

The Effect of Green Accounting, Women on Board, and Carbon Emission Disclosure on Firm Value

Okta Viola Diya Watus Sholikhah^{1*}, Insyirah Putikadea²

^{1,2}Faculty of Economics and Business, State University of Surabaya, East Java, Indonesia

ABSTRACT

This study is motivated by the increasing emphasis on sustainability, which has encouraged investors to consider environmental and governance aspects in assessing firm value. The objective of this research is to examine the influence of green accounting, Women on Board, and carbon emission disclosure on firm value in energy sector companies listed on the Indonesia Stock Exchange. The study employs purposive sampling, resulting in a sample of 27 firms with 75 firm-year observations over the period 2022–2024. Given the treatment of outliers at the observation level, the dataset is structured as an unbalanced panel. The analysis is conducted using EViews 13 with a random effects model (REM) in a panel data regression framework. The empirical results indicate that green accounting, Women on Board, and carbon emission disclosure do not have a statistically significant effect on firm value. These findings suggest that environmental and governance-related disclosures have not yet been fully integrated into investors' valuation decisions in the Indonesian capital market.

Keywords: Green Accounting; Women on Board, Carbon Emission Disclosure, Firm Value

Corresponding author: okta.22166@mhs.unesa.ac.id

How to cite this article:

History of Article: Received: 15 April 2026. Revision: 22 April 2026. Published: 1 May 2026.

DOI Prefix 10.32832/neraca.v21i1.23314

INTRODUCTION

Since the late 20th century, sustainability and environmental responsibility have attracted increasing attention from both academics and the public, driven by the escalating impacts of climate change and the growing expectations for businesses to adopt long-term ecological responsibility. The Triple Bottom Line concept introduced by Elkington (1997) emphasizes that firms should not solely focus on profit maximization but also contribute to maintaining a balance between economic, social, and environmental dimensions. This approach highlights the importance of aligning profit, people, and planet as the foundation of sustainable business practices (Alaika & Firmansyah, 2024). Within the global discourse on sustainability, countries are increasingly compelled to align economic activities with environmental objectives. Indonesia, endowed with abundant natural resources, holds a strategic position in addressing climate change.

In this regard, the transition toward a green economy has become increasingly critical, especially in the energy sector, which not only serves as the backbone of the national economy but also represents a major source of carbon emissions. In 2022, the energy sector accounted for 50.6% of Indonesia's total emissions, making it the most environmentally intensive sector. This condition contributes to Indonesia's position as one of the largest carbon emitters globally, with total emissions reaching 1.32 gigatons of CO₂e in 2024 (EnviCount, 2025). In response to these challenges, the Indonesian government has progressively strengthened its regulatory framework to promote sustainability practices and enhance environmental reporting transparency. This effort is reflected in the issuance of POJK No. 51/POJK.03/2017 and SEOJK No. 16/SEOJK.04/2021, which aim to improve the quality of sustainability disclosures. These regulations not only encourage firms to be more accountable for their environmental impacts but also reinforce the role of non-financial information as a critical basis for stakeholder decision-making.

Nevertheless, an international study published in Nature placed Indonesian energy companies such as PT Alamtri Resources Indonesia Tbk, PT Bumi Resources Tbk, and PT Pertamina (Persero) within the list of 180 carbon majors worldwide, a group of corporations responsible for the largest share of global carbon emissions. These companies were associated with 50 of the 213 extreme heatwaves recorded globally between 2000 and 2023 (Tanahair.net, 2025). Another phenomenon is the indication of greenwashing practices, as seen in PT Adaro Minerals Indonesia Tbk, where sustainability claims were reportedly inconsistent with operational activities (Jong, 2023). The manipulation of

environmental information not only harms ecosystems but also creates reputational risks that directly diminish corporate value.

Firm value reflects investors' perspectives on managerial performance, which is closely linked to fluctuations in stock prices (Suteja et al., 2023). The determinants of firm value are not confined to financial aspects alone, but also include intangible assets such as reputation, transparency, and demonstrated commitment to sustainability initiatives (Intara & Suwansin, 2024). This condition aligns with the findings of Saputra & Windyastuti (2024), which show that companies integrating environmental responsibility into their business activities are perceived as more capable of creating long-term value, particularly through the application of green accounting as a manifestation of commitment to sustainable development. Green accounting refers to an accounting framework designed to capture and disclose the environmental consequences of corporate activities in organizational reporting (Saputra & Windyastuti, 2024). Pratama et al. (2024) reported that green accounting has a positive effect on firm value, whereas Silalahi et al. (2025) found no significant relationship. Thus, beyond the role of green accounting, it is also important to examine other non-financial factors that may influence firm value, such as female representation at the board level (Gonçalves et al., 2022).

Women on Board refers to the proportion of female directors within the board and is regarded as a key indicator of corporate governance practices (Cardenas et al., 2022). In Indonesia's energy sector, women accounted for only about 5% of decision-makers in 2022 (Sawiji, 2024). This situation is further underscored by the Global Gender Gap Report 2025, which ranked Indonesia 97th out of 148 countries (World Economic Forum, 2025). Majumder et al. (2024) demonstrated that female representation on corporate boards positively contributes to firm value, whereas Ciptany & Handayani (2025) reported no significant association. Beyond governance aspects such as female representation on boards, the environmental dimension also warrants attention, particularly carbon emission disclosure, which reflects corporate accountability for operational emissions (Kamra et al., 2025). This argument is reinforced by (Huang et al., 2025), who found that such disclosure positively affects firm value as it is perceived as a credible signal to investors. Nevertheless, these empirical findings are not entirely consistent with (Gunawan & Berliyanda, 2024), who reported that the disclosure does not exert a significant influence on firm value.

Although numerous studies have investigated the determinants of firm value, empirical evidence remains inconclusive, particularly concerning the relevance of non-financial information such as environmental performance and governance. Prior research has often relied on simple linear regression and has rarely provided a focused examination of the energy sector, despite its distinctive industrial characteristics and its role as a major source of carbon emissions. The relatively low proportion of female directors in this sector further reflects its male-dominated organizational culture, which may limit the effectiveness of gender diversity in influencing strategic decision-making. Moreover, studies that integrate green accounting, female board representation, and carbon emission disclosure into a single empirical framework are scarce. To address this gap, the present study employs panel data regression to analyze the influence of these three variables on firm value among Indonesian energy companies during the 2022–2024 period, following the implementation of POJK No. 51/2017 and SEOJK No. 16/2021. Carbon emission disclosure is measured using the Global Reporting Initiative (GRI) Standards 2021, thereby ensuring standardized and comparable assessments across firms within the context of national regulatory requirements.

THEORITICAL BASIS AND HYPOTHESIS DEVELOPMENT

Stakeholder Theory

In the 1980s, R. Edward Freeman introduced stakeholder theory as a response to the limitations of traditional management models in dealing with the increasing complexity of the business environment. According to this theory, stakeholders are defined as individuals or groups connected to an organization, as they can both influence and be influenced by the achievement of organizational goals. From this viewpoint, a firm's long-term success depends on how effectively management handles the relationships and interests of various parties (Freeman & McVea, 2001). The primary aim of stakeholder theory is to generate long-term value by managing relationships with all stakeholders, rather than focusing solely on maximizing shareholder profit. It also provides guidance for management in making strategic decisions that consider the impact on multiple interested parties. Over time, pressure

from external stakeholders has encouraged firms to broaden transparency in disclosing environmental and social aspects. Such efforts reflect both a commitment and a strategy to sustain public trust (Alaika & Firmansyah, 2024; Wahyuningrum et al., 2023).

Signaling Theory

Signaling theory, introduced by Michael Spence in 1973, describes a mechanism whereby parties with superior information convey credible signals to those with limited information in order to reduce information asymmetry (Spence, 1973). The key elements of this theory include signal quality, signaling cost, and the reduction of information asymmetry (Connelly et al., 2011). As the theory has progressed, it has come to regard non-financial disclosure as a strategic signal delivered to investors, reflecting both the firm's quality and its commitment to sustainable practices (Rohendi et al., 2024). Signaling theory is therefore relevant in explaining how sustainability practices can serve as positive signals that enhance firm value. Greater transparency enables investors to assess a firm's prospects and risks more accurately. This is because investment decisions and financial performance may be influenced by favorable signals arising from the implementation of social responsibility and sustainability practices (Suteja et al., 2023).

Firm Value

Firm value represents the degree of trust placed by both the public and investors. A higher firm value signals strong performance and promising future prospects that are viewed favorably by investors (Pratama et al., 2024). In this regard, stock prices serve as a reflection of publicly available information, including accounting figures and financial disclosures (Putikadea & Siregar, 2023). An increase in stock prices indicates that the market holds confidence in the firm's ability to generate value for its stakeholders. Furthermore, Suteja et al. (2023) state that a rise in firm value has direct implications for enhancing shareholder wealth, while also indicating positive long-term growth potential. This view is reinforced by Putikadea & Siregar (2023), who argue that improvements in firm value contribute to greater shareholder prosperity.

Green Accounting

Green accounting represents an expanded framework of the conventional accounting system, embedding environmental and social dimensions into corporate reporting practices and strategic decision-making processes. In this study, green accounting emphasizes Environmental Management Accounting (EMA), an internal approach that focuses on collecting, measuring, and recording material flows, energy use, and environmental costs to support managerial decision-making. In practice, EMA is classified into several subsystems, one of which is Eco Balance Environmental Accounting. This subsystem functions as an internal management tool that supports the Plan-Do-Check-Act (PDCA) cycle to achieve sustainable environmental management (Muralikrishna & Manickam, 2017:114). Furthermore, the implementation of green accounting is intended to support environmental preservation, which not only shapes investor decisions and may raise firm value, but also strengthens legitimacy, thereby attracting public and investor trust (Octavia & Wafiroh, 2025).

Women on Board

Women on board refers to female participation in board-level strategic decisions (Gonçalves et al., 2022). As part of Board Gender Diversity (BGD), the inclusion of women on the board of directors reflects gender diversity within corporate governance mechanisms (Cardenas et al., 2022). Central concepts associated with women on board encompass board gender diversity, which emphasizes variation in board composition; critical mass theory, which maintains that the presence of at least three female directors is necessary to exert substantive influence; and token representation, which denotes symbolic inclusion without corresponding impact on governance outcomes (Noguera, 2020).

Carbon Emission Disclosure

Carbon emission disclosure reflects the degree of a firm's openness in reporting information related to the volume of carbon emissions generated from its operations, along with the efforts undertaken to mitigate them (Huang et al., 2025). It also captures how extensively a company

communicates data on emission levels, reduction initiatives, energy efficiency measures, and the transition toward low-carbon business practices (Kamra et al., 2025). This form of disclosure provides value for both firms and stakeholders. Huang et al. (2025) further argue that carbon emission disclosure aims to lessen investor uncertainty by offering relevant insights into environmental risks and commitments. Conversely, when the quality of disclosure is limited, firms may be perceived as concealing unfavorable information, which can diminish their value in the view of stakeholders

Hypothesis Development

The Effect of Green Accounting on Firm Value

Rismawati & Sumarna (2025) argue that the institutionalization of green accounting practices is perceived as a favorable indication of a firm's responsibility in managing environmental impacts, which may attract investor interest and stimulate market responses through rising stock prices. Consistent with stakeholder theory, green accounting reflects a firm's commitment to meeting stakeholder expectations regarding sustainability-oriented practices (Alaika & Firmansyah, 2024). From the perspective of signaling theory, the application of green accounting can be interpreted as a credible signal that the firm recognizes and internalizes its environmental impacts. Such a signal is expected to enhance investor confidence and encourage a positive reaction from the market (Rismawati & Sumarna, 2025; Santika et al., 2025). This argument gains further support from the empirical study of Pratama et al. (2024), which evidences a positive association between green accounting and firm value. On the basis of this reasoning, the following hypothesis is posited:

H1: Green accounting has a positive effect on firm value

The Effect of Women on Board on Firm Value

The presence of female directors on the board is considered to enhance the quality of oversight and monitoring, as women tend to offer more careful and prudent perspectives in decision-making. From the standpoint of stakeholder theory, gender diversity within the board structure reflects a firm's concern for inclusivity and sustainability principles expected by stakeholders (Gonçalves et al., 2022). Within the framework of signaling theory, the inclusion of women on the board can be interpreted as a signal of governance quality, as well as a commitment to more inclusive governance and stronger supervision. The market may perceive this as an indicator of sound management, which can influence firm valuation (Sundarasan et al., 2024). This assumption is supported by the findings of Majumder et al. (2024), which demonstrate a positive effect of women on board on firm value. On the basis of this rationale, the following hypothesis is advanced:

H2: Women on board has a positive effect on firm value

The Effect of Carbon Emission Disclosure on Firm Value

Carbon emission disclosure helps firms mitigate reputational and regulatory risks, as the market tends to view transparency regarding environmental impact as a reflection of corporate responsibility and a commitment to low-carbon policies (Choi et al., 2013). Grounded in stakeholder theory, firms disclose carbon emissions as a means of fulfilling accountability and addressing stakeholders' expectations regarding environmental responsibility (Matuszak et al., 2025). From a signaling theory standpoint, carbon emission disclosure is regarded as an important channel for conveying non-financial information to stakeholders. Transparent and high quality disclosure mitigates information asymmetry between firms and stakeholders, fosters trust, and may positively influence firm value (Xu et al., 2025). This argument is reinforced by Huang et al. (2025), whose empirical analysis evidences a favorable association between carbon emission disclosure and firm value. Building upon this reasoning, the following hypothesis is posited:

H3: Carbon emission disclosure has a positive effect on firm value.

Following the formulation of the hypotheses, Figure 1 illustrates the conceptual framework of this study:

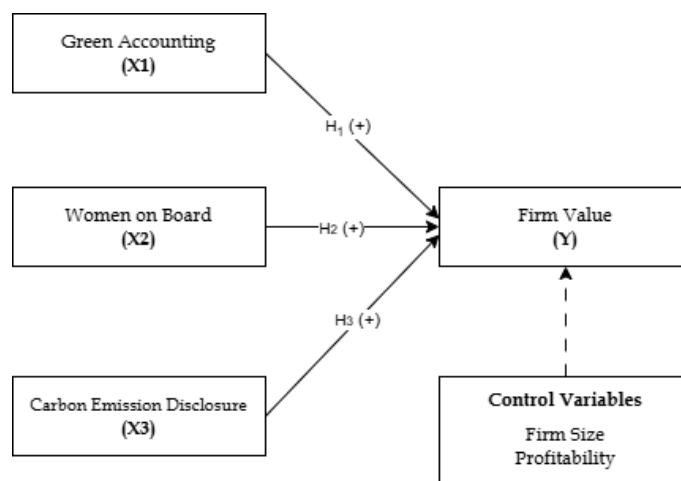


Figure 1. Conceptual Framework
 Source: Research Data, 2026

RESEARCH METHODS

Employing a quantitative methodology under an associative design, this study investigates how green accounting, women on board, and carbon emission disclosure affect firm value. To mitigate confounding effects, firm size and profitability are introduced as control variables. Secondary panel data were collected through documentation techniques, encompassing annual and sustainability reports of energy sector companies. The population comprises 75 energy sector firms listed on the IDX. Purposive sampling was employed, with firms selected according to specific criteria consistent with the research objectives. The outcomes of the sampling procedure are presented in Table 1.

Table 1. Research Sample

No.	Criteria	Number of Companies	Number of Observations
1	Energy companies listed on the IDX during the 2022–2024 period	75	225
2	The company does not consistently publish its sustainability and annual reports during the 2022–2024 period.	(11)	(33)
3	Firms that do not disclose carbon emission-related information.	(35)	(105)
4	Total data before outlier removal	29	87
5	Observations identified as outliers		(12)
6	Number of Observation Data		75

Source: Research Data, 2026

After applying the sample selection criteria, 22 firms were retained as the final sample, yielding 75 firm-year observations across the 2022–2024 period. The number of observations reflects the availability of firm-level data over the three-year horizon. The dataset is unbalanced because outliers were treated at the observation level, where extreme firm-year values were excluded to safeguard the robustness and reliability of the regression analysis. This approach was adopted to minimize bias and ensure that the results remain representative of the energy sector sample.

The dataset was analyzed through panel data regression to test the hypothesized relationships among variables. Firm value serves as the dependent variable in this research. In this context, firm value is operationalized through the Tobin’s Q, consistent with its application in previous studies such as Suteja et al. (2023). The measurement of firm value is derived based on the following formulation:

$$Tobins'Q = \frac{Market\ Value\ of\ Equity + Total\ Debt}{Total\ Asset} \dots\dots\dots(1)$$

The independent variables in this study are green accounting, women on board, and carbon emission disclosure. Green accounting is operationalized through a dummy scale based on ISO 14001 certification ownership, following the approach employed in prior studies by Gantino et al. (2023) dan (Rismawati & Sumarna (2025). A score of 1 is assigned to firms holding ISO 14001 certification, while a score of 0 is given to those without such certification(2)

Women on board is measured by the proportion of female members on the board of directors. This formula refers to the approach used in the study by Cardenas et al. (2022). Women on board is calculated using the following formula:

$$WOB = \frac{\text{Number of Female Directors}}{\text{Total Number of Directors}} \dots\dots\dots(3)$$

Carbon Emission Disclosure (CED) is operationalized using the Global Reporting Initiative (GRI) Standard 305 (GRI 305-1 to GRI 305-7), which comprises seven disclosure indicators. This variable adopts a proxy consistent with Apriliani et al. (2024). The measurement of CED is conducted using content analysis with a dichotomous scoring method, where a score of 1 is assigned if an item is disclosed and 0 otherwise. The CED index is calculated as follows:

$$CED = \frac{\text{Total Items Disclosed by the Company}}{\text{Maximum Total Items}} \dots\dots\dots(4)$$

The GRI indicators serve as a reference framework to ensure consistent and comparable disclosure measurement across firms that adopt the GRI standards.

There are two control variables used in this study, namely firm size and profitability. The measurement of these variables refers to prior studies by Ayatilla & Permatasari (2024) dan Faradila & Bhilawa (2022). Firm size, based on prior studies, is measured using the natural logarithm (ln) of total assets(5)

Profitability is measured using Return on Assets (ROA), which is calculated using the following formula:

$$ROA = \frac{\text{Net Profit}}{\text{Total Assets}} \dots\dots\dots(6)$$

Data analysis was carried out using panel data regression with EViews version 13. The process commenced with descriptive statistics to summarize the dataset’s characteristics, followed by model specification tests namely the Chow, Hausman, and Lagrange Multiplier tests to determine the most appropriate model. After selecting the model, classical diagnostic tests covering normality, multicollinearity, and heteroskedasticity are carried out to assess the appropriateness of the regression model. The explanatory power of the model is assessed using the coefficient of determination, while the F-test and t-test are employed to evaluate the overall and individual effects of the independent variables on the dependent variable.

RESULT AND DISCUSSION

Firm value (NP) exhibits relatively high skewness and kurtosis. According to Ghozali (2021:30-39) elevated skewness and kurtosis may lead to less optimal statistical estimation results. Therefore, the firm value data are transformed into their natural logarithm form.

Table 2. Descriptive Statistical Analysis Test

	LOGNP	GA	WOB	CED	FZ	ROA
Mean	-0.06	0.84	0.14	0.61	30.22	0.09
Median	-0.07	1.00	0.00	0.57	30.56	0.07
Max	0.55	1.00	0.67	1.00	32.76	0.45
Min	-0.58	0.00	0.00	0.00	27.22	-0.11
Std. Dev.	0.24	0.37	0.18	0.24	1.53	0.09

Source: Research Data, 2026

Based on the descriptive statistics (Table 2), firm value (LOGNP) has a mean of -0.06, with a minimum of -0.58 and a maximum of 0.55, indicating variation in firm value across the sample. The green accounting (GA) variable shows a mean of 0.84 and a median of 1.00, suggesting that most firms have implemented green accounting practices. In contrast, the proportion of Women on Board (WOB) remains relatively low, with a mean of 0.14 and a median of 0.00, indicating that many firms do not have female representation on their boards. Carbon emission disclosure (CED) has a mean value of 0.61, reflecting a moderate level of disclosure with noticeable variation among firms. Meanwhile, firm size (FZ) has a mean of 30.22 with a standard deviation of 1.53, and profitability (ROA) has a mean of 0.09, with a negative minimum value, indicating differences in financial performance across firms in the sample.

Table 3. Model Feasibility Test Results

No.	Test	Measurement	Result
1	Chow Test (0.0000 < 0.05)	CEM vs FEM	FEM
2	Hausman Test (0.4632 > 0.05)	FEM vs REM	REM
3	LM Test (0,0000 < 0.05)	CEM vs REM	REM

Source: Research Data, 2026

Model feasibility testing (Table 3) reveals that the Chow test produces a probability value of $0.0000 < 0.05$, initially favoring the Fixed Effect Model (FEM). In contrast, the Hausman test returns a probability value of $0.4632 > 0.05$, indicating that the Random Effect Model (REM) provides a better fit. The Lagrange Multiplier test further supports this conclusion, with a Breusch–Pagan cross-section probability of $0.0000 < 0.05$, thereby affirming the Random Effect Model (REM) as the most appropriate specification for this study.

Classical Assumption Test

Normality Test

The Jarque–Bera normality test yields a probability value of 0.188839, which exceeds the 0.05 threshold, suggesting that the data follow a normal distribution. This result indicates that the distributional assumption required for regression analysis is satisfied. Consequently, the model can be considered appropriate from a normality standpoint.

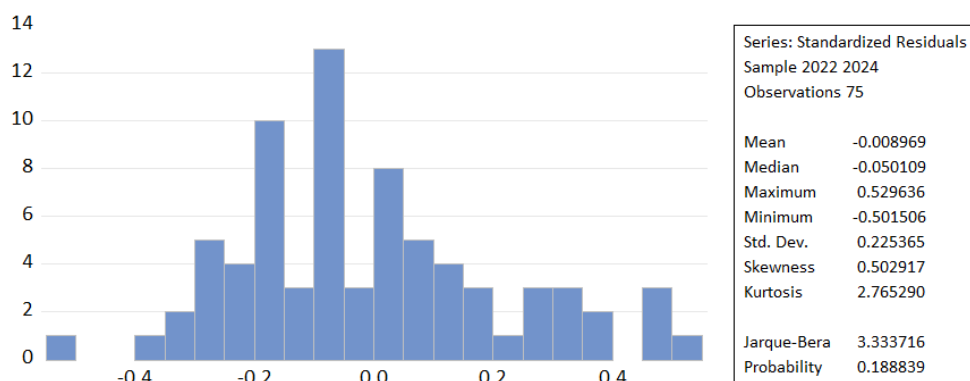


Figure 2. Normality Test

Source: Research Data, 2026

Multicollinearity Test

The correlation coefficients among the independent variables are all below 0.80, indicating that multicollinearity is not present. This suggests that the variables do not exhibit strong linear relationships with one another. As a result, the regression estimates are not distorted by multicollinearity issues.

Table 4. Multicollinearity Test

	GA	WOB	CED	FZ	ROA
GA	1.0000	-0.2331	0.3506	0.1781	-0.0212
WOB	-0.2331	1.0000	-0.0643	-0.1461	-0.1526
CED	0.3506	-0.0643	1.0000	0.6190	0.1374
FZ	0.1781	-0.1461	0.6190	1.0000	0.2223
ROA	-0.0212	-0.1526	0.1374	0.2223	1.0000

Source: Research Data, 2026

Heteroscedasticity Test

The heteroskedasticity test using the Glesjer test reveals that the probability values of each independent variable exceed 0.05, indicating that the model satisfies the homoskedasticity assumption.

Table 5. Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	0.666308	0.430955	1.546119	0.1267
GA	-0.012458	0.048268	-0.258094	0.7971
WOB	0.154390	0.103589	1.490409	0.1407
CED	0.059628	0.084088	0.709117	0.4806
FZ	-0.016762	0.015001	-1.117389	0.2677
ROA	-0.233768	0.177051	-1.320340	0.1911

Source: Research Data, 2026

Hypothesis Testing

Panel data regression was employed to assess the influence of the independent variables on the dependent variable in this study. This analytical approach enables the identification of both the direction and the statistical significance of each variable's effect.

T Test

Table 6. Result of t-Test

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	0.302610	0.903189	0.335047	0.7386
GA	-0.066382	0.078178	-0.849110	0.3988
WOB	-0.073611	0.187328	-0.392953	0.6956
CED	-0.014720	0.127412	-0.115533	0.9084
FZ	-0.012394	0.030726	-0.403384	0.6879
ROA	1.111727	0.267192	4.160778	0.0001

Source: Research Data, 2026

The t-statistical analysis indicated that the probability value for green accounting was 0.3988, exceeding the 0.05 threshold, thereby showing no significant effect on firm value and leading to the rejection of Hypothesis 1. Similarly, the probability value for women on board was 0.6956, also greater than 0.05, signifying no influence on firm value and resulting in the rejection of Hypothesis 2. Carbon emission disclosure produced a probability value of 0.9084, again above 0.05, thus demonstrating no meaningful impact on firm value and leading to the rejection of Hypothesis 3. Regarding the control variables, firm size recorded a probability value of 0.6879, confirming no discernible effect on firm value. In contrast, return on assets (ROA) yielded a probability value of 0.0001, below the 0.05 threshold, with a coefficient of 1.111727, thereby evidencing a positive and statistically significant effect on firm value.

F Test

Table 7. Result of f-Test

Weighted Statistics	
F-statistics	3.927534
Prob(F-statistics)	0.003425

Source: Research Data, 2026

The probability value was calculated as 0.003425, which is below the 0.05 significance threshold. This finding indicates that the independent variables exert a statistically significant effect on the dependent variable, thereby affirming the validity and methodological robustness of the research model.

Coefficients of Determination

Table 8. Result of Coefficients Determination Test

Weighted Statistics	
R-square	0.221550
Adjusted R-square	0.165141

Source: Research Data, 2026

As reported in Table 8, the adjusted R-squared value is 0.165141, suggesting that about 16.51% of the variation in firm value can be accounted for by green accounting, women on board, carbon emission disclosure, firm size, and profitability. The residual 83.49% is explained by factors outside the model's scope, such as macroeconomic dynamics, organizational policies, and other contextual determinants not incorporated in this research.

Discussion

The Effect of Green Accounting on Firm Value

Green accounting, measured through ISO 14001 certification, yielded a probability value of 0.3988, exceeding the 0.05 significance threshold. This indicates that green accounting does not exert a significant influence on firm value. The result can be explained by the high prevalence of ISO 14001 adoption within the sample, reaching 84%. In the energy sector, the certification has become an operational prerequisite for participation in global supply chains, and thus it is no longer perceived by the market as a source of added value (Mohamud, 2026). In other words, compliance with environmental standards such as ISO 14001 has been normalized as routine practice rather than interpreted as a competitive signal. Investor skepticism regarding potential greenwashing may also contribute to the limited responsiveness to such information in firm valuation.

From a theoretical standpoint, stakeholder theory posits that green accounting practices should embody a firm's responsiveness to stakeholder expectations. Yet, the empirical evidence suggests that such environmental considerations have not been firmly embedded in investors' evaluation processes, which remain predominantly shaped by financial performance indicators (Wijaya & Khairani, 2024). Likewise, signaling theory maintains that ISO 14001 certification ought to serve as a credible signal of corporate sustainability commitment. However, its informational strength appears to have diminished, largely due to its widespread adoption and transformation into a compliance-based requirement rather than a distinctive competitive signal (Rismawati & Sumarna, 2025). This weak signaling effect may also be attributed to measurement and contextual constraints inherent in the study. Given the relatively homogeneous adoption of ISO 14001 within the sample, the variability required to establish a strong statistical relationship is limited, thereby reducing its explanatory capacity. Accordingly, the findings suggest that the theoretical mechanisms advanced by stakeholder and signaling theories may not fully manifest in market responses when environmental certification has become standardized practice. This outcome is consistent with the findings of Silalahi et al. (2025), Gunawan & Berliyanda (2024), and Wijaya & Khairani (2024), all of which similarly reported that green accounting does not exert a significant influence on firm value.

The Effect of Women on Board on Firm Value

The probability value for women on board, measured by the proportion of women directors, is 0.6956, which exceeds the 0.05 significance threshold. This result indicates that the presence of women on boards does not exert a statistically significant effect on firm value. Such evidence suggests that female directorship remains largely symbolic, as the critical mass of at least three women directors, considered necessary to meaningfully influence decision-making, has not yet been (Noguera, 2020). The empirical context further supports this interpretation, as female representation in the energy sector

in 2022 is approximately only 5%, while nearly 48% of the observed firm-year data contain no female directors at all. This condition implies that the distinctive contributions and diverse perspectives women could bring to corporate governance are not being fully realized (Cardenas et al., 2022).

From a theoretical perspective, these findings contradict the expectations of both stakeholder theory and signaling theory. Stakeholder theory suggests that the inclusion of women in board structures reflects a firm's commitment to diversity and equality as valued by stakeholders, however, the persistently low representation of women, coupled with a male-dominated governance structure, limits their actual influence in decision-making processes (Cardenas et al., 2022). Similarly, within signaling theory, female board representation should function as a positive signal to investors regarding governance quality, yet when the number of women is minimal and their strategic influence is limited, the signaling effect becomes weak and fails to generate a meaningful market response (Noguera, 2020). The findings of this study are consistent with those of Ciptany & Handayani (2025), Cardenas et al (2022), and Noguera (2020), all of which reported no significant relationship between female board representation and firm value.

The Effect of Carbon Emission Disclosure on Firm Value

Carbon emission disclosure based on the GRI 305 series produced a probability value of 0.9084, which is above the 0.05 significance threshold. This indicates that disclosure practices do not significantly affect firm value. The result reflects the fact that, despite the energy sector being a major source of emissions in Indonesia, disclosure remains largely voluntary and is not strictly regulated (Putikadea & Siregar, 2023). The study further reveals that many firms disclose only a limited set of indicators, with items such as GRI 305-6, GRI 305-3, and GRI 305-7 reported at very low frequencies. This incomplete disclosure undermines consistency and reduces the usefulness of emission data as a basis for firm valuation. Such empirical evidence is inconsistent with both stakeholder theory and signaling theory. Under stakeholder theory, carbon emission disclosure is expected to reflect firms' efforts to respond to environmental expectations from stakeholders. However, the findings suggest that limited public awareness of environmental issues reduces stakeholder sensitivity toward such disclosures, thereby weakening their perceived relevance (Gunawan & Berliyanda, 2024; Putikadea & Siregar, 2023). Consequently, investors continue to prioritize financial indicators over non-financial environmental information, rendering disclosure practices less influential in determining firm value (Wijaya & Khairani, 2024).

Similarly, from a signaling theory perspective, voluntary carbon disclosure should function as a signal of corporate environmental commitment. However, due to its limited scope and lack of consistency across firms, such disclosure fails to generate a sufficiently strong signal to influence market evaluation of future firm prospects. Empirically, these findings are consistent with the evidence reported by Putikadea & Siregar (2023) as well as Gunawan & Berliyanda (2024), both of which similarly demonstrated that carbon emission disclosure does not exert a significant influence on firm value.

CONCLUSION

This study examines the effect of green accounting, women on board, and carbon emission disclosure on firm value in energy sector companies listed on the Indonesia Stock Exchange. The results indicate that none of these non-financial variables have a significant effect on firm value, while profitability has a positive and significant influence. These findings suggest that firm value in the Indonesian energy sector is still predominantly driven by financial performance, whereas sustainability-related information has not yet been fully integrated into investment decision-making. From a theoretical perspective, the findings indicate that both stakeholder theory and signaling theory have limited explanatory power in the context of emerging capital markets. Although these theories assume that environmental and governance practices reflect stakeholder responsiveness and function as positive

signals of firm quality, the empirical evidence shows that such non-financial information has not yet been effectively translated into market valuation mechanisms.

The insignificance of the results further implies that ESG-related information is not yet fully priced by investors in the Indonesian capital market. Investors continue to prioritize financial indicators over sustainability disclosures, reflecting the early stage of ESG integration in emerging economies. This study also acknowledges several contextual considerations. The measurement of variables relies on proxy approaches that are comparable across firms, although these measures may not fully capture the complexity of the underlying constructs. In addition, the relatively short observation period captures recent dynamics but may not fully reflect long-term sustainability effects. Future research is encouraged to extend the observation period and employ more comprehensive measurement approaches to enhance the robustness and generalizability of findings regarding sustainability practices and firm value.

REFERENCES

- Alaika, A. A., & Firmansyah, A. (2024). Unveiling the Impact of Green Accounting and Sustainability Disclosure on the Firm Value. *Journal of Governance Risk Management Compliance and Sustainability*, 4(2), 64–78. <https://doi.org/10.31098/jgrcs.v4i2.2436>
- Apriliani, L., Kadir, K., & Hifni, S. (2024). Sustainability Accounting: Nilai Perusahaan dan Carbon Emission Disclosure. *Gorontalo Accounting Journal*, 7(1), 91. <https://doi.org/10.32662/gaj.v7i1.3306>
- Ayatilla, N., & Permatasari, I. K. (2024). How Profitability, Thin Capitalization, and Company Size Affect Tax Avoidance. *Jurnal Bisnis Mahasiswa*, 4(4), 518–530. <https://doi.org/10.60036/jbm.v4i4.art6>
- Cardenas, V. M., Gonzalez-Ruiz, J. D., & Duque-Grisales, E. (2022). Board Gender Diversity and Firm Performance: Evidence from Latin America. *Journal of Sustainable Finance and Investment*, 12(3), 785–808. <https://doi.org/10.1080/20430795.2021.2017256>
- Choi, B. B., Lee, D., & Psaros, J. (2013). An Analysis of Australian Company Carbon Emission Disclosures. *Pacific Accounting Review*, 25(1), 58–79. <https://doi.org/10.1108/01140581311318968>
- Ciptany, I. D. G., & Handayani, S. (2025). Pengaruh Corporate Social Responsibility dan Board Gender Diversity terhadap Nilai Perusahaan. *JRKA: Jurnal Riset Keuangan Dan Akuntansi*, 11(1), 19–34. <https://journal.uniku.ac.id/index.php/jrka/article/view/11520/4547>
- Connelly, B. L., Certo, S. T., Ireland, R. D., & Reutzel, C. R. (2011). Signaling Theory: A Review and Assessment. *Journal of Management*, 37(1), 39–67. <https://doi.org/10.1177/0149206310388419>
- EnviCount. (2025). *Sektor dan Tren Data Emisi Karbon di Indonesia Paling Update*. <https://www.envicount.com/sektor-data-emisi-karbon-di-indonesia/>
- Faradila, I. C., & Bhilawa, L. (2022). Pengaruh Profitabilitas, Leverage, Ukuran Perusahaan dan Sales Growth terhadap Tax Avoidance. *Jurnal Ilmiah Akuntansi Dan Keuangan*, 5(1), 34–44. <https://journal.ikopin.ac.id/index.php/fairvalue>
- Freeman, R. E., & McVea, J. (2001). Darden Graduate School of Business Administration A Stakeholder Approach to Strategic Management. *Working Paper*, 01.
- Gantino, R., Ruswanti, E., & Widodo, A. M. (2023). Green Accounting and Intellectual Capital Effect on Firm Value Moderated by Business Strategi. *Jurnal Akuntansi*, 27(1), 38–61.
- Ghozali, I. (2021). Aplikasi Analisis Multivariate Dengan Program SPSS 26. In *Badan Penerbit Universitas Diponegoro*.
- Gonçalves, T. C., Gaio, C., & Rodrigues, M. (2022). The Impact of Women Power on Firm Value. *Administrative Sciences*, 12(3). <https://doi.org/10.3390/admsci12030093>
- Gunawan, B., & Berliyanda, K. L. (2024). Pengaruh Green Accounting, Pengungkapan Emisi Karbon, dan Kinerja Lingkungan terhadap Nilai Perusahaan. *Reviu Akuntansi Dan Bisnis Indonesia*, 8(1), 33–50. <https://doi.org/10.18196/rabin.v8i1.22027>
- Huang, L., Ji, X., Niu, T., & Ou, W. (2025). The Impact of Carbon Information Disclosure Quality on Enterprise Value: Evidence from Chinese Listed Companies. *Sustainability (Switzerland)*, 17(2). <https://doi.org/10.3390/su17020402>
- Intara, P., & Suwansin, N. (2024). Intangible Assets, Firm Value, and Performance: Does Intangible-Intensive Matter? *Cogent Economics and Finance*, 12(1). <https://doi.org/10.1080/23322039.2024.2375341>
- Jong, H. N. (2023). Indonesian Coal Giant Adaro's 'Sustainable' Smelter Slammed as 'Greenwashing.' Mongabay. <https://news.mongabay.com/2023/06/indonesian-coal-giant-adaros-sustainable-smelter-slammed-as-greenwashing/>
- Kamra, J., Mani, A. P., Joshi, S., & Sharma, M. (2025). Are Companies Walking the Talk for Disclosing as Per GRI 305? Evidence From India. *Journal of Information Systems Engineering and Management*, 10(33s), 110–123. <https://doi.org/10.52783/jisem.v10i33s.5462>
- Majumder, T. H., Ali, M., Hamid, A., Ariffin, B., Noordin, A., & Al-duais, S. (2024). Unveiling the Link Between Board Gender Diversity and Energy Firm's Performance in South Asia: The Mediating Role of Earnings

- Management. *Cogent Business & Management*, 11(1). <https://doi.org/10.1080/23311975.2024.2381088>
- Matuszak, Ł., Różańska, E., & Szczepankiewicz, E. I. (2025). Assessment of the Compliance of Environmental Disclosures by Energy Companies Using GRI Standards with European Sustainability Reporting Standards: A Case Study. *Sustainability (Switzerland)*, 17(8). <https://doi.org/10.3390/su17083380>
- Mohamad, R. (2026). *Why Adopting ISO 14001 is Important for Your Business*. BDC Climate Action Centre. <https://www.bdc.ca/en/articles-tools/sustainability/climate-action-centre/articles/iso-14001-certify-company-environmentally-responsible>
- Muralikrishna, I. V., & Manickam, V. (2017). Environmental Accounting. In *Environmental Management* (pp. 113–134). Elsevier Inc. <https://doi.org/10.1016/B978-0-12-811989-1.00007-5>
- Noguera, M. (2020). Women Director's Effect on Firm Value and Performance: The Case of REITs. *Corporate Governance (Bingley)*, 20(7), 1265–1279. <https://doi.org/10.1108/CG-02-2020-0057>
- Octavia, F., & Wafiroh, N. L. (2025). The Effect of Green Accounting, Leverage and Environmental Performance on Firm Value with Profitability as a Moderating Variable. *Jurnal Akuntansi AKUNESA*, 13(3), 284–296. <https://doi.org/10.26740/akunesa.v13n3.p284-296>
- Pratama, D. R., Reptiningsih, E., & Setyaningsih, E. D. (2024). Green Accounting, Kinerja Lingkungan, dan Ukuran Perusahaan terhadap Nilai Perusahaan pada Perusahaan Sektor Pertambangan yang Terdaftar di Bursa Efek Indonesia. *J-CEKI: Jurnal Cendekia Ilmiah*, 4(1), 2873–2885.
- Putikadea, I., & Siregar, C. S. (2023). Does Disclosure of Carbon Emission Able to Attract Investors? *AKRUAL: Jurnal Akuntansi*, 15(1), 39–52. <https://doi.org/10.26740/jaj.v15n1.p39-52>
- Rismawati, & Sumarna, A. D. (2025). The Effect of Green Accounting and Intellectual Capital on Firm Value. *Jurnal Akuntansi Bisnis*, 18(1), 146. <https://doi.org/10.30813/jab.v18i1.7871>
- Rohendi, H., Ghozali, I., & Ratmono, D. (2024). Environmental, Social, and Governance (ESG) Disclosure and Firm Value: The Role of Competitive Advantage as a Mediator. *Cogent Business and Management*, 11(1). <https://doi.org/10.1080/23311975.2023.2297446>
- Santika, S., Kusno, H. S., & Arazy, D. R. (2025). Green Accounting, Corporate Social Responsibility, Business Strategy, and Firm Value: Evidence from Indonesia. *AKRUAL: Jurnal Akuntansi*, 17(1), 188–197. <https://doi.org/10.26740/jaj>
- Saputra, M., & Windyastuti, W. (2024). The Effect of Green Accounting Implementation, Sustainability Report, Asymmetric Information, and Financial Performance on Firm Value. *Journal of Entrepreneurship*, 3(July), 1–22. <https://doi.org/10.56943/joe.v3i3.618>
- Sawiji, H. W. (2024). *Where are the Women in Indonesia's Energy Transition?* SMERU. <https://smeru.or.id/en/article/where-are-women-indonesia's-energy-transition>
- Silalahi, A. S., Susanti, M., & Hutapea, J. Y. (2025). Pengaruh Green Accounting dan Agresivitas Pajak terhadap Nilai Perusahaan. *Benefit: Journal of Business, Economics, and Finance*, 3(1), 93–110. <https://doi.org/10.70437/benefit.v3i1.1120>
- Spence, M. (1973). Job Market Signaling Author (s): Michael Spence Published by: Oxford University Press Stable. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://www.jstor.org/stable/1882010>
- Sundarasan, S., Kumar, R., Tanaraj, K., Ali Alsmady, A., & Rajagopalan, U. (2024). From Board Diversity to Disclosure: A Comprehensive Review on Board Dynamics and ESG Reporting. *Research in Globalization*, 9(November), 100259. <https://doi.org/10.1016/j.resglo.2024.100259>
- Suteja, J., Gunardi, A., Alghifari, E. S., Susiadi, A. A., Yulianti, A. S., & Lestari, A. (2023). Investment Decision and Firm Value: Moderating Effects of Corporate Social Responsibility and Profitability of Non-Financial Sector Companies on the Indonesia Stock Exchange. *Journal of Risk and Financial Management*, 16(1). <https://doi.org/10.3390/jrfm16010040>
- Tanahair.net. (2025). *Laporan Nature: Tiga Perusahaan Fosil Indonesia Jadi 'Biang Kerok' Gelombang Panas Global*. Tanahair.Net. <https://tanahair.net/id/laporan-nature-tiga-perusahaan-fosil-indonesia-jadi-biang-kerok-gelombang-panas-global/>
- Wahyuningrum, I. F. S., Ihlashul'amal, M., Hidayah, R., & Widhi Rizkyana, F. (2023). Stakeholder Pressure and its Effect on Sustainability Report. *Jurnal Presipitasi: Media Komunikasi Dan Pengembangan Teknik Lingkungan*, 20(2), 494–506. <https://doi.org/10.14710/presipitasi.v20i2.494-506>
- Wijaya, C., & Khairani, S. (2024). Pengaruh Pengungkapan Emisi Karbon dan Green Accounting terhadap Nilai Perusahaan Sektor Industri. *Jurnal Riset Mahasiswa Ekonomi Manajemen Dan Akuntansi*, 4(2), 130–140. <https://doi.org/https://doi.org/10.35449/surplus.v4i2.864>
- World Economic Forum. (2025). *Global Gender Gap Report 2025*. World Economic Forum. <https://www.weforum.org/publications/global-gender-gap-report-2025/in-full/benchmarking-gender-gaps-2025/>
- Xu, A., Su, Y., Wang, Y., & Liao, J. (2025). Carbon Information Disclosure and Corporate Financial Performance—Empirical Evidence Based on Heavily Polluting Industries in China. *PLoS ONE*, 20(1), 1–22. <https://doi.org/10.1371/journal.pone.0313638>