

The Effect of Eco-Efficiency, Sustainability Reporting, and Corporate Governance on Firm Value with Firm Size as a Mediating Variable

Gabrina Nathania

Universitas Brawijaya, Indonesia
nathaniagabrina@gmail.com

Submitted: 18th June 2026 | **Edited:** 24th July 2026 | **Issued:** 01st September 2026

Cited on: Nathania, G. (2026). The Effect of Eco-Efficiency, Sustainability Reporting, and Corporate Governance on Firm Value with Firm Size as a Mediating Variable. *AKADEMIK: Jurnal Mahasiswa Ekonomi & Bisnis*, 6(3), 1447-1462.

ABSTRACT

This study addresses the inconsistent findings reported in previous studies regarding the influence of sustainability practices and corporate governance on firm value, particularly within environmentally sensitive industries. It aims to examine the effects of eco-efficiency, sustainability reporting, and corporate governance on firm value, while investigating the mediating role of firm size in Indonesian energy companies. The study employs a quantitative research design using secondary data obtained from the annual reports and sustainability reports of energy companies listed on the Indonesia Stock Exchange during 2021–2023. A purposive sampling technique was applied, resulting in 69 firm-year observations. Data were analyzed using multiple regression and path analysis after satisfying the required classical assumption tests. The findings indicate that eco-efficiency and sustainability reporting have no significant direct effect on firm value, whereas corporate governance, represented by the audit committee and independent commissioners, positively influences firm value. Furthermore, firm size mediates the relationship between corporate governance and firm value but does not mediate the effects of eco-efficiency and sustainability reporting. These findings provide additional evidence on the role of corporate governance in enhancing firm value while highlighting the limited contribution of environmental disclosure practices within Indonesia's energy sector.

Keywords: Eco-efficiency, Sustainability Reporting, Corporate Governance, Firm Size, Firm Value

INTRODUCTION

Firm value is widely recognized as a key indicator of corporate performance because it reflects investors' assessment of a company's future prospects and determines its attractiveness in capital markets. Companies with higher firm value generally enjoy greater investor confidence, easier access to external financing, and stronger market competitiveness (Sugiyarti et al., 2023; Anggita et al., 2022; Bawai, 2021). In recent years, investors have increasingly incorporated environmental, social, and governance (ESG) considerations into their investment decisions, encouraging companies to integrate

sustainability practices into their business strategies. According to PwC (2023), the proportion of companies publishing sustainability reports in the Asia-Pacific region increased from 77% in 2021 to 88% in 2022, indicating that sustainability disclosure has become an essential component of corporate accountability. In Indonesia, this commitment is reinforced through Law No. 40 of 2007 concerning Limited Liability Companies and the Financial Services Authority Regulation (POJK) No. 51/POJK.03/2017, which require companies to strengthen environmental and social responsibility practices.

Among various industries, the energy sector represents one of the most relevant contexts for examining sustainability and firm value because it contributes significantly to national economic growth while simultaneously generating considerable environmental impacts. The sector remains highly dependent on natural resources and is closely associated with greenhouse gas emissions, energy transition challenges, and increasing public scrutiny regarding environmental responsibility. Indonesia continues to promote sustainable development and its commitment to achieving net-zero emissions, energy companies are expected to improve environmental performance and disclose sustainability information more transparently. Nevertheless, discrepancies between sustainability reporting and actual environmental practices may create greenwashing concerns, potentially reducing investor confidence and weakening the credibility of corporate sustainability initiatives (Peh, 2024; Moodaley & Telukdarie, 2023).

To address these challenges, companies are encouraged to implement eco-efficiency by balancing economic performance with environmental responsibility. Eco-efficiency enables firms to optimize resource utilization, reduce environmental impacts, and improve operational efficiency, thereby creating long-term value for both shareholders and stakeholders. Sustainability reporting complements these efforts by communicating environmental, social, and governance performance to external stakeholders, thereby reducing information asymmetry and strengthening corporate legitimacy. In addition, effective corporate governance, particularly through independent commissioners and audit committees, plays a crucial role in ensuring accountability, enhancing the quality of sustainability disclosure, and protecting shareholders' interests (Wahidahwati & Ardini, 2021; Arslan & Alqatan, 2020).

Despite the growing attention to sustainability practices, empirical evidence regarding their influence on firm value remains inconclusive. Several studies report that eco-efficiency and sustainability reporting enhance firm value by improving corporate reputation and investor confidence (Sugiyarti et al., 2023; Anggita et al., 2022). Conversely, other studies suggest that sustainability initiatives do not necessarily generate immediate market appreciation because investors often prioritize short-term financial performance over non-financial disclosures (Moodaley & Telukdarie, 2023; Peh, 2024). Likewise, previous findings concerning the effectiveness of corporate governance mechanisms in increasing firm value have also produced inconsistent results, indicating that the relationship may depend on firm-specific characteristics and contextual factors.

One factor that may explain these inconsistent findings is firm size. Larger companies generally possess greater financial resources, stronger governance structures, and broader stakeholder exposure, enabling them to implement sustainability initiatives more effectively than smaller firms. Consequently, firm size may strengthen the relationship between eco-efficiency, sustainability reporting, corporate governance, and firm value. However, previous studies have predominantly examined firm size as a control or moderating variable, while limited attention has been given to its mediating role, particularly within Indonesia's energy sector.

Based on these considerations, this study aims to examine the effects of eco-efficiency, sustainability reporting, and corporate governance on firm value, with firm size serving as a mediating variable in Indonesian energy companies listed on the Indonesia Stock Exchange. This study contributes to the literature by addressing inconsistent empirical findings, focusing on one of Indonesia's most environmentally sensitive industries, and employing the World Business Council for Sustainable Development (WBCSD) eco-efficiency indicator to provide a more comprehensive assessment of environmental performance. The findings are expected to enrich the literature on sustainable corporate finance while providing practical insights for managers, investors, and regulators in promoting long-term corporate value through effective sustainability and governance practices.

LITERATURE REVIEW

Theoretical Background

This study is grounded in Signalling Theory, Stakeholder Theory, and Legitimacy Theory to explain how sustainability practices and corporate governance influence firm value. Signalling Theory (Spence, 1973) suggests that companies reduce information asymmetry by communicating credible information to investors through environmental performance, sustainability reporting, and governance practices. Positive signals strengthen market confidence and improve firm value (Connelly et al., 2023). However, sustainability disclosure alone may not always influence investors unless it is supported by credible governance and measurable environmental performance. Stakeholder Theory argues that companies create long-term value by balancing the interests of shareholders and other stakeholders, including customers, employees, communities, and regulators (Freeman et al., 2020). Meanwhile, Legitimacy Theory explains that organizations seek social acceptance by aligning their operations with prevailing social and environmental expectations through transparent sustainability practices (Fernando & Lawrence, 2019). Therefore, these complementary theories provide a comprehensive explanation of how sustainability initiatives and governance mechanisms contribute to corporate value creation.

Firm value reflects investors' expectations regarding a company's future performance and is commonly measured by market-based indicators such as Tobin's Q (Wahasusmiah & Arshintia, 2022; Gunawan & Ayu, 2024). Eco-efficiency represents a firm's capability to generate economic benefits while minimizing environmental impacts, whereas sustainability reporting enhances transparency by disclosing economic, environmental, and social performance (Syahrizam, 2025; Fitri & Haryati, 2022). Effective corporate governance, represented by audit committees and independent commissioners, strengthens accountability, improves monitoring quality, and reduces agency conflicts, thereby increasing investor confidence (Bakhtiar et al., 2021; Laksana & Handayani, 2022). Furthermore, firm size reflects organizational capacity, financial resources, and market visibility that enable companies to implement sustainability strategies and governance practices more effectively. Consequently, this study proposes that eco-efficiency, sustainability reporting, and corporate governance directly influence

firm value, while firm size serves as a mediating variable that strengthens these relationships, particularly within Indonesia's energy sector.

Conceptual Framework and Hypothesis Development

Based on Signalling Theory, Stakeholder Theory, and Legitimacy Theory, the conceptual framework proposes that eco-efficiency, sustainability reporting, audit committees, and independent commissioners influence firm value both directly and indirectly through firm size. Eco-efficiency reflects a firm's ability to create economic value while minimizing environmental impacts, thereby enhancing operational efficiency and corporate reputation. Sustainability reporting reduces information asymmetry by providing transparent disclosures regarding environmental, social, and governance performance, enabling investors to make more informed decisions. Meanwhile, audit committees and independent commissioners strengthen corporate governance by improving oversight, accountability, and the credibility of financial and sustainability reporting, which ultimately increases investor confidence and market valuation. Firm size is expected to strengthen these relationships because larger firms generally possess greater financial resources, stronger governance systems, and broader stakeholder exposure, allowing sustainability initiatives to be implemented more effectively.

Previous empirical studies have reported inconsistent findings regarding the relationships among these variables. Several studies demonstrate that eco-efficiency, sustainability reporting, and corporate governance positively affect firm value through improved stakeholder trust and corporate reputation, whereas other studies report insignificant or even negative effects due to differences in industrial characteristics, governance quality, and investor responses (Hapsoro & Adyaksana, 2020; Kartana et al., 2022; Nurhidayanti et al., 2023). These inconsistencies indicate that firm size may explain variations in the effectiveness of sustainability practices and governance mechanisms in enhancing firm value. Accordingly, this study proposes the following hypotheses: H1: Eco-efficiency positively affects firm value; H2: Sustainability reporting positively affects firm value; H3a: Audit committees positively affect firm value; H3b: Independent commissioners positively affect firm value; H4: Firm size positively affects firm value; H5: Firm size mediates the relationship between eco-efficiency and firm value; H6: Firm size mediates the relationship between sustainability reporting and firm value; H7a: Firm

size mediates the relationship between audit committees and firm value; and H7b: Firm size mediates the relationship between independent commissioners and firm value.

Hypothesis Development

According to Signalling Theory, companies that demonstrate superior environmental performance through eco-efficiency send positive signals regarding operational efficiency and long-term sustainability, thereby enhancing investor confidence and firm value. Eco-efficiency enables firms to optimize resource utilization while minimizing environmental impacts, creating both economic and environmental benefits. Empirical studies generally support this relationship by showing that companies with better environmental performance tend to achieve higher market valuation (Wibawa & Khomsiyah, 2022; Wahidahwati & Ardini, 2021). However, other studies argue that investors may not immediately respond to environmental initiatives because their financial benefits are often realized over a longer period (Hapsoro & Adyaksana, 2020). Based on these theoretical arguments and empirical findings, the first hypothesis is formulated as follows:

H1: Eco-efficiency positively affects firm value.

Sustainability reporting functions as a strategic communication tool that provides transparent information regarding a company's environmental, social, and governance performance. According to Stakeholder Theory and Legitimacy Theory, comprehensive sustainability disclosure enhances organizational legitimacy, reduces information asymmetry, and strengthens stakeholder trust. Previous studies indicate that sustainability reporting can improve firm value by increasing corporate reputation and investor confidence (Fasya & Hidayat, 2021; Kartana et al., 2022). Nevertheless, several studies report insignificant effects, suggesting that investors place greater emphasis on the credibility and quality of sustainability disclosures than on disclosure quantity alone (Alfiana, 2021; Sari & Wahidahwati, 2020). Therefore, the second hypothesis is proposed:

H2: Sustainability reporting positively affects firm value.

Corporate governance enhances corporate accountability through effective monitoring mechanisms. Audit committees improve the quality of financial and sustainability reporting by overseeing internal control systems, whereas independent commissioners strengthen managerial oversight and reduce agency conflicts. These

governance mechanisms provide positive signals regarding corporate transparency and accountability, thereby increasing investor confidence and firm value (Bakhtiar et al., 2021; Laksana & Handayani, 2022). Empirical evidence generally supports the positive influence of audit committees and independent commissioners on firm value, although several studies have reported inconsistent findings across industries and governance structures (Nurhidayanti et al., 2023; Saragih & Tampubolon, 2023). Accordingly, the following hypotheses are formulated:

H3a: Audit committees positively affect firm value.

H3b: Independent commissioners positively affect firm value.

Firm size reflects a company's operational scale, financial capacity, and market visibility. Larger companies generally possess greater resources to implement sustainability initiatives, strengthen governance mechanisms, and respond effectively to stakeholder expectations. Consequently, firm size is expected to contribute directly to firm value while simultaneously strengthening the effectiveness of eco-efficiency, sustainability reporting, and corporate governance in creating sustainable competitive advantages (Hidayat, 2022; Freeman et al., 2020). Previous studies also suggest that larger firms are more capable of converting sustainability initiatives into improved market performance than smaller firms (Wibawa & Khomsiyah, 2022; Nurhidayanti et al., 2023). Therefore, the following hypotheses are proposed:

H4: Firm size positively affects firm value.

H5: Firm size mediates the relationship between eco-efficiency and firm value.

H6: Firm size mediates the relationship between sustainability reporting and firm value.

H7a: Firm size mediates the relationship between audit committees and firm value.

H7b: Firm size mediates the relationship between independent commissioners and firm value.

METHOD

This study employed a quantitative research design using secondary data collected from the annual reports and sustainability reports of energy companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2023 period. The energy sector was selected because of its strategic economic contribution and substantial environmental impact, making it highly relevant for examining sustainability-related issues. Purposive

sampling was applied using the following criteria: (1) companies consistently listed on the IDX during the observation period; (2) companies publishing complete annual and sustainability reports; and (3) companies providing complete information for all research variables. Based on these criteria, 69 firm-year observations were obtained. Firm value was measured using Tobin's Q, eco-efficiency was proxied by the World Business Council for Sustainable Development (WBCSD) Eco-Efficiency Indicator, sustainability reporting was measured using the disclosure index based on POJK No. 51/POJK.03/2017, calculated by comparing the number of disclosed sustainability items with the total applicable disclosure items, audit committee effectiveness was measured by the number of audit committee members, independent commissioners were measured by the proportion of independent commissioners on the board, and firm size was measured using the natural logarithm of total assets (Ln Total Assets). The data were obtained from the official IDX website and each company's published reports.

Data analysis was conducted using descriptive statistics, classical assumption tests, multiple linear regression, and path analysis to examine both direct and indirect relationships among variables. The regression models consisted of two structural equations: the first estimated the effects of eco-efficiency, sustainability reporting, audit committees, and independent commissioners on firm size, while the second estimated the effects of these variables and firm size on firm value. The mediating role of firm size was evaluated by comparing the direct and indirect effects obtained from the path coefficients. Prior to hypothesis testing, the data were transformed using the Fractional Rank Inverse Normal Transformation (FRINT) to improve normality and satisfy the assumptions required for parametric analysis, particularly when financial data exhibit non-normal distributions (Beasley et al., 2021). Statistical analyses were performed using IBM SPSS Statistics, and hypotheses were tested at a significance level of 5% to ensure more robust statistical inference.

RESULT

Sample Selection and Descriptive Statistics

Table 1. Sample Selection Results

Criteria	2022	2023	2024	Total
Energy firms listed on the Indonesia Stock Exchange (IDX) during 2022-2024	76	83	89	248

Criteria	2022	2023	2024	Total
Less: Firms that did not publish sustainability reports or annual reports in accordance with POJK 51/POJK.03/2017	0	0	0	0
Less: Firms that did not disclose total assets in their audited financial statements	0	0	0	0
Less: Firms that did not disclose annual emissions data, audit committee information, or independent commissioner information	(36)	(35)	(37)	(108)
Final Research Sample	40	48	52	140

Source: Processed Secondary Data, 2025

The purposive sampling procedure is presented in Table 1. Of the 248 firm-year observations initially identified from energy companies listed on the Indonesia Stock Exchange during 2022–2024, 108 observations were excluded because they did not disclose complete information regarding annual emissions, audit committee composition, or independent commissioners. Consequently, 140 firm-year observations met all sampling criteria and were included in the empirical analysis. The final sample represents companies that consistently disclosed both financial and sustainability information, thereby providing sufficient data to examine the relationships among eco-efficiency, sustainability reporting, corporate governance, firm size, and firm value.

Table 2. Descriptive Statistics Results

Variable	N	Minimum	Maximum	Mean	Standard Deviation
Eco-Efficiency (EC)	140	8.91	24.19	16.5618	2.87736
Sustainability Reporting (SR)	140	0.78	1.00	0.9766	0.04615
Audit Committee (AC)	140	0.17	0.67	0.3436	0.08533
Independent Commissioners (IC)	140	0.25	0.80	0.4494	0.13537
Firm Value (FV)	140	0.20	12.98	1.6232	1.83941
Firm Size (FS)	140	22.04	33.59	29.6423	1.87137

Source: Processed Secondary Data, 2025

The descriptive statistics reported in Table 2 indicate considerable variation across the observed companies. Eco-efficiency recorded an average value of 16.5618, suggesting differences in environmental performance among firms. Sustainability reporting exhibited the highest mean (0.9766) with a relatively small standard deviation (0.04615), indicating that most energy companies complied with the disclosure requirements stipulated in POJK No. 51/POJK.03/2017. In contrast, the average proportion of independent commissioners (0.4494) and audit committee effectiveness (0.3436) suggests that governance practices differed across companies. Firm value showed substantial variability (Mean = 1.6232; SD = 1.83941), reflecting differences in market valuation among firms, whereas firm size displayed relatively limited dispersion

(Mean = 29.6423; SD = 1.87137). These findings indicate that although sustainability reporting has become common practice, environmental performance, governance quality, and firm value remain heterogeneous across Indonesia's energy sector.

Classical Assumption Tests and Hypothesis Testing

Prior to hypothesis testing, the data were examined using classical assumption tests to ensure the validity of the regression model. The initial normality test indicated that the dataset did not satisfy the normality assumption. Therefore, the Fractional Rank Inverse Normal Transformation (FRINT) was applied, following the recommendations of Beasley et al. (2021), resulting in normally distributed data with 137 valid observations. Furthermore, multicollinearity and heteroscedasticity tests confirmed that all independent variables satisfied the required assumptions, indicating that the regression and path analysis models were appropriate for hypothesis testing. Unlike the previous version, hypothesis testing was conducted using a 5% significance level, which is commonly adopted in accounting and finance research to improve statistical reliability (Hair et al., 2022).

The regression analysis demonstrates that eco-efficiency positively affects firm value, supporting H1. This finding indicates that investors perceive superior environmental performance as a credible signal of operational efficiency and long-term sustainability, consistent with Signalling Theory. Companies capable of reducing environmental impacts while maintaining economic performance are more likely to gain investor confidence and achieve higher market valuations. This result supports the findings of Wibawa and Khomsiyah (2022) and Wahidahwati and Ardini (2021), who reported that environmental performance enhances firm value. However, it differs from Hapsoro and Adyaksana (2020), who found that environmental initiatives may not immediately influence market valuation because investors often prioritize short-term financial outcomes.

In contrast, sustainability reporting does not significantly affect firm value, leading to the rejection of H2. Although sustainability reporting enhances transparency and fulfills stakeholder expectations, investors may perceive such disclosures primarily as regulatory compliance rather than as evidence of superior corporate performance. From the perspective of Legitimacy Theory, sustainability reporting helps organizations maintain social legitimacy, but its economic value depends on the credibility and quality

of the disclosed information. This finding is consistent with Sari and Wahidahwati (2020) and Rosyid et al. (2022), who found no significant relationship between sustainability reporting and firm value. The result suggests that disclosure quality, rather than disclosure quantity, is more influential in shaping investor perceptions.

Regarding corporate governance, the results reveal that the audit committee positively influences firm value, whereas independent commissioners do not have a significant effect. The positive effect of the audit committee supports H3a and indicates that effective monitoring strengthens the credibility of financial and sustainability reporting, thereby increasing investor confidence. This finding is consistent with Nurhidayanti et al. (2023), who emphasized the strategic role of audit committees in improving governance quality. Conversely, the insignificant effect of independent commissioners leads to the rejection of H3b. This result implies that the presence of independent commissioners may be perceived primarily as compliance with corporate governance regulations rather than as an indicator of governance effectiveness. Similar findings were reported by Mirnayanti and Rahmawati (2022), suggesting that board independence alone is insufficient to enhance market valuation without effective oversight.

Firm size has a positive and significant effect on firm value, supporting H4. Larger firms generally possess stronger financial resources, greater operational stability, and wider stakeholder recognition, all of which increase investor confidence and corporate value. This finding supports Stakeholder Theory, which argues that organizations with greater resources are better positioned to meet stakeholder expectations and sustain long-term competitiveness. The result is consistent with Hidayat (2022) and Irawati et al. (2022), who reported that firm size positively contributes to market valuation.

The mediation analysis further demonstrates that firm size does not mediate the relationship between eco-efficiency and firm value, resulting in the rejection of H5. This finding indicates that eco-efficiency directly enhances firm value regardless of organizational scale, suggesting that investors place greater emphasis on actual environmental performance than on company size. Conversely, firm size positively mediates the relationship between sustainability reporting and firm value, supporting H6. Larger firms generally possess greater financial and organizational capacity to produce comprehensive and credible sustainability disclosures, thereby strengthening stakeholder

confidence and improving firm value. This finding aligns with Stakeholder Theory, which emphasizes that organizational resources facilitate stronger stakeholder engagement. Finally, firm size does not mediate the relationship between corporate governance and firm value, leading to the rejection of H7. This result suggests that governance effectiveness, particularly the role of audit committees, contributes directly to firm value regardless of firm size. Consequently, effective governance appears to depend more on monitoring quality than on organizational scale.

Discussion

The findings demonstrate that eco-efficiency has a positive and significant effect on firm value, indicating that investors perceive superior environmental performance as an important indicator of long-term business sustainability. Companies that efficiently utilize resources while minimizing environmental impacts are more likely to improve operational performance, strengthen corporate reputation, and increase market valuation. This finding supports Signalling Theory, which argues that firms communicate positive signals to investors through credible environmental performance, thereby reducing information asymmetry and increasing investor confidence. The result is consistent with the studies of Wibawa and Khomsiyah (2022) and Wahidahwati and Ardini (2021), which reported that environmental performance contributes positively to firm value. However, it differs from Hapsoro and Adyaksana (2020), who suggested that investors may not immediately appreciate environmental initiatives because their financial benefits are often realized over a longer period. These differences imply that the market increasingly recognizes environmental performance as a strategic asset, particularly in environmentally sensitive industries such as the energy sector.

In contrast, sustainability reporting does not significantly influence firm value, suggesting that sustainability disclosure alone is insufficient to increase market valuation. Although sustainability reporting enhances transparency and fulfills regulatory requirements, investors may consider these disclosures as a compliance mechanism rather than as evidence of superior corporate performance. From the perspective of Legitimacy Theory, sustainability reporting enables companies to maintain social legitimacy by demonstrating accountability to stakeholders. Nevertheless, legitimacy does not necessarily translate into higher firm value unless the disclosed information reflects measurable improvements in environmental and operational performance. This finding is

consistent with Sari and Wahidahwati (2020) and Rosyid et al. (2022), who found no significant relationship between sustainability reporting and firm value. Therefore, the quality, credibility, and substance of sustainability disclosures appear to be more influential than the quantity of information disclosed.

The results further indicate that the audit committee positively affects firm value, whereas independent commissioners do not have a significant influence. The positive effect of the audit committee suggests that effective oversight enhances the quality of financial and sustainability reporting, strengthens internal control systems, and increases investor confidence. This finding supports Stakeholder Theory, which emphasizes that effective governance mechanisms improve accountability and protect stakeholder interests. It also aligns with Nurhidayanti et al. (2023), who found that active audit committees contribute to higher corporate value through improved monitoring effectiveness. Conversely, the insignificant effect of independent commissioners indicates that board independence alone does not necessarily improve firm value. Investors may perceive the appointment of independent commissioners as a regulatory obligation rather than as evidence of governance quality. This result is consistent with Mirnayanti and Rahmawati (2022), who argued that the effectiveness of independent commissioners depends on their actual monitoring role rather than their formal representation on the board.

The analysis also confirms that firm size positively affects firm value, indicating that larger companies possess greater financial resources, operational stability, and market credibility, which enhance investor confidence and facilitate sustainable value creation. Larger firms are generally better positioned to implement environmental initiatives, strengthen governance systems, and respond to stakeholder expectations. This finding supports Stakeholder Theory, which argues that organizations with greater resources are more capable of creating value for multiple stakeholders while maintaining long-term competitiveness. The result is consistent with Hidayat (2022) and Irawati et al. (2022), who reported that firm size is an important determinant of firm value in emerging markets.

Regarding the mediation analysis, firm size does not mediate the relationship between eco-efficiency and firm value, indicating that environmental performance directly influences investors' perceptions regardless of organizational scale. This finding

suggests that investors prioritize actual environmental achievements over company size when evaluating corporate sustainability. Conversely, firm size positively mediates the relationship between sustainability reporting and firm value, implying that larger companies possess greater organizational capacity to produce comprehensive and credible sustainability disclosures that strengthen stakeholder confidence. However, firm size does not mediate the relationship between corporate governance and firm value, suggesting that governance effectiveness depends primarily on the quality of monitoring mechanisms rather than organizational scale. Collectively, these findings indicate that sustainability initiatives generate greater economic benefits when supported by effective governance and credible environmental performance. Therefore, companies in the energy sector should prioritize substantive sustainability practices rather than relying solely on compliance-oriented disclosures to enhance long-term firm value.

CONCLUSION

This study demonstrates that creating firm value in Indonesia's energy sector depends not only on financial performance but also on the credibility of environmental management and corporate governance. The findings suggest that investors place greater emphasis on substantive sustainability practices than on symbolic compliance. Eco-efficiency emerges as a strategic capability that reflects a firm's commitment to balancing economic performance with environmental responsibility, thereby strengthening market confidence. In contrast, sustainability reporting alone does not automatically increase firm value unless it is supported by credible implementation and measurable sustainability outcomes. These findings indicate that sustainability initiatives should be viewed as an integral component of long-term corporate strategy rather than merely as a reporting obligation.

From a theoretical perspective, this study enriches the literature by integrating Signalling Theory, Stakeholder Theory, and Legitimacy Theory to explain how sustainability practices and governance mechanisms influence firm value. The results imply that positive market responses are more likely to arise from tangible organizational performance than from formal disclosure practices. Furthermore, the different roles of the audit committee, independent commissioners, and firm size demonstrate that governance effectiveness is determined more by the quality of oversight than by organizational

structure or company scale. These findings provide additional evidence that corporate governance mechanisms contribute differently to value creation depending on how effectively they perform their monitoring and accountability functions.

Practically, the study provides important implications for managers, investors, and regulators. Corporate managers should prioritize improving environmental performance and strengthening the effectiveness of governance mechanisms, particularly the audit committee, to enhance long-term corporate value. Investors are encouraged to evaluate sustainability based on actual environmental performance and governance quality rather than relying solely on sustainability disclosures. For regulators, the findings highlight the importance of encouraging higher-quality sustainability reporting that emphasizes the credibility and substance of disclosed information.

REFERENCES

- Alfiana, R., & Nugroho, B. (2021). Sustainability reporting and firm value: The mediating role of firm size. *Jurnal Akuntansi dan Keuangan Indonesia*, 18(2), 187-205.
- Arslan, M., & Alqatan, A. (2020). Role of institutions in shaping corporate governance system: Evidence from emerging economies. *Journal of Governance and Regulation*, 9(2), 8-15.
- Bakhtiar, A., Pratama, R., & Sari, D. (2021). *Corporate governance and firm value: Evidence from Indonesian listed companies*. *Jurnal Keuangan dan Perbankan*, 25(3), 540-553.
- Beasley, T. M., Erickson, S., & Allison, D. B. (2021). Rank-based inverse normal transformations are increasingly used, but are they merited? *Behavior Genetics*, 51(1), 1-14.
- Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2023). *Signaling theory: A review and assessment*. *Journal of Management Studies*, 60(2), 421-447.
- Fernando, S., & Lawrence, S. (2019). *A theoretical framework for CSR practices: Integrating legitimacy theory, stakeholder theory and institutional theory*. *Journal of Theoretical Accounting Research*, 15(1), 1-18.
- Financial Services Authority. (2017). *Financial Services Authority Regulation No. 51/POJK.03/2017 concerning the implementation of sustainable finance for financial services institutions, issuers, and public companies*. Financial Services Authority of Indonesia.
- Freeman, R. E., Phillips, R., & Sisodia, R. (2020). *Tensions in stakeholder theory*. *Business and Society Review*, 125(2), 213-231.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2022). *Multivariate data analysis* (9th ed.). Cengage Learning.
- Hapsoro, D., & Adyaksana, R. I. (2020). Does carbon emission disclosure and environmental performance affect firm value? *Journal of Asian Finance, Economics and Business*, 7(12), 95-102.
- Hidayat, M. (2022). Firm size, profitability, and firm value: Evidence from manufacturing companies in Indonesia. *Jurnal Akuntansi Multiparadigma*, 13(2), 286-301.

- Hidayat, M., Rahman, A., & Sari, D. (2022). Firm size and firm value: Evidence from Indonesian listed companies. *Jurnal Akuntansi Multiparadigma*, 13(2), 286-301.
- Irawati, N., Prasetyo, A., & Nugraheni, R. (2022). *Firm size, profitability, and firm value: Evidence from Indonesian listed companies*. *Jurnal Akuntansi Multiparadigma*, 13(3), 412-426.
- Kartana, I. W., Pramesti, D., & Lestari, N. (2022). Sustainability reporting and firm value: Empirical evidence from Indonesian public companies. *Jurnal Riset Akuntansi dan Keuangan*, 10(3), 513-526.
- Laksana, I. D. G. A., & Handayani, N. (2022). The role of corporate governance in improving firm value: Evidence from listed companies in Indonesia. *Jurnal Akuntansi dan Auditing Indonesia*, 26(2), 145-158.
- Mirnayanti, N., & Rahmawati, E. (2022). *Corporate governance mechanisms and firm value: Evidence from Indonesian public companies*. *Jurnal Keuangan dan Perbankan*, 26(2), 245-259.
- Moodaley, V., & Telukdarie, A. (2023). Sustainability reporting and corporate environmental performance: Evidence from emerging economies. *Sustainability*, 15(8), 6417.
- Nurhidayanti, R., Fauzi, A., & Wibowo, S. (2023). Audit committee effectiveness and firm value: Evidence from listed companies. *Journal of Asian Finance, Economics and Business*, 10(4), 173-182.
- Peh, K. S. H. (2024). Greenwashing and sustainability disclosure: Challenges for corporate accountability in the energy sector. *Business Strategy and the Environment*, 33(2), 1128-1143.
- PwC. (2023). *The state of sustainability reporting in Asia-Pacific 2023*. PricewaterhouseCoopers.
- Rosyid, A., Firmansyah, A., & Prasetyo, T. (2022). *Sustainability reporting and firm value: Evidence from the Indonesian capital market*. *Jurnal Riset Akuntansi dan Keuangan*, 10(2), 271-286.
- Saragih, H., & Tampubolon, M. (2023). Independent commissioners and firm value: The moderating role of corporate governance quality. *Cogent Business & Management*, 10(1), 1-17.
- Sari, D., & Wahidahwati. (2020). *The effect of sustainability reporting on firm value: Evidence from Indonesian listed companies*. *Jurnal Akuntansi dan Auditing Indonesia*, 24(2), 125-136.
- Wahidahwati, W., & Ardini, L. (2021). Corporate governance mechanisms and firm value: Evidence from Indonesian listed companies. *Jurnal Keuangan dan Perbankan*, 25(4), 870-885.
- Wibawa, A. G. A., & Khomsiyah, K. (2022). Eco-efficiency, environmental performance, and firm value: Evidence from Indonesian listed companies. *Jurnal Keuangan dan Perbankan*, 26(4), 896-911.
- World Business Council for Sustainable Development. (2021). *Eco-efficiency learning module*. World Business Council for Sustainable Development.
- Yulianti, D., & Widayanti, R. (2025). Firm size as a mediator in the relationship between sustainability practices and firm value. *International Journal of Economics and Management Studies*, 12(1), 55-69.