edition)*. SAGE Publication Ltd.

Haldar, A., Shah, R., Nageswara Rao, S. V. D., Stokes, P., Demirbas, D., & Dardour, A. (2018). Corporate Performance: Does Board Independence Matter? - Indian Evidence. *International Journal of Organizational Analysis*, *26*(1), 185–200. https://doi.org/10.1108/IJOA-12-2017-1296

Hassn, N. T. (2018). Corporate Governance, Degree of Multi- Nationality, and Corporate Social Responsibility Disclosure: Evidence from the UK. *Journal of Empirical Research in Accounting & Auditing An International Journal*, *01*(01), 76–98. https://doi.org/10.12785/JERAA/010105

Hu, W. (2022). The Impacts of the Board of Directors in a Company. *BCP Business & Management*, *20*, 525–528. https://doi.org/10.54691/bcpbm.v20i.1027

Juniarti, J., & Jie, F. (2024). Performance of Gender Diversity on Board of Directors: The Case of Indonesia. *Journal of Infrastructure Policy and Development*, *8*(4). https://doi.org/10.24294/jipd.v8i4.3438

Katadata (2024). *Katadata ESG Index 2024*.

Lahlou, I. (2018). Determinants of Board Size, Composition and Leadership. *In Corporate Board of Directors (). Springer International Publishing*, 29–67. https://doi.org/10.1007/978-3-030-05017-7_2

Lasmi, N. W., P, K. W. S. P., & Sukarnasih, D. M. (2024). Assessing the Influence of Board of Commissioners, Audit Committees, and Company Scale on Business Performance. *UPI YPTK Journal of Business and Economics*, *9*(3), 8–15. https://doi.org/10.35134/jbe.v9i3.258

Li, Q., & Guo, M. (2022). *Do the Resignations of Politically Connected Independent Directors Affect Corporate Social Responsibility? Evidence from China*. Journal of Corporate Finance, (Query date: 2025-05-03 20:41:2463 cites: & as_sdt=2005 & sciodt=2007 & hl=en). https://scholar.google.com/scholar?cites=14297792582062271656. https://www.sciencedirect.com/science/article/pii/S0929119922000177

Marheni, D. K., Erick, E., Ramadani, A. G., & Wandi, Y. (2024). The Influence of GCG on Disclosure of ESG Scores of Companies Listed on the IDX. *Almana: Jurnal Manajemen Dan Bisnis*, *8*(1), 110–118. https://doi.org/10.36555/almana.v8i1.2460

Melinda, A., & Wardhani, R. (2020). The Effect of Environmental, Social, Governance, and Controversies on Firms' Value: Evidence from Asia (). 147–173. https://doi.org/10.1108/S1571-038620200000027011

Moisello, A. M., Gavana, G., & Gottardo, P. (2024). Does Nomination Committee Independence Affect Corporate Environmental Performance? Evidence from the European Union. *Cleaner Environmental Systems*, *12*, 100170. https://doi.org/10.1016/j.cesys.2024.100170

NCSR (2024). *List of Rating- Asia Sustainability Reporting Rating (ASRRAT) 2024*.

Ngadin, D. R., & Prastyantini, S. L. Y. (2025). The Effect of Board Size, Independent Board and Audit Committee, on Firm Value. *Journal of Social Growth and Development Studies*, *1*(2), 91–98. https://doi.org/10.64021/jsgds.1.2.91-98.2025

Nisa Afifa, Abdul Halim Barkatullah, & Yulia Qamariyanti (2022). *Pengangkatan Komisaris Independen dalam Mewujudkan Good Corporate Governance (tata Kelola Perusahaan yang Baik) pada Perseroan Terbatas*. *The Juris*, *6*(2), 625–631. https://doi.org/10.56301/juris.v6i2.652

Pardana, R. S. (2024). *Adu Skor ESG Versi S&P Global: GOTO, Grab, Hingga Induk Shopee*. Hijau. Bisnis. Com.

Peixoto, J. A., Machado, A. B., & Richter, M. F. (2022). ESG Indicator Metrics Used by Organisations to Assess the Degree of Sustainability in Companies. *International Journal of Advanced Engineering Research and Science*, *9*(9), 589–600. https://doi.org/10.22161/ijaers.99.64

Prihandono, I., & S. Yuniarti, D. (2023). Indonesia Sustainability Reporting Standard: What Needs to Be Improved? Padjadjaran Journal of International Law, 7(1). 1–23. https://doi.org/10.23920/pjil.v7i1.1159

Rahmadani, F., Adrianto, F., & Alfarisi, M. F. (2023). Is It Corporate Governance, Industry, and Profitability Matter on Esg Performance? Evidence from Indonesian Companies. *Journal of Social Research*, *2*(3), 804–817. https://doi.org/10.55324/josr.v2i3.728

Saraswati, E., Ghofar, A., Atmini, S., & Dewi, A. A. (2024). Clustering of Companies Based on Sustainability Performance Using ESG Materiality Approach: Evidence from Indonesia. *International Journal of Energy Economics and Policy*, *14*(2), 112–125. https://doi.org/10.32479/ijeep.15393

Sari, T. K., & Nadhira Fitriani (2024). *How Do Board Characteristics Influence the ESG Disclosure in Indonesia? Jurnal Akuntansi & Auditing Indonesia*. https://doi.org/10.20885/jaai.vol27.iss2.art9

Surbakti, L. P., & Sari, R. P. (2024). Gender Diversity and Sustainability Performance of Companies Listed on the IDX. *International Journal of Social Science and Business*, *8*(2), 300–310. https://doi.org/10.23887/ijssb.v8i2.69836

Tien, N. T. T. (2020). Towards a Multi-theoretical Approach on the Board and Firm Performance Relationship. *VNU Journal of Economic and Business*, *36*(2).

Treepongkaruna, S., Kyaw, K., & Jiraporn, P. (2024). ESG Controversies and Corporate Governance: Evidence from Board Size. *Business Strategy and the Environment*, *33*(5), 4218–4232. https://doi.org/10.1002/bse.3697

Tyrowicz, J., Terjesen, S., & Mazurek, J. (2020). All on Board? New Evidence on Board Gender Diversity from a Large Panel of European Firms. *European Management Journal*, *38*(4), 634–645. https://doi.org/10.1016/j.emj.2020.01.001

Uribe-Bohorquez, M.-V., Martínez-Ferrero, J., & García-Sánchez, I.-M. (2018). Board Independence and Firm Performance: The Moderating Effect of Institutional Context. *Journal of Business Research*, *88*, 28–43. https://doi.org/10.1016/j.jbusres.2018.03.005

Wang, Z., & Zhu, W. (2024). ESG Performance, Financing Constraints and Firm Capital Efficiency. *Open Journal of Business and Management*, *12*(05), 3676–3691. https://doi.org/10.4236/ojbm.2024.125183

World Economics (2024). *ESG Score in Asia Pacific 2024*.

Yin, J., & Xu, J. (2025). Exploring the Impact of Board Size on ESG Controversies: New Evidence from China. *Sustainability*, *17*(11). https://doi.org/10.3390/su17114855

Young, A. M. (2022). Women's Presence on Corporate Boards: Addressing Director Selection, Participation, and Gender Bias. *Journal of Behavioral and Applied Management*, *22*(1). https://doi.org/10.21818/001c.37168

Zainal Abidin, S., Lokman, N., & Abdul Rahim, M. (2025). Women in the Boardroom: Contribution and Challange in Malaysia Companies. *International Journal of Entrepreneurship and Management Practices*, *8*(31), 735–749. https://doi.org/10.35631/IJEMP.831050

Zhang, P., & Kakabadse, N. (2022). A Conceptual Approach to Exploring Board Effect on CSR Responsiveness. *Journal of Corporate Governance, Insurance, and Risk Management*, *9*(2), 302–315. https://doi.org/10.56578/jcgirm090201

Zhao, W. (2024). Research Trend in the Development of Environmental, Social, and Governance (ESG). *Advances in Economics, Management and Political Sciences*, *122*(1), 183–194. https://doi.org/10.54254/2754-1169/2024.17815

AI Disclosure

The authors used ChatGPT (Model: GPT 4-o, May 2026 version) from Open AI to assist in language editing, grammar checking, and improving the clarity of the manuscript. All content was reviewed and verified by the authors, who remain fully responsible for the accuracy, interpretation, and conclusions of the study.