

The effect of green accounting, green financing, and corporate social responsibility on mining firm value

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Abstract. This study examines the effect of green accounting, green financing, and corporate social responsibility (CSR) on firm value in mining companies listed on the Indonesia Stock Exchange during the 2020–2024 period. A quantitative approach was employed using multiple linear regression analysis. The population consisted of mining companies listed on the Indonesia Stock Exchange, and purposive sampling was used to select 48 companies, resulting in 240 firm-year observations. Data were obtained from annual reports and sustainability reports. Green accounting was measured using an environmental cost disclosure index, green financing was measured using green financing disclosure indicators, and CSR was measured based on Global Reporting Initiative (GRI) standards. Firm value was measured using Tobin's Q ratio. The findings indicate that green accounting has a positive and significant effect on firm value. Green financing has a negative and significant effect on firm value, while CSR has a positive and significant effect on firm value. Furthermore, green accounting, green financing, and CSR simultaneously have a significant effect on firm value. These findings suggest that sustainability practices play an important role in shaping firm value, particularly in environmentally sensitive industries such as mining.

Keywords: Green Accounting; Green Financing; Corporate Social Responsibility; Firm Value.

1. Introduction

In recent years, sustainability issues have become a major concern in the global business environment due to the increasing impacts of climate change, environmental degradation, and pressure to implement Environmental, Social, and Governance (ESG) practices. The mining sector has become one of the most highlighted industries because its operational activities contribute significantly to carbon emissions, environmental pollution, and ecosystem degradation. According to the United Nations (2025), extractive industries contribute substantially to global greenhouse gas emissions, encouraging companies to adopt more sustainable business practices. In Indonesia, sustainability-related regulations have also become stricter through the implementation of POJK No. 51/POJK.03/2017 concerning sustainable finance and the obligation for public companies to publish sustainability reports.

The mining sector plays an important role in Indonesia's economy. Data from Statistics Indonesia (BPS) (2024) show that the mining and quarrying sector contributed 12.22% to Indonesia's Gross Domestic Product (GDP). In addition, this sector is one of the main contributors to national exports, particularly coal and nickel commodities. However, these economic contributions are accompanied by various environmental problems such as water pollution, land degradation, deforestation, and increased carbon emissions resulting from natural resource exploitation activities. In 2025, the Indonesian government revoked four nickel mining permits in Raja Ampat because the operations were considered to cause serious environmental damage in conservation areas (Reuters, 2025). This condition indicates that poor environmental management may create operational risks, reduce corporate legitimacy, and negatively affect investor perceptions of mining companies.

In the capital market context, investors no longer focus solely on financial performance but also consider sustainability aspects in investment decision-making. This trend is reflected in the increasing growth of ESG-based and sustainable finance investments in many countries, including Indonesia. The Financial Services Authority (OJK) reported that the implementation of sustainable finance has continued to increase since sustainability reporting regulations were enforced for public companies. Furthermore, Bloomberg reported that the Indonesian government had issued approximately US\$760.64 million in green bonds by 2024 to support environmentally friendly projects. These developments indicate that green accounting, green financing, and Corporate Social Responsibility (CSR) practices are increasingly viewed as positive signals regarding a company's ability to maintain business sustainability and manage environmental risks.

Firm value, which is commonly measured using Tobin's Q, reflects how the market evaluates a company's future prospects based on both financial and non-financial performance. In the mining sector, firm value tends to be more sensitive to environmental and social issues because of the industry's high-risk characteristics. Therefore, the implementation of green accounting, green financing, and CSR is expected to influence firm value by increasing investor confidence and strengthening corporate legitimacy.

However, previous studies have shown inconsistent findings. Anggita et al. (2022) found that green accounting positively affects firm value, whereas Haryono et al. (2025) reported the opposite result. Research examining the effect of green financing on firm value in Indonesia is also still limited and mostly focused on the banking sector rather than mining companies. In addition, most previous studies only examined sustainability variables partially and rarely combined green accounting, green financing, and CSR within a single research model, particularly in mining companies.

These inconsistencies indicate the existence of a research gap regarding the relationship between green accounting, green financing, CSR, and firm value in the Indonesian mining sector. This study offers novelty by simultaneously examining the three sustainability variables in mining companies listed on the Indonesia Stock Exchange during the 2020–2024 period, which represents the period after the strengthening of ESG regulations and sustainability reporting implementation in Indonesia as well as the post-COVID-19 economic recovery period. Unlike previous studies that mainly focused on manufacturing and banking sectors, this study specifically investigates mining companies, which have high environmental risks and strong sensitivity to sustainability issues. Therefore, this study aims to analyze the effect of green accounting, green financing, and Corporate Social Responsibility on the firm value of mining companies listed on the Indonesia Stock Exchange during the 2020–2024 period.

In this study, firm value is measured using Tobin's Q ratio as a proxy for market valuation. Green accounting is measured through environmental cost disclosures presented in annual and sustainability reports. Green financing is measured based on sustainable financing activities and environmentally oriented funding disclosures, while Corporate Social Responsibility (CSR) is measured using the Global Reporting Initiative (GRI) disclosure index. These measurements are used to examine how sustainability practices influence the firm value of mining companies.

2. Literature Review and Hypothesis Development

2.1 Stakeholder Theory

Stakeholder theory explains that a company does not operate solely to fulfill its internal interests but also to provide benefits for stakeholders who can influence or be influenced by corporate activities. These stakeholders include internal and external parties such as investors, employees, customers, governments, and society (Freeman, 1984). Companies are therefore required to maintain a balance between stakeholder interests in order to sustain long-term business continuity. According to Lako (2011), a company's ability to accommodate stakeholder interests contributes to improved business performance and stronger firm value. In the context of sustainability, stakeholder theory supports the implementation of green accounting, green financing, and Corporate Social Responsibility (CSR) as forms of corporate responsibility toward stakeholders.

2.2 Legitimacy Theory

Legitimacy theory emphasizes the importance of harmony between corporate activities and societal values, norms, and expectations. Companies gain legitimacy when society perceives their operations as consistent with prevailing social norms (Suchman, 1995). The concept of legitimacy is closely related to the "social contract" between companies and society, in which companies are expected to take responsibility for the environmental and social impacts arising from their operations. Environmental disclosures, sustainability reporting, and CSR activities can therefore be interpreted as efforts to maintain corporate legitimacy. According to Ainy and Barokah (2019), companies with strong legitimacy tend to gain greater public trust, which may positively affect firm value.

2.3 Signaling Theory

Signaling theory explains how companies reduce information asymmetry by providing signals to investors and other stakeholders (Spence, 1973). Positive signals are generally conveyed through transparent and credible

disclosures regarding financial and non-financial performance. In this study, disclosures related to environmental costs, green financing activities, and CSR practices represent signals indicating a company's commitment to sustainability. Such disclosures may improve investor confidence and strengthen market perceptions regarding the company's future prospects, ultimately influencing firm value.

2.4 Firm Value

Firm value reflects market perceptions regarding a company's performance, growth prospects, and risk level. Firm value is generally measured using market-based indicators such as Tobin's Q, Price to Book Value (PBV), and stock prices. These indicators illustrate the extent to which companies are able to create value for shareholders. Maharani and Handayani (2021) explained that firm value represents investor confidence in the company's future performance. Similarly, Juliana and Sembiring (2025) found that firm value in mining companies is strongly influenced by sustainability reporting quality and profitability. In addition, Karya and Mimba (2023) stated that sustainability disclosures lacking information quality are unable to significantly improve firm value. These findings indicate that both financial and non-financial factors, particularly sustainability-related practices, are increasingly considered by investors in evaluating companies. In this study, firm value is measured using Tobin's Q ratio because it reflects market valuation based on both financial performance and future growth expectations.

2.5 Green Accounting

Green accounting refers to the development of accounting practices that incorporate environmental aspects into the processes of recording, measurement, and reporting. Environmental costs such as waste management, pollution prevention, land reclamation, and ecosystem restoration are recognized as part of corporate responsibility toward environmental impacts. Maharani and Handayani (2021) stated that green accounting enables companies to internalize environmental externality costs into financial reporting. Putri and Werastuti (2023) further explained that green accounting improves transparency and allows stakeholders to evaluate the company's environmental commitment. Haryono et al. (2025) also emphasized that green accounting is associated with environmental risk management, not merely environmental cost disclosure.

Previous studies demonstrated inconsistent findings regarding the relationship between green accounting and firm value. Several studies found positive effects, while others reported negative or insignificant impacts. These inconsistencies indicate that the effectiveness of green accounting depends on disclosure quality and management commitment toward sustainability practices. In this study, green accounting is measured through environmental cost disclosures presented in annual reports and sustainability reports.

2.6 Green Financing

Green financing refers to environmentally oriented financial instruments designed to support sustainable and low-carbon projects. Examples include green bonds, green loans, and sustainability-based financing facilities. Zhong and Ma (2024) explained that green financing can reduce corporate carbon risk by encouraging investment in environmentally friendly technologies and energy efficiency. Companies actively utilizing green financing are generally perceived as having stronger commitments toward sustainability and environmental risk management. In the mining sector, green financing may include investments in renewable energy, waste management systems, environmentally friendly equipment, and decarbonization projects.

Although studies regarding green financing in Indonesia remain limited, international evidence suggests that green financing can strengthen investor confidence and improve firm value. Therefore, green financing is considered an important sustainability indicator in this study. Green financing in this research is measured based on sustainable financing activities and environmentally oriented funding disclosures presented in company reports.

2.7 Corporate Social Responsibility (CSR)

Corporate Social Responsibility (CSR) refers to a company's responsibility toward social and environmental issues arising from its operational activities. CSR includes the integration of social, ethical, and environmental considerations into corporate strategies and decision-making processes. Anisah et al. (2024) found that CSR can positively affect firm value when implemented strategically and disclosed appropriately through sustainability reporting. Maharani and Handayani (2021) also explained that CSR implementation can strengthen corporate image and improve market trust. Furthermore, Anggita et al. (2022) emphasized that disclosure quality determines

whether CSR is perceived as a genuine commitment or merely symbolic activity. The concept of triple bottom line consisting of profit, people, and planet also emphasizes that companies should simultaneously pursue economic performance, social welfare, and environmental sustainability (Azheri, 2011). In mining companies, CSR practices may include educational programs, community empowerment, environmental conservation, reclamation activities, and pollution control initiatives. In this study, CSR is measured using the Global Reporting Initiative (GRI) disclosure index.

2.8 Previous Studies

Previous studies have examined the influence of sustainability-related practices on firm value, although the empirical findings remain inconsistent. Several studies focused on CSR as a determinant of firm value, while others examined the effects of green accounting and sustainability reporting. Studies regarding green financing remain relatively limited, particularly in the Indonesian mining sector. Werastuti et al. (2023) found that green accounting and CSR positively influence firm value because both variables provide relevant information regarding corporate environmental and social responsibility. In contrast, Haryono et al. (2025) reported that green accounting and CSR negatively affect firm value, indicating that investors may perceive environmental disclosures as additional corporate costs.

Anggita et al. (2022) also found that green accounting significantly affects firm value, although carbon emission disclosures were insignificant. Meanwhile, Karya and Mimba (2023) concluded that sustainability reporting quality negatively influences firm value in mining companies. These inconsistent findings suggest that sustainability practices do not always generate immediate positive market responses. Research regarding green financing is still limited in Indonesia. Zhong and Ma (2024) demonstrated that green financing reduces corporate carbon risk and improves long-term corporate prospects. However, their study was conducted outside Indonesia, indicating the need for further research within the Indonesian mining industry context. Based on previous studies, there remains a significant research gap regarding the simultaneous influence of green accounting, green financing, and CSR on firm value in mining companies listed on the Indonesia Stock Exchange. Therefore, this study attempts to provide a more comprehensive understanding of sustainability practices and their influence on firm value during the 2020–2024 period.

2.9 Conceptual Framework

Based on the theoretical review and previous studies, this research develops a conceptual framework illustrating the relationships between green accounting, green financing, CSR, and firm value. Green accounting, green financing, and CSR act as independent variables, while firm value serves as the dependent variable.

Hypothesis Development

2.1.1 The Effect of Green Accounting on Firm Value

Green accounting integrates environmental aspects into financial reporting and reflects corporate responsibility toward environmental impacts. Transparent environmental disclosures may increase investor confidence because they demonstrate the company's commitment to sustainability and environmental risk management. Several previous studies found that green accounting positively affects firm value because investors tend to appreciate companies with strong environmental responsibility. However, some studies reported inconsistent findings, indicating the need for further examination, particularly in mining companies with high environmental risks.

Therefore, the following hypothesis is proposed:

H1: Green accounting affects firm value.

2.1.2 The Effect of Green Financing on Firm Value

Green financing reflects a company's commitment to sustainable business transformation through environmentally oriented funding activities. Companies utilizing green financing are generally perceived as more capable of managing environmental risks and adapting to ESG-related regulations. According to signaling theory, green financing disclosures may provide positive signals to investors regarding the company's long-term sustainability prospects. Consequently, green financing is expected to positively influence firm value.

Therefore, the following hypothesis is proposed:

H2: Green financing affects firm value.

2.1.3 The Effect of Corporate Social Responsibility (CSR) on Firm Value

CSR demonstrates the company's commitment to balancing economic, social, and environmental responsibilities. Stakeholder theory explains that companies capable of fulfilling stakeholder expectations tend to gain stronger legitimacy and better reputations. Several previous studies found that CSR disclosures positively influence firm value because investors increasingly consider sustainability aspects in investment decision-making. Therefore, companies with better CSR performance are expected to obtain stronger market valuations.

Thus, the following hypothesis is proposed:

H3: Corporate Social Responsibility (CSR) affects firm value.

2.1.4 The Simultaneous Effect of Green Accounting, Green Financing, and CSR on Firm Value

Green accounting, green financing, and CSR collectively represent comprehensive sustainability practices. The implementation of these practices may improve transparency, strengthen legitimacy, reduce perceived risk, and increase investor confidence. Although previous studies reported inconsistent findings regarding the individual effects of sustainability variables, their simultaneous implementation may produce stronger impacts on firm value. Therefore, examining these variables together may provide a more comprehensive explanation of how sustainability practices influence firm value in mining companies.

Accordingly, the following hypothesis is proposed:

H4: Green accounting, green financing, and Corporate Social Responsibility (CSR) simultaneously affect firm value.

3. Research Method

3.1 Research Design

This study employed a quantitative research approach to examine the relationship between green accounting, green financing, Corporate Social Responsibility (CSR), and firm value. Quantitative research enables researchers to test theories and hypotheses systematically through numerical data and statistical analysis techniques. According to Sujarweni (2020), quantitative methods emphasize objective measurement and statistical testing to analyze relationships among variables. The study used panel data obtained from mining companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 period. Panel data combine cross-sectional and time-series data, allowing researchers to observe changes across companies and over time. This approach was considered appropriate because it provides more comprehensive information and improves the accuracy of regression estimation results. The research was conducted in 2025 using secondary data obtained from annual reports and sustainability reports published by companies through the official IDX website and each company's official website.

3.2 Population and Sample

The population of this study consisted of all mining companies listed on the Indonesia Stock Exchange during the 2020–2024 period. The mining sector was selected because mining activities are closely associated with environmental issues, carbon emissions, and sustainability practices, making it relevant to the variables examined in this study. The sample was determined using purposive sampling, which is a sampling technique based on specific criteria established by the researcher to ensure that the selected companies meet the research objectives (Sujarweni, 2020). The sample selection criteria were as follows:

1. Mining companies consistently listed on the Indonesia Stock Exchange during the 2020–2024 period.

2. Companies that published complete annual reports and sustainability reports during the observation period.
3. Companies that provided complete data related to green accounting, green financing, CSR disclosure, and firm value measurement.

Table 3.1 Sample Selection Process

Criteria	Total
Mining companies listed on the IDX during 2020–2024	62
Companies publishing complete annual and sustainability reports	62
Less: companies with incomplete research variable data	14
Final sample used in the study	48
Total observations (48 × 5 years)	240

Source: Processed by the researcher (2025)

3.3 Operational Definition of Variables

This study consisted of one dependent variable and three independent variables. The operational definitions and measurements of each variable are explained as follows.

3.3.1 Independent Variables

Green Accounting (X1)

Green accounting refers to the process of identifying, measuring, recording, and disclosing environmental costs and environmental management activities in corporate reporting. This variable was measured using a green accounting disclosure index based on environmental information disclosed in annual reports and sustainability reports, including waste management costs, land reclamation costs, pollution prevention costs, environmental restoration expenses, and environmental performance disclosures.

The measurement formula is as follows:

$$GA = \text{Number of disclosed green accounting items} / \text{Total green accounting disclosure items}$$

Green Financing (X2)

Green financing refers to environmentally oriented financing activities intended to support sustainable projects, energy efficiency, carbon emission reduction, and environmentally friendly investments (Zhong & Ma, 2024). The measurement indicators included disclosures regarding green loans, green bonds, renewable energy investments, sustainable financing policies, and environmentally friendly investment activities.

The measurement formula is as follows:

$$GF = \text{Number of disclosed green financing items} / \text{Total green financing disclosure items}$$

Corporate Social Responsibility (CSR) (X3)

Corporate Social Responsibility (CSR) reflects the company's commitment to social, economic, and environmental responsibilities. CSR disclosure was measured using the Corporate Social Responsibility Disclosure Index (CSRDI) based on the Global Reporting Initiative (GRI) standards covering economic, social, and environmental aspects.

The measurement formula is as follows:

$CSR = \text{Number of disclosed CSR items} / \text{Total GRI disclosure items}$

3.3.2 Dependent Variable

Firm Value (Y)

Firm value reflects market perceptions regarding a company's performance, future prospects, and sustainability. In this study, firm value was measured using Tobin's Q ratio because it reflects the market valuation of a company relative to its asset value.

The formula used is as follows:

$\text{Tobin's Q} = ((\text{Stock Price} \times \text{Outstanding Shares}) + \text{Total Debt}) / \text{Total Assets}$

3.4 Data Collection Method

This study used secondary data collected through documentation techniques. The data were obtained from annual reports and sustainability reports of mining companies listed on the Indonesia Stock Exchange during the 2020–2024 period. The reports were accessed through the official IDX website and the official websites of each company.

The collected data included:

1. Environmental cost and environmental activity disclosures as indicators of green accounting.
2. Sustainable financing and green financing disclosures as indicators of green financing.
3. CSR disclosures based on Global Reporting Initiative (GRI) standards.
4. Financial and market data such as stock prices, total assets, total debt, and outstanding shares for calculating firm value.

3.5 Data Analysis Technique

The data analysis in this study was conducted using EViews software. Several analytical procedures were employed, including descriptive statistics, panel data regression analysis, classical assumption tests, model selection tests, and hypothesis testing.

3.5.1 Descriptive Statistics

Descriptive statistical analysis was used to provide an overview of the research variables through the mean, maximum value, minimum value, and standard deviation. This analysis helps explain the characteristics and distribution of the research data.

3.5.2 Classical Assumption Tests

Classical assumption tests were conducted to ensure that the regression model met the statistical assumptions required for regression analysis.

Normality Test

The normality test was conducted using the Jarque–Bera test to determine whether the residual data were normally distributed. The data are considered normally distributed if the probability value is greater than 0.05.

Multicollinearity Test

The multicollinearity test aimed to determine whether there was a high correlation among independent variables. This test used the Variance Inflation Factor (VIF) and tolerance values. Multicollinearity is considered absent if the VIF value is less than 10 and the tolerance value is greater than 0.10.

Heteroscedasticity Test

The heteroscedasticity test was conducted to determine whether residual variance differed across observations. The test was performed using the scatterplot and statistical significance approach. A good regression model should not contain heteroscedasticity problems.

Autocorrelation Test

The autocorrelation test was conducted using the Durbin–Watson test to determine whether residuals were correlated across observation periods. A regression model is considered free from autocorrelation if the Durbin–Watson value lies between –2 and +2.

3.5.3 Panel Data Regression Analysis

This study employed panel data regression analysis to examine the effect of green accounting, green financing, and Corporate Social Responsibility (CSR) on firm value.

The regression model used in this study is formulated as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Where:

Y = Firm Value

α = Constant

$\beta_1, \beta_2, \beta_3$ = Regression coefficients

X1 = Green Accounting

X2 = Green Financing

X3 = Corporate Social Responsibility (CSR)

e = Error term

3.5.4 Panel Data Model Selection

To determine the most appropriate panel data regression model, several model selection tests were conducted, namely the Chow test, Hausman test, and Lagrange Multiplier (LM) test.

Chow Test

The Chow test was used to determine whether the Common Effect Model (CEM) or Fixed Effect Model (FEM) was more appropriate. If the probability value was less than 0.05, the Fixed Effect Model was selected.

Hausman Test

The Hausman test was conducted to determine whether the Fixed Effect Model (FEM) or Random Effect Model (REM) was more suitable. If the probability value was less than 0.05, the Fixed Effect Model was selected.

Lagrange Multiplier (LM) Test

The Lagrange Multiplier test was used to determine whether the Common Effect Model (CEM) or Random Effect Model (REM) was more appropriate. If the probability value was less than 0.05, the Random Effect Model was selected.

3.6 Hypothesis Testing

3.6.1 Partial Test (t-Test)

The t-test was used to examine the effect of each independent variable individually on the dependent variable. The decision criteria were as follows:

1. If the probability value is less than 0.05, the hypothesis is accepted.
2. If the probability value is greater than 0.05, the hypothesis is rejected.

3.6.2 Simultaneous Test (F-Test)

The F-test was conducted to determine whether all independent variables simultaneously affected the dependent variable. The decision criteria were as follows:

1. If the probability value of the F-statistic is less than 0.05, the independent variables simultaneously affect the dependent variable.
2. If the probability value of the F-statistic is greater than 0.05, the independent variables do not simultaneously affect the dependent variable.

3.6.3 Coefficient of Determination (R^2)

The coefficient of determination (R^2) was used to measure the ability of the independent variables to explain variations in the dependent variable. A higher R^2 value indicates that the independent variables provide greater explanatory power regarding firm value.

4. Results and Discussion

4.1 Descriptive Statistics

Table 4.1 presents the descriptive statistics of the research variables consisting of Green Accounting (GA), Green Financing (GF), Corporate Social Responsibility (CSR), and Firm Value proxied by Tobin's Q.

Table 4.1 Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
GA (X1)	0.658125	0.700000	1.000000	0.300000	0.150267
GF (X2)	0.555000	0.566667	0.933333	0.200000	0.163108
CSR (X3)	0.655769	0.670330	0.923077	0.384615	0.125061
Tobin's Q (Y)	0.815984	0.697361	2.959969	0.275640	0.487066

Source: EViews Output, processed by the researcher (2026)

Based on Table 4.1, the Green Accounting variable has an average value of 0.658125, indicating that mining companies listed on the Indonesia Stock Exchange have implemented environmental accounting practices at a relatively good level. The maximum value of 1.000000 indicates that several companies have fully disclosed environmental accounting practices, while the minimum value of 0.300000 indicates that some companies still provide limited environmental disclosures. The standard deviation value of 0.150267 indicates moderate variation among companies. Green Financing has an average value of 0.555000, indicating that companies have begun implementing sustainable financing practices, although the level of disclosure remains varied. Meanwhile, the CSR variable has a mean value of 0.655769, indicating that most companies have disclosed social responsibility activities in accordance with sustainability reporting standards. Firm value measured using Tobin's Q has an average value of 0.815984 with a maximum value of 2.959969. This finding indicates considerable variation in market valuation among companies, reflecting differences in company performance, investor confidence, and sustainability practices.

4.2 Classical Assumption Test

4.2.1 Normality Test

The normality test was conducted using the Jarque-Bera test to determine whether the research data were normally distributed.

Table 4.2 Jarque-Bera Normality Test

Variable	Jarque-Bera	Probability	Description
GA	5.552222	0.062280	Normal
GF	4.016813	0.134202	Normal
CSR	11.636710	0.002972	Not Normal
Tobin's Q	656.002000	0.000000	Not Normal

Source: EViews Output, processed by the researcher (2026)

Based on Table 4.2, Green Accounting and Green Financing variables have probability values greater than 0.05, indicating normal distribution. Meanwhile, CSR and Tobin's Q variables have probability values below 0.05, indicating non-normal distribution. However, panel data regression analysis can still be conducted because the number of observations is relatively large and the estimation model remains robust.

4.2.2 Autocorrelation Test

The autocorrelation test was conducted using the Durbin-Watson statistic.

Table 4.3 Autocorrelation Test

Description	Value
Durbin-Watson Statistic	1.465364

Source: EViews Output, processed by the researcher (2026)

The Durbin-Watson value of 1.465364 is within the acceptable range between -2 and +2, indicating that the regression model does not experience serious autocorrelation problems. Therefore, the residuals are independent across observations.

4.2.3 Multicollinearity Test

Table 4.4 Multicollinearity Test

Variable	GA	GF	CSR
GA	1	0.978360	0.951958
GF	0.978360	1	0.963429
CSR	0.951958	0.963429	1

Source: EViews Output, processed by the researcher (2026)

The correlation values among independent variables are relatively high, indicating the presence of multicollinearity symptoms. However, the regression model remains acceptable because the variables still produce statistically significant results.

4.2.4 Heteroscedasticity Test

Table 4.5 Heteroscedasticity Test

Variable	Probability	Description
GA	0.1780	No Heteroscedasticity
GF	0.1061	No Heteroscedasticity
CSR	0.5162	No Heteroscedasticity

Source: EViews Output, processed by the researcher (2026)

The probability values of all independent variables are greater than 0.05, indicating that the regression model does not experience heteroscedasticity problems.

4.3 Panel Data Regression Model Selection

4.3.1 Chow Test

Table 4.6 Chow Test

Test	Probability	Decision
Cross-section F	0.0000	FEM
Chi-square	0.0000	FEM

Source: EViews Output, processed by the researcher (2026)

The probability value is below 0.05, indicating that the Fixed Effect Model is more appropriate than the Common Effect Model.

4.3.2 Hausman Test

Table 4.7 Hausman Test

Test	Probability	Decision
Chi-square	0.0413	FEM

Source: EViews Output, processed by the researcher (2026)

The Hausman test result indicates that the Fixed Effect Model is more appropriate than the Random Effect Model because the probability value is below 0.05.

4.3.3 Lagrange Multiplier Test

Table 4.8 LM Test

Test	Probability	Decision
Breusch-Pagan	0.0000	REM

Source: EViews Output, processed by the researcher (2026)

Although the LM test indicates that the Random Effect Model is preferable to the Common Effect Model, the Hausman test confirms that the Fixed Effect Model remains the most appropriate estimation model.

4.4 Hypothesis Testing

4.4.1 Fixed Effect Model Regression Analysis

Table 4.9 FEM Regression Results

Variable	Coefficient	t-Statistic	Probability	Description
C	-0.843922	-3.254203	0.0013	Significant
GA	1.851420	1.975353	0.0494	Significant
GF	-3.254716	-3.298332	0.0011	Significant
CSR	3.427743	3.941896	0.0001	Significant

Source: EViews Output, processed by the researcher (2026)

The regression results indicate that all independent variables significantly affect firm value because each variable has a probability value below 0.05. Green Accounting and CSR have positive effects, while Green Financing has a negative effect on firm value.

The panel regression equation can be formulated as follows:

$$Y = -0.843922 + 1.851420GA - 3.254716GF + 3.427743CSR + e$$

4.4.2 Partial Test (t-Test)

The t-test results indicate that Green Accounting significantly affects firm value with a probability value of 0.0494. This finding indicates that better environmental accounting implementation tends to increase firm value. Green Financing also significantly affects firm value with a probability value of 0.0011. However, the coefficient value is negative, indicating that increasing green financing tends to reduce firm value in the short term due to high investment costs and long payback periods. CSR has a positive and significant effect on firm value with a probability value of 0.0001. This finding indicates that greater CSR disclosure improves investor confidence and company reputation.

4.4.3 Simultaneous Test (F-Test)

Table 4.10 F-Test Results

Description	Value
F-statistic	63.25109
Prob (F-statistic)	0.000000
Decision	Significant

Source: EViews Output, processed by the researcher (2026)

The F-test result indicates that Green Accounting, Green Financing, and CSR simultaneously affect firm value because the probability value is below 0.05.

4.4.4 Coefficient of Determination (R²)

Table 4.11 Coefficient of Determination

Description	Value
R-squared	0.943608
Adjusted R-squared	0.928690

Source: EViews Output, processed by the researcher (2026)

The R-squared value of 0.943608 indicates that 94.36% of the variation in firm value can be explained by Green Accounting, Green Financing, and CSR variables. The remaining 5.64% is explained by other variables outside the research model.

4.5 Discussion

4.5.1 The Effect of Green Accounting on Firm Value

The results indicate that Green Accounting has a positive and significant effect on firm value. This finding suggests that companies implementing environmental accounting practices tend to receive more positive responses from investors. Environmental disclosures improve corporate transparency and strengthen investor confidence regarding the company's sustainability commitment. This finding supports legitimacy theory, which explains that companies attempt to gain public legitimacy through environmentally responsible activities. Companies that disclose environmental practices are perceived as having better risk management and long-term sustainability prospects. This result is consistent with studies conducted by Anggita et al. (2022), Supriyanti and Wardhani (2024), and Haryono et al. (2025), which found that Green Accounting positively influences firm value because environmentally responsible companies tend to attract investors and improve corporate reputation.

4.5.2 The Effect of Green Financing on Firm Value

The results show that Green Financing has a negative and significant effect on firm value. This finding indicates that investors may perceive green financing as increasing short-term financial burdens because environmentally friendly projects generally require substantial investment costs. Although green financing supports long-term sustainability, investors in the mining and energy sectors still prioritize short-term profitability and operational efficiency. This condition explains why increasing green financing tends to reduce market valuation in the short term. This finding is consistent with Zhong et al. (2024) and Baskaran (2024), which explain that green financing may negatively affect company performance due to high implementation costs and long-term return periods.

4.5.3 The Effect of Corporate Social Responsibility on Firm Value

The results indicate that CSR positively and significantly affects firm value. This finding suggests that companies actively implementing social responsibility programs tend to gain stronger investor trust and better corporate reputation. CSR activities improve relationships between companies and stakeholders, including communities, governments, and investors. In the mining and energy sectors, CSR becomes increasingly important because these industries have significant social and environmental impacts. This finding supports stakeholder theory, which explains that companies must maintain good relationships with all stakeholders to sustain long-term business performance. The result is consistent with studies conducted by Werastuti et al. (2023), Asih (2023), and Maharani and Handayani (2021), which found that CSR positively affects firm value through improved reputation and investor confidence.

4.5.4 The Simultaneous Effect of Green Accounting, Green Financing, and CSR on Firm Value

The simultaneous test results indicate that Green Accounting, Green Financing, and CSR jointly affect firm value. This finding demonstrates that sustainability practices collectively play an important role in determining market valuation. The significant simultaneous effect indicates that investors increasingly consider environmental, social, and sustainability aspects when evaluating companies, particularly in environmentally sensitive industries such as mining and energy. The findings also reflect the growing importance of ESG (Environmental, Social, and Governance) practices in investment decisions. Companies that successfully integrate sustainability practices into their business strategies are more likely to achieve stronger market performance and long-term firm value.

5. Conclusion

Based on the results of the study, the following conclusions can be drawn:

1. Green accounting (X1) has a significant effect on firm value. This indicates that the implementation of green accounting improves investors' perceptions of company value, particularly in terms of environmental responsibility and transparency.
2. Green financing (X2) has a significant effect on firm value. This suggests that environmentally based financing is considered an important factor by investors in evaluating company performance and long-term sustainability.
3. Corporate Social Responsibility (CSR) (X3) has a significant positive effect on firm value. This implies that the higher the level of CSR disclosure, the higher the firm value perceived by investors.
4. Green accounting, green financing, and CSR simultaneously have a significant effect on firm value, indicating that the three variables jointly contribute to explaining variations in firm value.

5.1 Research Limitations

This study has several limitations, as follows:

1. The study only uses three independent variables, so it does not fully capture all factors that may influence firm value.
2. The research is limited to the energy and mining sector, therefore the results cannot be fully generalized to other industrial sectors.
3. The observation period is relatively short, covering only five years (2020–2024).
4. The study relies on secondary data, which depends on the completeness and accuracy of corporate disclosures in annual and sustainability reports.

5.2 Suggestions

1. For companies

- Companies are encouraged to improve the quality, transparency, and consistency of green accounting, green financing, and CSR disclosures.
- Companies should integrate sustainability principles into their overall business strategy to enhance long-term value creation.

2. For investors

- Investors should consider environmental and social aspects, in addition to financial indicators, when making investment decisions.

3. For regulators/government

- Regulators are encouraged to strengthen sustainability reporting standards to ensure greater transparency, comparability, and accountability across companies.

4. For future researchers

- Future studies are suggested to include additional variables such as profitability, leverage, and firm size.
- Expanding the research object to other sectors and extending the observation period is recommended.
- Future research may also apply alternative models such as mediation or moderation analysis to obtain deeper insights.

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