International Journal of Academic Research and Development
www.allreviewjournal.com
ISSN: 2455-4197
Received: 16-04-2026, Accepted: 17-05-2026, Published: 01-06-2026
Volume 11, Issue 2, 2026, Page No. 32-41

The role of profitability in mediating the effect of green accounting and carbon emission disclosure on firm value

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DOI: https://doi.org/10.66856/academic.2026.11.2.11049

Abstract
This study aims to analyze the role of profitability in mediating the effect of green accounting and carbon emission disclosure on firm value in industrial sector companies in Indonesia during the 2021–2024 period. This research is based on the inconsistency of previous findings regarding the effect of environmental practices on firm value and the unclear role of profitability as a mediating variable in explaining the relationship between environmental performance and financial performance.
This study uses a quantitative approach with secondary data obtained from companies' annual reports. The analytical methods employed are multiple linear regression and mediation analysis. The independent variables in this study are green accounting and carbon emission disclosure, the dependent variable is firm value, and profitability serves as the mediating variable.
The results of the study indicate that green accounting and carbon emission disclosure significantly influence firm value. Green accounting and carbon emission disclosure also influence profitability, while profitability significantly influences firm value. However, profitability is unable to mediate the relationship between green accounting and firm value or the relationship between carbon emission disclosure and firm value. These findings indicate that the implementation of green accounting and carbon emission disclosure can have a direct impact on firm value, but this effect does not occur through increased profitability. Thus, green accounting and carbon emission disclosure play a more significant role as a form of environmental responsibility and a positive signal for investors in assessing a company's prospects and sustainability.

Keywords: Green accounting, carbon emission disclosure, profitability, firm value

Introduction

Firm value is one of the most important indicators reflecting market perceptions regarding a company's performance and future prospects. According to Fernando *et al.* (2024) [16], firm value is commonly reflected through stock prices and market valuation because investors tend to assess companies with strong financial and non-financial performance more positively. High firm value indicates that the market has confidence in the company's sustainability, operational performance, and future growth opportunities.
In recent years, environmental issues and sustainability practices have become major concerns among stakeholders, including investors, creditors, governments, and society. Companies are no longer assessed solely based on financial performance, but also based on their environmental responsibility and sustainability commitment. According to Apriliani *et al.* (2024) [3], environmental responsibility has become one of the strategic factors influencing stakeholder trust and investor decision-making.
One of the environmental accounting practices increasingly implemented by companies is green accounting. Green accounting refers to the integration of environmental costs into corporate accounting systems and operational decision-making. According to Fawzyputra *et al.* (2025) [15], green accounting enables companies to identify, measure, and disclose environmental costs more transparently, thereby improving accountability and corporate sustainability.
In industrial sector companies, the implementation of green accounting becomes increasingly important due to the high environmental impact generated from production activities, energy consumption, and waste emissions. The industrial sector is one of the largest contributors to carbon emissions in Indonesia. Based on data from the Ministry of Environment and Forestry, industrial activities contributed significantly to Indonesia's greenhouse gas emissions during the 2021–2024 [3] period. Therefore, industrial companies are under greater public pressure to implement environmentally responsible business practices.
In addition to green accounting, companies are also encouraged to disclose environmental information through carbon emission disclosure. Carbon emission disclosure represents corporate transparency regarding carbon emissions, emission reduction strategies, environmental policies, and climate-related risks. According to Sari *et al.* (2024) [29], carbon emission disclosure serves as a communication mechanism between companies and stakeholders regarding environmental commitment and sustainability performance.
The importance of carbon emission disclosure in Indonesia has increased alongside the implementation of POJK No. 51/POJK.03/2017 [1] concerning sustainable finance and sustainability reporting obligations. Through sustainability reports, companies are expected to provide transparent information regarding environmental impacts and sustainability initiatives. This condition encourages industrial companies to disclose more comprehensive environmental information to maintain stakeholder trust.
Several previous studies have examined the relationship between green accounting, carbon emission disclosure, profitability, and firm value. However, the findings remain inconsistent. Research conducted by Apriliani *et al.* (2024) and Sari *et al.* (2024) [3, 29] found that environmental

practices positively influence firm value because investors perceive environmentally responsible companies as having better long-term prospects. Conversely, other studies found insignificant relationships between environmental practices and firm value because stakeholders may prioritize short-term financial performance over sustainability disclosure.

The inconsistency of previous findings also appears in studies examining profitability as a mediating variable. Some studies suggest that environmental practices improve operational efficiency and financial performance, which subsequently increases firm value. However, other studies reveal that profitability cannot fully mediate the relationship between environmental practices and firm value because investors often directly appreciate environmental responsibility regardless of financial outcomes.

Stakeholder theory explains that companies must fulfill the interests and expectations of stakeholders in order to maintain legitimacy and business sustainability. According to Freeman (1984) [17], companies are responsible not only to shareholders but also to broader stakeholder groups affected by corporate activities. Through green accounting and carbon emission disclosure, companies attempt to provide transparent environmental information that can increase stakeholder trust and improve firm value.

Based on the research gap and inconsistent findings from previous studies, this study aims to analyze the role of profitability in mediating the effect of green accounting and carbon emission disclosure on firm value in industrial sector companies in Indonesia during the 2021–2024 [3] period.

Theoretical Framework and Hypothesis Formulation

This section explains the theory used in the research, the conceptual framework that describes the relationships between the research variables, and the development of research hypotheses.

Stakeholder Theory

Stakeholder theory explains that companies are responsible for maintaining relationships with stakeholders who are affected by corporate activities. Freeman (1984) [17] stated that companies must consider stakeholder interests in decision-making processes to maintain sustainability and long-term business success. In the context of environmental practices, stakeholders expect companies to be transparent regarding environmental impacts, sustainability policies, and corporate social responsibility.

Green accounting and carbon emission disclosure represent corporate efforts to fulfill stakeholder information needs related to environmental performance. According to Apriliani *et al*. (2024) [3], companies implementing environmental accounting practices tend to gain higher stakeholder trust because they are perceived as more transparent and accountable.

Theoretical Framework

The following framework illustrates the relationship between the independent variable and the dependent variable.

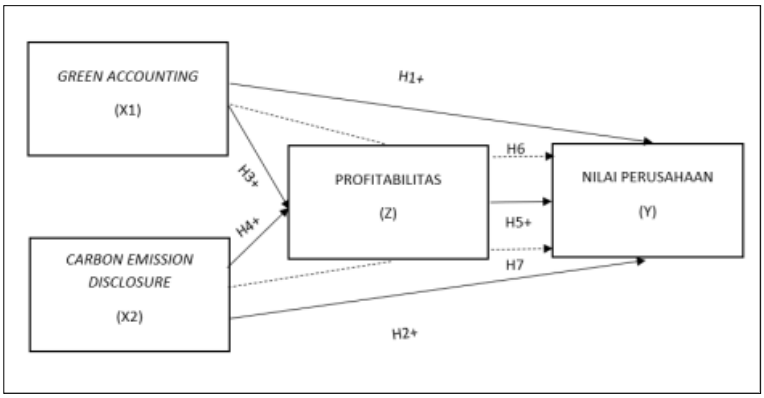


Fig 1: Theoretical Framework

Hypothesis Formulation

The Effect of Green Accounting on Firm Value

Green accounting reflects corporate commitment to environmental responsibility through the identification, recognition, and disclosure of environmental costs. Companies implementing green accounting are considered more responsible in managing environmental impacts and sustainability risks.

According to Fawzyputra *et al*. (2025) [15], the implementation of green accounting can improve corporate reputation and investor trust because stakeholders perceive environmentally responsible companies as having better long-term prospects. Sari *et al*. (2024) [29] also explained that environmental transparency through green accounting can reduce information asymmetry and improve stakeholder confidence.

Based on stakeholder theory, companies implementing green accounting can strengthen stakeholder support and increase firm value through enhanced corporate reputation and transparency.

H1: Green accounting has a positive impact on firm value.

The Effect of Carbon Emission Disclosure on Firm Value

Carbon emission disclosure is a form of corporate transparency regarding carbon emissions and climate-related environmental impacts. Through carbon emission disclosure, companies provide information regarding emission levels, reduction strategies, and environmental policies.

According to Apriliani *et al*. (2024) [3], companies with higher carbon emission disclosure tend to receive positive responses from investors because disclosure reflects corporate environmental awareness and sustainability commitment. Fawzyputra et al. (2025) [15] also argued that

environmental disclosure can improve stakeholder trust and corporate reputation.
Based on stakeholder theory, companies disclosing carbon emission information transparently can gain stronger stakeholder support and improve firm value.
H2: Carbon emission disclosure has a positive effect on firm value.

The Effect of Green Accounting on Profitability
Green accounting can improve operational efficiency through better environmental cost management, energy efficiency, and waste reduction. Companies implementing environmental accounting practices may reduce environmental risks and operational inefficiencies.
According to Sari *et al*. (2024) [25], green accounting contributes to improving profitability because companies become more efficient in resource utilization and environmental management. Apriliani *et al*. (2024) [3] also found that environmentally responsible companies tend to achieve better financial performance.
Based on stakeholder theory, stakeholders tend to support companies that demonstrate environmental responsibility, which may indirectly improve financial performance and profitability.
H3: Green accounting has a positive effect on profitability.

The Effect of Carbon Emission Disclosure on Profitability
Carbon emission disclosure can strengthen stakeholder trust and improve corporate image. Transparent environmental disclosure may increase investor confidence and customer loyalty, thereby improving company profitability.
According to Fawzyputra *et al*. (2025) [15], companies actively disclosing environmental information tend to attract more investors because stakeholders perceive these companies as more sustainable and accountable.
Based on stakeholder theory, carbon emission disclosure can increase stakeholder support and improve profitability.
H4: Carbon emission disclosure has a positive effect on profitability.

The Effect of Profitability on Firm Value
Profitability reflects the company's ability to generate profits from operational activities and assets owned. Companies with higher profitability are generally perceived as having better financial performance and stronger future prospects.
According to Fernando *et al*. (2024) [16], profitability is one of the main indicators considered by investors in assessing firm value. Companies generating consistent profits tend to have higher stock prices and market valuation.
Based on stakeholder theory, profitability provides positive signals to stakeholders regarding company performance and sustainability.
H5: Profitability has a positive effect on firm value.

The Role of Profitability in Mediating the Effect of Green Accounting on Firm Value
Green accounting can improve operational efficiency and reduce environmental costs, which may contribute to improved profitability. Increased profitability can subsequently improve firm value.
According to Sari *et al*. (2024) [25], environmental accounting practices may influence firm value indirectly through financial performance improvement. However, investors may also directly appreciate environmental responsibility regardless of profitability improvement.
Based on Stakeholder Theory, companies must take into account the interests of the various parties affected by their operations. The implementation of Green Accounting is a form of corporate responsibility toward stakeholders, as companies strive to manage environmental impacts in a transparent and accountable manner. Stakeholders, particularly investors and creditors, will view companies that implement Green Accounting as having a commitment to sustainability and environmental risk management (Freeman, 1984) [17]
H6: Profitability mediates the effect of green accounting on firm value.

The Role of Profitability in Mediating the Effect of Carbon Emission Disclosure on Firm Value
Carbon emission disclosure may improve stakeholder trust and strengthen company reputation, thereby contributing to profitability improvement. Increased profitability can subsequently enhance firm value.
According to Apriliani *et al*. (2024) [3], environmental disclosure may influence investor perceptions both directly and indirectly through financial performance.
Based on Stakeholder Theory, carbon emissions disclosure serves as a means for companies to meet stakeholders' information needs (Freeman, 1984) [17]. Companies that disclose their carbon emissions transparently tend to gain greater trust from stakeholders. This trust can strengthen a company's reputation, improve relationships with investors, and reduce pressure from regulators and the public.
H7: Profitability mediates the effect of carbon emission disclosure on firm value.

Research Methodology
This section describes the research population and sample, the variables used and their measurements, and the research model.

Population and Sample
The population is the entire subject of research that has certain characteristics to be studied by researchers (Sugiyono, 2019) [33]. The population in this study consists of industrial sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period.
The sample in this study was determined using the purposive sampling method, which is a method of selecting samples based on specific criteria in accordance with the research objectives. The research sample consisted of industrial sector companies that met the following criteria:
1. Industrial sector companies listed on the IDX during the 2021–2024 period.
2. Companies that published annual reports during the 2021–2024 period.
3. Companies that published sustainability reports or disclosed environmental and carbon emission information during the 2021–2024[3] period
4. Companies that provided complete data related to Green Accounting, Carbon Emission Disclosure, profitability, and firm value.

Model and Research Variables

This study uses three types of variables, namely dependent variable, independent variables, and mediating variable. The dependent variable in this research is firm value, while the independent variables are Green Accounting and Carbon Emission Disclosure. In addition, profitability is used as a mediating variable to analyze whether profitability is able to mediate the effect of Green Accounting and Carbon Emission Disclosure on firm value. These variables are used to examine the effect of Green Accounting and Carbon Emission Disclosure on firm value, both directly and indirectly through profitability, in industrial sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period.

Firm Value

The dependent variable in this study is firm value. Firm value reflects market assessment of a company's performance and future prospects. According to Fernando *et al*. (2024) [16], firm value can be reflected through stock prices and market valuation indicators because these measures show investor confidence in the company. In this study, firm value is measured using Price to Book Value (PBV). PBV is used because it shows how the market values a company compared to its book value (Brigham & Houston, 2019) [5].

$$\text{Firm Value} = \frac{\text{Closing Share Price}}{\text{Book Value per Share}}$$

A higher PBV value indicates that the company is valued more positively by the market because investors perceive the company as having good prospects. Conversely, a lower PBV value indicates that the market valuation of the company is relatively low compared to its book value.

Green Accounting

Green Accounting is an independent variable in this study. Green Accounting refers to accounting practices that integrate environmental aspects into corporate reporting, including environmental costs, pollution control, waste management, environmental investment, and other environmental activities. In this study, Green Accounting is measured using a disclosure index based on environmental indicators disclosed in annual reports or sustainability reports (Aruna, 2017; Susilawati *et al*., 2024) [34].

$$\text{Green Accounting} = \frac{\sum X_i}{N}$$

A score of 1 is given if the company discloses the environmental item, and a score of 0 is given if the company does not disclose it. A higher index value indicates a higher level of Green Accounting disclosure.

Carbon Emission Disclosure

Carbon Emission Disclosure is an independent variable in this study. Carbon Emission Disclosure refers to the disclosure of information related to carbon emissions generated by company activities, including emission calculation, emission reduction strategies, energy consumption, climate change risks, and management accountability for carbon issues. In this study, Carbon Emission Disclosure is measured using a carbon emission disclosure index based on disclosure items adapted from Choi *et al*. (2013) and Sari *et al*. (2024) [7, 29].

$$\text{Carbon Emission Disclosure} = \frac{\sum X_i}{N}$$

A score of 1 is given if the company discloses the carbon emission item, and a score of 0 is given if the company does not disclose it. A higher index value indicates that the company has a higher level of transparency in disclosing carbon emission information.

Profitability

Profitability is the mediating variable in this study. Profitability reflects the company's ability to generate profit by using its available resources. In this study, profitability is measured using Return on Assets (ROA), because ROA shows how effectively the company uses its assets to generate net income (Kasmir, 2019; Brigham & Houston, 2019) [5, 21].

$$\text{Profitability} = \frac{\text{Net Income}}{\text{Total Assets}}$$

A higher ROA value indicates that the company is more effective in using its assets to generate profit, while a lower ROA value indicates lower efficiency in asset utilization.

Analysis Method

In In this study, multiple linear regression analysis was used to test the effect of independent variables on the dependent and mediating variables. The independent variables used in this study were Green Accounting and Carbon Emission Disclosure, while the dependent variable was firm value and the mediating variable was profitability.

Data processing was performed using SPSS software version 25 to obtain the necessary statistical analysis results. The analysis methods used in this study included descriptive statistical analysis, classical assumption tests, multiple linear regression analysis, hypothesis testing, and mediation testing using the Sobel test. The research model in this study can be formulated in the following regression equations:

$$PROF = \alpha + \beta_1 GA + \beta_2 CED + + e_1$$

Explanation:
PROF = Profitability
GA = Green Accounting
CED = Carbon Emission Disclosure
α = Constant
β_1, β_2 = Regression coefficient for each independent variable
e_1 = Error term

This equation is used to test the effect of Green Accounting and Carbon Emission Disclosure on profitability.

$$NP = \alpha + \beta_3 GA + \beta_4 CED + \beta_5 PROF + e_2$$

Explanation:
NP = Firm Value
GA = Green Accounting
CED = Carbon Emission Disclosure
PROF = Profitability
α = Constant

β_3, β_4, β_5 = Regression coefficient for each variable
e_2 = Error term

This equation is used to test the effect of Green Accounting, Carbon Emission Disclosure, and profitability on firm value. In addition, the Sobel test was used to examine whether profitability mediates the effect of Green Accounting and Carbon Emission Disclosure on firm value. The mediation effect is considered significant if the Sobel test value is greater than 1.96 at the 5% significance level.

Mediation Tets

In this study, mediation testing was used to examine whether profitability is able to mediate the effect of Green Accounting and Carbon Emission Disclosure on firm value. Profitability is used as a mediating variable because it is expected to explain the indirect relationship between environmental practices and firm value.

The mediation test was conducted using the Sobel test. The Sobel test is used to determine whether the indirect effect of the independent variable on the dependent variable through the mediating variable is statistically significant. The mediation effect is considered significant if the Sobel test value is greater than 1.96 at the 5% significance level. The Sobel test formula used in this study is a follows:

$$Z = \frac{a \times b}{\sqrt{b^2 S_a^2 + a^2 S_b^2}}$$

Explanation:
a = Regression coefficient of the effect of the independent variable on the mediating variable
b = Regression coefficient of the effect of the mediating variable on the dependent variable
Sa = Standard error of coefficient a
Sb = Standard error of coefficient b

Research Results and Discussion

Description of Research Objects

This study uses secondary data obtained from annual reports and sustainability reports of companies. The population in this study consists of industrial sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period. The purposive sampling method was used to determine the research sample based on specific criteria relevant to the objectives of the study. The steps for selecting the sample in this study are presented as follows:

Table 1: Research Sample

No	Sample Criteria	Number
1	Industrial sector companies listed on the Indonesia Stock Exchange during the 2021–2024 period	65
2	Companies that did not publish annual reports during the 2021–2024 period	(8)
3	Companies that did not have or provide information related to environmental aspects or sustainability reports during the 2021–2024[3] period	(9)
4	Companies that did not provide complete data for all research variables during the 2021–2024[29] period	(16)
	Total sample companies	44
	Number of observations (44 × 4 years)	176

Descriptive Statistics

Table 2: Descriptive Statistics

Variabel	N	Minimum	Maximum	Mean	Std. Deviation
PBV	176	0.01	8.54	1.2062	1.00389
GA	176	0.00	1.00	0.5043	0.19498
CED	176	0.22	0.78	0.4981	0.11314
ROA	176	0.01	0.12	0.0635	0.03180
Valid N (listwise)	176				

Source: Secondary data processed using SPSS 25, 2026

Based on the descriptive statistics table, the firm value variable, which is proxied by Price to Book Value (PBV), has a minimum value of 0.01 and a maximum value of 8.54. The average PBV value is 1.2062 with a standard deviation of 1.00389. This indicates that the firm value of industrial sector companies in the sample is generally stable, because the mean value is higher than the standard deviation.

The Green Accounting variable has a minimum value of 0.00 and a maximum value of 1.00. The average value of Green Accounting is 0.5043 with a standard deviation of 0.19498. This shows that the implementation of Green Accounting in industrial sector companies is at a moderate level. The relatively low standard deviation also indicates that the variation in Green Accounting implementation among the sampled companies is not too large.

The Carbon Emission Disclosure variable has a minimum value of 0.22 and a maximum value of 0.78. The average value of Carbon Emission Disclosure is 0.4981 with a standard deviation of 0.11314. This indicates that the level of carbon emission disclosure in industrial sector companies is also at a moderate level. The low standard deviation shows that the level of disclosure among companies is relatively consistent.

The profitability variable, which is proxied by Return on Assets (ROA), has a minimum value of 0.01 and a maximum value of 0.12. The average ROA value is 0.0635 with a standard deviation of 0.03180. This indicates that industrial sector companies in the sample have a fairly good ability to generate profit from their total assets. The standard deviation value, which is lower than the mean, also shows that the ROA data is relatively stable and does not experience extreme fluctuations.

Normality Test

Table 3 presents the results of the normality test using the Kolmogorov-Smirnov test. The test results show that the Asymp. Sig. value is 0.128, which is greater than 0.05. Therefore, it can be concluded that the residual data in this study is normally distributed. This means that the regression model has fulfilled the normality assumption and can be used for further analysis.

Table 3: Results of the Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		176
Normal Parameters[a,b]	Mean	.1728123
	Std. Deviation	.18929750
Most Extreme Differences	Absolute	.104
	Positive	.104
	Negative	-.124
Test Statistic		.124
Asymp. Sig. (2-tailed)		.128[c,d]

Source: Secondary data processed using SPSS 25, 2026

Autocorrelation Test

Based on Table 4, the Durbin-Watson value is 2.201. This value is within the acceptable range, so it can be concluded that the regression model does not experience autocorrelation. Thus, the regression model has fulfilled the autocorrelation assumption and is suitable for further analysis.

Table 4: Results of the Durbin-Watson Autocorrelation Test

Model Summary[b]					
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Durbin-Watson**
1	.429[a]	.348	.312	1.32235	2.201
a. Predictors: (Constant), ROA, GA, CED					
b. Dependent Variable: PBV					

Source: Secondary data processed using SPSS 25, 2026

Multicollinearity Test

Based on Table 5, the GA variable has a tolerance value of 0.983 and a VIF value of 1.017. The CED variable has a tolerance value of 0.983 and a VIF value of 1.017, while the ROA variable has a tolerance value of 1.000 and a VIF value of 1.000. All variables have tolerance values above 0.10 and VIF values below 10. Therefore, it can be concluded that the regression model does not experience multicollinearity.

Table 5: Multicollinearity Test Results

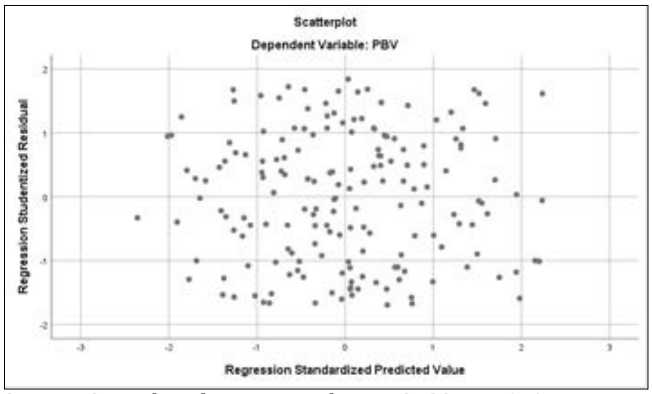
Coefficients[a]			
Model		**Collinearity Statistics**	
		Tolerance	**VIF**
1	GA	.983	1.017
	CED	.983	1.017
	ROA	1.000	1.000

Source: Secondary data processed using SPSS 25, 2026

Heteroscedasticity Test

The heteroscedasticity test in this study was conducted using the scatterplot test. Based on the scatterplot results, the points are spread randomly above and below the zero line and do not form a clear pattern. Therefore, it can be concluded that the regression model does not experience heteroscedasticity. This indicates that the regression model has fulfilled one of the classical assumptions and is appropriate for further analysis.

Image 2
Scatterplot Test Results



Source: Secondary data processed using SPSS 25, 2026

Hypothesis Testing

Coefficient of Determination Test

The coefficient of determination test is used to measure the extent to which the independent variables are able to explain the variation in the dependent variable. In this study, the independent variables are Green Accounting, Carbon Emission Disclosure, and profitability, while the dependent variable is firm value. The thesis uses multiple linear regression and mediation analysis, with Green Accounting and Carbon Emission Disclosure as independent variables, firm value as the dependent variable, and profitability as the mediating variable.

Table 6: Results of the Coefficient of Determination Test (R^2)

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.429[a]	.348	.312	1.32235

Source: Secondary data processed using SPSS 25, 2026

Based on Table 6, the R Square value is 0.348. This indicates that Green Accounting, Carbon Emission Disclosure, and profitability are able to explain 34.8% of the variation in firm value. Meanwhile, the remaining 65.2% is explained by other variables outside the research model. The Adjusted R Square value of 0.312 shows that the explanatory ability of the model is 31.2% after considering the number of independent variables used in the regression model.

F-test

The F-test was conducted to examine whether the regression model is suitable and whether the independent variables simultaneously affect the dependent variable. In this study, the F-test is used to determine whether Green Accounting, Carbon Emission Disclosure, and profitability together have a significant effect on firm value.

Tabel 7: Simultaneous Significance Test (F-Statistic Test)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.454	3	1.384	32.817	.000[b]
	Residual	173.130	172	1.105		
	Total	175.584	175			
a. Dependent Variable: PBV						
b. Predictors: (Constant), ROA, GA, CED						

Source: Secondary data processed using SPSS 25, 2026

Based on Table 7, the calculated F value is 32.817 with a significance value of 0.000. Since the significance value is lower than 0.05, it can be concluded that the regression model is valid and suitable for further analysis. This result indicates that Green Accounting, Carbon Emission Disclosure, and profitability simultaneously have a significant effect on firm value.

t-test

The t-test is used to test how each independent variable individually affects the dependent variable.

Table 8: Partial Significance Test (t-test)

Model 1

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.723	.447		1.941	.001
	GA	.517	.192	.074	5.694	.003
	CED	.428	.175	.078	2.554	.008
	ROA	1.737	1.383	.099	5.342	.000

Model 2

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.246	.313		1.974	.000
	GA	1.822	.513	.003	1.641	.004
	CED	1.853	.222	.019	1.045	.006

Source: Secondary data processed using SPSS 25, 2026

Based on the test results in Table 8, the findings of this study are as follows:

1. Green Accounting (GA) has a significance value of 0.003 (< 0.05) with a t-value of 5.694 and a coefficient value of 0.517. The positive coefficient indicates that an increase in Green Accounting increases firm value. Therefore, Green Accounting has a positive and significant effect on firm value.
2. Carbon Emission Disclosure (CED) has a significance value of 0.008 (< 0.05) with a t-value of 2.554 and a coefficient value of 0.428. This indicates that Carbon Emission Disclosure has a positive and significant effect on firm value. It means that the higher the level of carbon emission disclosure, the higher the firm value.
3. Profitability (ROA) has a significance value of 0.000 (< 0.05) with a t-value of 5.342 and a coefficient value of 1.737. The positive coefficient indicates that an increase in profitability increases firm value. Therefore, profitability has a positive and significant effect on firm value.
4. Green Accounting (GA) has a significance value of 0.004 (< 0.05) with a t-value of 1.641 and a coefficient value of 1.822 in Model 2. This indicates that Green Accounting has a positive and significant effect on profitability. It means that better implementation of Green Accounting can increase the company's profitability.
5. Carbon Emission Disclosure (CED) has a significance value of 0.006 (< 0.05) with a t-value of 1.045 and a coefficient value of 1.853 in Model 2. This shows that Carbon Emission Disclosure has a positive and significant effect on profitability. Therefore, higher carbon emission disclosure can improve company profitability.

Mediation tets

The mediation test in this study was conducted using the Sobel test. This test aims to determine whether profitability, proxied by Return on Assets (ROA), is able to mediate the effect of Green Accounting (GA) and Carbon Emission Disclosure (CED) on firm value, proxied by Price to Book Value (PBV). The mediation effect is considered significant if the Z-value is greater than 1.96 at the 5% significance level.

Table 9: Sobel test

No	Independent variable	Variabel Mediasi	Dependent variable	Z Hitung	Z Tabel (α=5%)	Keterangan
1	Green Accounting (GA)	Profitabilitas (ROA)	Nilai Perusahaan (PBV)	0,913	1,96	Tidak Significant (Tidak Mediasi)
2	Carbon Emission Disclosure (CED)	Profitabilitas (ROA)	Nilai Perusahaan (PBV)	0,939	1,96	Tidak Significant (Tidak Mediasi)

Source: Secondary data processed using SPSS 25, 2026

Based on the mediation test results in Table 9, the findings of this study are as follows:

1. Profitability does not mediate the effect of Green Accounting on firm value. The Sobel test result shows a Z-value of 0.913, which is lower than the Z-table value of 1.96. This indicates that the indirect effect of Green Accounting on firm value through profitability is not significant. Therefore, profitability is unable to mediate the relationship between Green Accounting and firm value, so the sixth hypothesis is rejected.
2. Profitability does not mediate the effect of Carbon Emission Disclosure on firm value. The Sobel test result shows a Z-value of 0.939, which is lower than the Z-table value of 1.96. This means that the indirect effect of Carbon Emission Disclosure on firm value through profitability is not significant. Therefore, profitability is unable to mediate the relationship between Carbon Emission Disclosure and firm value, so the seventh hypothesis is rejected.

Interpretation of Results

The Effect of Green Accounting on Firm Value

Based on the t-test results, Green Accounting has a positive and significant effect on firm value, so the first hypothesis is accepted. This result indicates that the better the implementation of Green Accounting, the higher the firm

value. Companies that disclose environmental costs, waste management, energy efficiency, and other environmental activities are considered more transparent and responsible by stakeholders.

This finding is in line with Stakeholder Theory proposed by Freeman (1984) [17], which explains that companies must pay attention to the interests of stakeholders, not only shareholders. Through Green Accounting, companies show their responsibility toward environmental issues and provide relevant information for investors, regulators, society, and other stakeholders. This result is also consistent with Setianingsih *et al*. (2025) [31], who found that Green Accounting has a positive effect on firm value. Therefore, Green Accounting can increase stakeholder trust and improve market perception of the company.

The Effect of Carbon Emission Disclosure on Firm Value

Based on the test results, Carbon Emission Disclosure has a positive and significant effect on firm value, so the second hypothesis is accepted. This result shows that higher carbon emission disclosure can increase firm value. Companies that disclose information related to carbon emissions, emission reduction strategies, energy consumption, and climate risk management are viewed positively by the market.

This finding supports Stakeholder Theory because Carbon Emission Disclosure is a form of corporate transparency to stakeholders. According to Freeman (1984) [17], companies need to provide information needed by stakeholders to maintain trust and business sustainability. This result is in line with Sari *et al*. (2024) and Dewi (2025) [11, 25], who found that carbon emission disclosure can improve firm value because it reflects transparency and environmental responsibility. Thus, investors may consider carbon disclosure as a positive signal of the company's long-term sustainability.

The Effect of Green Accounting on Profitability

Based on the statistical test results, Green Accounting has a positive and significant effect on profitability, so the third hypothesis is accepted. This result indicates that the implementation of Green Accounting can improve company profitability. Green Accounting helps companies identify and manage environmental costs more effectively, such as costs related to waste management, pollution control, energy efficiency, and environmental investment.

From the perspective of Stakeholder Theory, companies that manage environmental responsibility properly can gain support from stakeholders. This support may appear in the form of investor trust, customer loyalty, and stronger corporate reputation. This result is consistent with Saripulloh and Wedari (2024) [30], who stated that sustainability practices can improve financial performance. Therefore, Green Accounting is not only related to environmental responsibility, but also contributes to improving operational efficiency and profitability.

The Effect of Carbon Emission Disclosure on Profitability

Based on the test results, Carbon Emission Disclosure has a positive and significant effect on firm value Based on the test results, Carbon Emission Disclosure has a positive and significant effect on profitability, so the fourth hypothesis is accepted. This result means that companies with higher carbon emission disclosure tend to have better profitability. Disclosure of carbon emission information can encourage companies to manage energy consumption, reduce operational waste, and improve environmental efficiency.

This finding is relevant to Stakeholder Theory because transparent carbon disclosure can strengthen stakeholder trust. According to Clarkson *et al*. (2011), environmental disclosure can reduce information asymmetry between companies and stakeholders. This finding is also supported by Fauziah and Siregar (2025) [14], who explained that environmental disclosure can influence company performance by improving transparency and market confidence. Therefore, Carbon Emission Disclosure can provide economic benefits through improved reputation and efficiency.

The Effect of Profitability on Firm Value

Based on the t-test results, profitability has a positive and significant effect on firm value, so the fifth hypothesis is accepted. This result indicates that companies with higher profitability tend to have higher firm value. Profitability reflects the company's ability to generate earnings from its assets and operational activities.

This finding is consistent with Stakeholder Theory because profitability shows that the company is able to fulfill the expectations of stakeholders, especially investors and creditors. Investors tend to give a higher valuation to companies with strong profitability because they are considered to have better prospects and lower risk. This result is in line with Setianingsih *et al*. (2025) [31], who found that profitability has a positive effect on firm value. Therefore, profitability becomes an important factor in increasing investor confidence and firm value.

The Role of Profitability in Mediating the Effect of Green Accounting on Firm Value

The mediation test results show that profitability is unable to mediate the effect of Green Accounting on firm value, so the sixth hypothesis is rejected. The Sobel test value is lower than 1.96, indicating that the indirect effect of Green Accounting on firm value through profitability is not significant.

This result means that although Green Accounting affects profitability and firm value, the increase in firm value does not occur through profitability as a mediating mechanism. In the perspective of Stakeholder Theory, stakeholders may directly appreciate Green Accounting as a form of environmental responsibility and transparency. This finding is in line with Susilawati *et al*. (2024) [34], who found that profitability was unable to mediate the relationship between Green Accounting and firm value. Therefore, Green Accounting has a more direct role in increasing firm value through stakeholder trust and corporate reputation.

The Role of Profitability in Mediating the Effect of Carbon Emission Disclosure on Firm Value

The mediation test results show that profitability is unable to mediate the effect of Carbon Emission Disclosure on firm value, so the seventh hypothesis is rejected. The Sobel test value is lower than 1.96, meaning that the indirect effect of Carbon Emission Disclosure on firm value through profitability is not significant.

This result indicates that stakeholders and investors may respond directly to carbon emission disclosure without

waiting for an increase in profitability. In relation to Stakeholder Theory, Carbon Emission Disclosure is considered important because it provides information about the company's environmental responsibility, climate risk management, and sustainability commitment. This finding is consistent with Dewi (2025) and Patima *et al*. (2024) [11, 26], who found that financial performance or profitability does not always mediate the relationship between environmental practices and firm value. Therefore, Carbon Emission Disclosure can directly increase firm value through transparency, stakeholder trust, and positive market perception.

Conclusion and Limitations

Conclusion

Based on the results of research on the effect of profitability, leverage, and capital intensity on tax Based on the results of research on the role of profitability in mediating the effect of Green Accounting and Carbon Emission Disclosure on firm value in industrial sector companies listed on the Indonesia Stock Exchange for the period 2021–2024, the following conclusions can be drawn:

1. Green Accounting has a positive and significant effect on firm value. This indicates that the better the implementation of Green Accounting, the higher the firm value.
2. Carbon Emission Disclosure has a positive and significant effect on firm value. This shows that companies with better carbon emission disclosure tend to receive a more positive response from investors and stakeholders.
3. Green Accounting has a positive and significant effect on profitability. This means that the implementation of Green Accounting can support the company's ability to generate profits.
4. Carbon Emission Disclosure has a positive and significant effect on profitability. This indicates that transparent carbon emission disclosure can contribute to improving company profitability.
5. Profitability has a positive and significant effect on firm value. This shows that companies with higher profitability tend to have higher firm value.
6. Profitability is unable to mediate the effect of Green Accounting on firm value. This means that the effect of Green Accounting on firm value occurs directly, not through profitability.
7. Profitability is unable to mediate the effect of Carbon Emission Disclosure on firm value. This indicates that Carbon Emission Disclosure directly affects firm value without being mediated by profitability.

Limitations

This study has several limitations, including the following:

1. The observation period of this study is relatively short, namely only 2021–2024, so it may not fully describe the long-term relationship between Green Accounting, Carbon Emission Disclosure, profitability, and firm value.
2. The scope of the research sample is limited to industrial sector companies listed on the Indonesia Stock Exchange. Therefore, the results of this study cannot be generalized to all company sectors.
3. The research sample is still limited. From the initial population of 65 companies, only 44 companies met the sample criteria, resulting in 176 observation data.
4. This study only uses profitability as a mediating variable. Other factors, such as firm size, leverage, corporate governance, environmental performance, or ESG disclosure, may also influence firm value.

Suggestions

This study has several limitations, including the following:

1. Future research is expected to use a longer observation period so that the results can better reflect the long-term effect of environmental practices on firm value.
2. Future research can expand the research object to other sectors, such as energy, manufacturing, mining, or consumer goods companies, to obtain broader and more generalizable results.
3. Future research is suggested to add other variables, such as firm size, leverage, corporate governance, environmental performance, or ESG disclosure, to improve the explanatory power of the research model.
4. Companies are expected to improve the implementation of Green Accounting and Carbon Emission Disclosure because these practices can increase transparency, stakeholder trust, and firm value.

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