

Firm Size Moderation on Green Accounting, Environmental Performance, Earnings Quality, and Financial Performance

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Abstract

Growing environmental concerns and increasing stakeholder expectations have encouraged companies to adopt sustainable business practices while improving financial performance. However, previous studies have reported inconsistent findings regarding the effects of green accounting, environmental performance, earnings quality, and firm size on financial performance. This study aims to examine the effects of green accounting, environmental performance, and earnings quality on financial performance and to investigate the moderating role of firm size. A quantitative approach was employed using secondary data from the annual and sustainability reports of mining companies listed on the Indonesia Stock Exchange during the 2021–2024 period. The sample was selected using purposive sampling, and the data were analyzed using panel data regression and Moderated Regression Analysis (MRA) were performed using EViews 12. The results indicate that green accounting and firm size have a positive and significant effect on financial performance, whereas environmental performance and earnings quality do not significantly affect financial performance. In addition, firm size negatively moderates the relationship between green accounting and financial performance as well as between environmental performance and financial performance, but it does not moderate the relationship between earnings quality and financial performance. These findings suggest that implementing green accounting contributes to better financial performance, although the financial benefits of environmental initiatives tend to decline as firm size increases due to higher environmental costs.

Keywords: Green Accounting; Environmental Performance; Earnings Quality; Financial Performance; Firm Size.

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INTRODUCTION

The increasing concern regarding sustainable development has transformed the role of companies from being solely focused on achieving financial objectives to also considering environmental responsibility and transparency in financial reporting (Mustofa & Murtanto, 2024). Companies are currently expected not only to generate profits but also to demonstrate their commitment to environmental sustainability and provide reliable financial information to stakeholders (Amalia et al., 2024). Financial performance remains an important indicator for assessing a company's ability to utilize its resources effectively and efficiently, as it provides valuable information for investors in evaluating future business prospects (Falih & Ifada, 2025). However, achieving strong financial performance while maintaining environmental responsibility has become a significant challenge, particularly for companies operating in industries with high environmental impacts (Safitri et al., 2025).

The mining sector represents one of the industries that faces considerable environmental challenges due to its intensive use of natural resources and potential negative consequences, including environmental degradation, waste generation, and ecosystem disruption (Fitriyani & Sungkar, 2024). In Indonesia, environmental issues related to mining activities have received increasing attention, especially during the 2021–2024 period, as stakeholders have become more aware of the importance of sustainable business practices (Suprihatin et al., 2025). The Corporate Performance Rating Program in Environmental Management (PROPER) issued by the Ministry of Environment and Forestry provides an overview of corporate environmental performance in Indonesia. The results of PROPER assessments indicate that many companies have not achieved optimal environmental management performance, with most companies still receiving blue ratings, while some companies continue to obtain red and black ratings (Setiawan et al., 2024). This condition illustrates that environmental management remains a critical issue, particularly in the mining sector, and highlights the need for companies to improve their environmental practices (Okterianda et al., 2025).

Along with increasing environmental concerns, companies are also required to provide high-quality financial reports, particularly earnings information that accurately reflects their actual economic performance (Syahzuni & Sari, 2022). Reliable earnings information is essential because investors and other stakeholders use financial statements as a basis for decision-making (Nianty et al., 2023). Therefore, companies need to balance environmental commitments with financial objectives. One approach that reflects this balance is the implementation of green accounting, which integrates environmental considerations into corporate accounting systems through the recognition, measurement, and disclosure of environmental-related activities and costs (Amal & Kholmi, 2025; Mustofa & Murtanto, 2024). Green accounting is expected to improve corporate transparency, strengthen stakeholder trust, and support sustainable financial performance (Harya Ningsi et al., 2024) & (Tambunan et al., 2025).

In addition to green accounting, environmental performance is another factor that may influence financial performance. Environmental performance reflects a company's ability to manage the environmental impacts arising from its operational activities through initiatives such as waste management, energy efficiency, pollution control, and environmental disclosure (Suharsono et al., 2026). Companies with better environmental performance may gain greater legitimacy and stakeholder support, potentially improving their competitiveness and financial outcomes (Mustofa & Murtanto, 2024). Furthermore, earnings quality is also considered an important

determinant of financial performance because it reflects the extent to which reported earnings represent the company's actual economic condition (Syahzuni & Sari, 2022). High-quality earnings provide more accurate information for decision-making and reduce information asymmetry between companies and stakeholders (Dewi & Muslim, 2022).

Firm size may also influence the relationship between these factors and financial performance. Larger companies generally possess greater financial resources, operational capabilities, and public visibility, allowing them to implement sustainability practices and improve reporting quality more effectively (Falih & Ifada, 2025). However, larger companies may also face greater pressure from stakeholders and higher environmental responsibilities due to their operational scale (Lonto et al., 2025). Therefore, firm size may strengthen or weaken the relationship between green accounting, environmental performance, earnings quality, and financial performance, making it an important variable to be examined as a moderator (Mulyanti et al., 2025).

Previous studies investigating the relationship between green accounting, environmental performance, earnings quality, and financial performance have shown inconsistent results. Ramadhani et al. (2022) and Dianty & Nurrahim (2022) found that green accounting has a positive effect on financial performance. Similar findings were also reported by Mustofa & Murtanto (2024) and Suprihatin et al. (2025), and Tambunan et al. (2025), who concluded that the implementation of Green Accounting enhances corporate financial performance through improved environmental accountability and stakeholder confidence. However, Safitri et al. (2025) argued that Green Accounting does not always significantly improve profitability because environmental investments often require substantial expenditures before generating long-term economic benefits. Regarding environmental performance, Mustofa & Murtanto (2024) found a positive relationship with financial performance, while Falih & Ifada (2025) found no significant effect. More recent studies by Amal & Kholmi (2025) and Okterianda et al. (2025) also suggest that the financial benefits of environmental initiatives are frequently realized only over the long term. Similar inconsistencies have also been identified in studies examining earnings quality. Syahzuni & Sari, (2022), Dewi & Muslim. (2022), and Nianty et al. (2023) reported differing findings regarding the relationship between earnings quality and financial performance. These inconsistencies indicate the existence of a research gap that requires further investigation, particularly by considering firm size as a moderating variable in the context of mining companies.

Based on the theoretical considerations and empirical gaps identified above, this study aims to examine the effects of green accounting, environmental performance, and earnings quality on financial performance, with firm size as a moderating variable, in mining companies listed on the Indonesia Stock Exchange during the 2021–2024 period. This study is expected to contribute to the development of environmental accounting and financial performance literature and provide practical insights for companies, investors, and stakeholders regarding the role of sustainability practices and financial information quality in improving corporate financial performance (Mustofa & Murtanto, 2024).

Based on the objectives of this study, the hypotheses are formulated as follows:

H1: Green Accounting has a positive effect on financial performance.

H2: Environmental performance has a positive effect on financial performance.

H3: Earnings quality has a positive effect on financial performance.

H4: Firm size has a positive effect on financial performance.

H5: Firm size moderates the relationship between Green Accounting and financial

performance.

H6: Firm size moderates the relationship between environmental performance and financial performance.

H7: Firm size moderates the relationship between earnings quality and financial performance.

METHODS

Study design and setting

This study employed a quantitative research approach using an explanatory research design to examine the relationships between green accounting, environmental performance, earnings quality, and financial performance, with firm size as a moderating variable. The quantitative approach was selected because this study uses numerical data and statistical analysis to test the proposed hypotheses and determine the causal relationships among research variables.

The study was conducted on mining companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period. The research setting was selected because the mining sector is considered one of the industries with significant environmental impacts due to intensive natural resource utilization. Therefore, this sector provides an appropriate context for examining the relationship between environmental accounting practices, environmental performance, financial information quality, and corporate financial performance.

Population, samples and sampling

The population of this study consisted of all mining companies listed on the Indonesia Stock Exchange (IDX) during the 2021–2024 period. Based on IDX data, there were 93 mining companies included in the population. The sample was selected using a purposive sampling technique based on predetermined inclusion criteria. The inclusion criteria applied in this study were:

Table 1. Sample Criteria

Criteria	Amount
Mining companies listed on the Indonesia Stock Exchange (IDX) for the 2021–2024 period.	93
Companies that received a PROPER rating or disclosed environmental information in accordance with the GRI 300 Series standards in their annual reports or sustainability reports.	13
Total Sample Companies	13
Total Observations (Total Sample × Number of Research Periods) (13 × 4)	52

Companies that did not provide complete information related to the research variables were excluded from the sample. Based on these criteria, 13 mining companies were selected as research samples, resulting in 52 firm-year observations (13 companies × 4 years).

The variables examined in this study consisted of financial performance as the dependent variable, green accounting, environmental performance, and earnings quality as independent variables, and firm size as a moderating variable.

Instruments and criteria

This study used secondary data obtained through document analysis of annual reports, sustainability reports, and financial statements published by the sampled companies.

Table 2. Operational Variables

Variable	Variable Definition	Indicator	Scale
Financial Performance (Y)	Financial performance reflects a company's ability to generate profits and create value for shareholders while ensuring business sustainability.	$ROA = \frac{\text{Net Income}}{\text{Total Assets}} \times 100\%$	Ratio
Green Accounting (X1)	Green accounting refers to an accounting practice that incorporates environmental impacts and environmental information into financial reporting, with an emphasis on enhancing corporate environmental accountability and transparency.	PROPER: • Gold = 5 • Green = 4 • Blue = 3 • Red = 2 • Black = 1	Ordinal
Environmental Performance (X2)	Environmental performance refers to the outcomes of a company's environmental management strategies, reflected in its environmental investments and costs to minimize operational impacts.	$EDI = \frac{\text{Number of Items Disclosure}}{\text{Total Number of Disclosure It}}$	Nominal
Earnings Quality (X3)	Earnings quality reflects the ability of reported earnings to accurately represent a company's economic condition, be predictable, and be free from manipulation.	$KL = \frac{\text{Operating Cash Flow}}{\text{Net Income}}$	Ratio
Firm Size (Z)	Firm size reflects the scale of a company's operations and resources. Larger firms generally have greater managerial capacity and higher reporting transparency.	$FS = \ln(\text{Net Income})$	Ratio

Procedure and data collection

The research procedure began with selecting mining companies listed on the Indonesia Stock Exchange during the 2021–2024 period based on predetermined purposive sampling criteria. Secondary data were collected from annual reports, sustainability reports, and financial statements obtained from the IDX website and company websites. The collected data were then classified according to the measurement indicators of each variable. Environmental disclosure was measured using content analysis based on the GRI 300 Series indicators, while financial data were processed to calculate financial performance, earnings quality, and firm size.

Statistical analysis

The data were analyzed using EViews 12 software. Descriptive statistics were first conducted to describe the characteristics of the research variables. Panel data regression analysis was then applied to examine the effects of green accounting, environmental performance, and earnings quality on financial performance. The appropriate regression model was determined through the Chow test, Hausman test, and Lagrange Multiplier (LM) test. Hypothesis testing was conducted using the t-test, F-test, and coefficient of determination (R^2). The moderating effect of firm size was examined using Moderated Regression Analysis (MRA) through interaction variables between firm size and each independent variable.

Ethical considerations

Ethical approval was not required because this study used publicly available secondary data without human participants.

RESULTS

Table 3. Descriptive Statistics

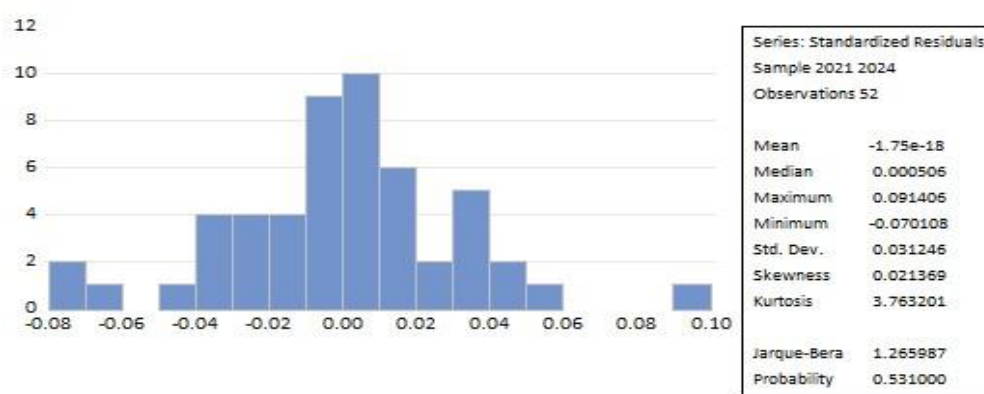
	GA	EP	EQ	ROA	SIZE
Mean	3.865385	0.848750	0.897272	0.078994	18.74593
Median	4.000000	0.857000	0.634385	0.065900	20.35995
Maximum	5.000000	1.000000	3.592100	0.275800	22.89870
Minimum	3.000000	0.571000	0.208800	-	10.12170
				0.035000	
Std. Dev	0.840841	0.131042	0.728153	0.077585	3.442640

Based on the descriptive statistics of 52 observations, financial performance (ROA) has a mean value of 0.078994, with a maximum value of 0.275800 and a minimum value of -0.035000, indicating variations in the profitability of mining companies during the study period. Green Accounting (X1) has a mean value of 3.865385, ranging from 3.000000 to 5.000000, reflecting differences in the implementation of green accounting practices. Environmental Performance (X2), measured by the Environmental Disclosure Index, has a mean value of 0.848750, with values ranging from 0.571000 to 1.000000, indicating a relatively high level of environmental disclosure. Earnings Quality (X3) has a mean value of 0.897272, ranging from 0.208800 to 3.592100, indicating variations in the quality of reported earnings. Meanwhile, Firm Size (Z) has a mean value of 18.74593, with values ranging from 10.12170 to 22.89870, reflecting differences in company scale among the sampled mining companies.

Table 4. Recapitulation of Model Test Results

Test Name	Model Testing	Probability Value	Selected Models
Chow Test	CEM or FEM	0,0000	FEM
Hausman Test	REM or FEM	0,0026	FEM

Based on the panel data model selection, the Chow test resulted in a probability value of 0.0000, which is lower than the 0.05 significance level. This result indicates that the Fixed Effect Model (FEM) is more suitable than the Common Effect Model (CEM). In addition, the Hausman test produced a probability value of 0.0026, which is also below 0.05, indicating that the Fixed Effect Model (FEM) is more appropriate than the Random Effect Model (REM). Therefore, the Fixed Effect Model (FEM) was selected as the panel data regression model in this study

**Figure 1.** Normality Test (FEM) Result

The normality test showed a Jarque-Bera value of 1.265987 and a probability value of 0.531000 (> 0.05). These results indicate that the residuals are normally distributed, suggesting that the regression model meets the normality assumption and can be used for further analysis.

Table 5. Multicollinearitas (FEM) Test Result

	GA	EP	KL	SIZE
GA	1.000000	-0.315645	-0.003015	-0.677739
EP	-0.315645	1.000000	0.054072	0.075347
EQ	-0.003015	0.054072	1.000000	-0.252696
SIZE	-0.677739	0.075347	-0.252696	1.000000

The multicollinearity test results showed that all correlation values among the independent variables were below 0.80, indicating that the model does not suffer from multicollinearity. The highest correlation value was found between green accounting and firm size (-0.677739), while the lowest correlation value was between green accounting and earnings quality (-0.003015). Therefore, there is no strong correlation among the independent variables, and the regression model is suitable for further analysis.

Table 6. Multiple Regression (FEM) Analysis Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.447583	0.125458	3.567697	0.0011
GA	-0.058902	0.023666	-2.488937	0.0177
EP	-0.196503	0.063146	-3.111879	0.0037
EQ	-0.018964	0.016590	-1.143071	0.2608
SIZE	0.002288	0.003596	0.636202	0.5288

$$Y = 0.447583 - 0.058902X_1 - 0.196503X_2 - 0.018964X_3 + 0.002288Z + e$$

The regression results show a constant value of 0.447583, indicating the level of financial performance when all independent variables are held constant. The coefficients of green accounting (-0.058902), environmental performance (-0.196503), and earnings quality (-0.018964) are negative, suggesting an inverse relationship with financial performance. In contrast, firm size has a positive coefficient of 0.002288, indicating that larger firms tend to have better financial performance.

Table 7. Multiple Regression (FEM) Analysis Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.447583	0.125458	3.567697	0.0011
GA	-0.058902	0.023666	-2.488937	0.0177
EP	-0.196503	0.063146	-3.111879	0.0037
EQ	-0.018964	0.016590	-1.143071	0.2608
SIZE	0.002288	0.003596	0.636202	0.5288

Based on the partial test results obtained from the Fixed Effect Model (FEM), each independent variable has a different effect on financial performance. Green accounting (X_1) has a t-statistic value of -2.488937 with a significance value of 0.0177 ($p < 0.05$), indicating that green accounting has a negative and significant effect on financial performance. This finding suggests that a higher level of green accounting implementation tends to be associated with lower financial performance.

Environmental performance (X_2) has a t-statistic value of -3.111879 with a significance value of 0.0037 ($p < 0.05$), indicating a negative and significant effect on financial performance. This finding suggests that higher environmental performance is associated with lower financial performance during the study period.

Earnings quality (X_3) has a t-statistic value of -1.143071 and a significance value of 0.2608 ($p > 0.05$). This result indicates that earnings quality does not significantly affect financial performance. Although the coefficient is negative, the effect is too weak to explain changes in the companies' financial performance.

Firm size (Z) has a t-statistic value of 0.636202 and a significance value of 0.5288 ($p > 0.05$), indicating that firm size does not have a significant effect on financial performance. Although the regression coefficient is positive, changes in firm size do not explain the variation in financial performance among mining companies during the study period.

Table 8. Determination Coefficient (FEM) Test Results

Weighted Statistics			
R-squared	0.837809	Mean dependent var	2.062664
Adjusted R-squared	0.763665	S.D. dependent var	3.403433

S.E. of regression	0.037717	Akaike info criterion	4.953456
Sum squared resid	0.049791	Schwarz criterion	5.855916
Log likelihood	106.9457	Hannan-Quinn criter	5.317571
F-statistic	11.29972	Durbin-Watson stat	1.824521
Prob(F-statistic)	0.000000		

Before the moderating effect was tested, the adjusted R-squared value was 0.763665 or 76.37%. This indicates that green accounting, environmental performance, earnings quality, and firm size explain 76.37% of the variation in financial performance, while the remaining 23.63% is explained by other factors not included in this study. In addition, the Prob (F-statistic) value of 0.000000, which is lower than 0.05, indicates that all independent variables jointly affect financial performance. Therefore, the research model is considered appropriate for hypothesis testing.

Table 9 Results of Moderation Regression (FEM) Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.043436	0.787863	-2.593644	0.0142
GA	0.486976	0.195743	2.487837	0.0183
EP	0.674932	0.412605	1.635782	0.1117
EQ	-0.170939	0.108077	-1.581638	0.1236
SIZE	0.133607	0.041547	3.215801	0.0030
MOD_GA	-0.028653	0.010207	-2.807098	0.0084
MOD_EP	-0.048903	0.022683	-2.155945	0.0387
MOD_EQ	0.007210	0.005878	1.226623	0.2289

$$Y = -2.04336 - 0.486976X_1 + 0.674932X_2 - 0.170939X_3 + 0.133607Z - 0.028653(X_1*Z) - 0.048903(X_2*Z) + 0.007210(X_3*Z) + e$$

In this model, financial performance is measured by Return on Assets (ROA), while green accounting, environmental performance, and earnings quality serve as the independent variables. Firm size acts as the moderating variable, and the interaction terms are used to examine whether firm size moderates the relationship between each independent variable and financial performance. The constant value of -2.04336 indicates that when all independent, moderating, and interaction variables are assumed to be zero, the baseline value of financial performance is -2.04336.

The regression coefficients indicate different relationships among the variables. Green accounting has a positive coefficient of 0.486976, suggesting that a higher level of green accounting implementation tends to improve financial performance. In contrast, environmental performance and earnings quality have negative coefficients of -0.674932 and -0.170939, respectively, indicating that increases in these variables tend to reduce financial performance. Meanwhile, firm size has a positive coefficient of 0.133607, suggesting that larger firms tend to have better financial performance.

From the moderating perspective, the interaction between green accounting and firm size has a coefficient of -0.028653, indicating that firm size tends to weaken the relationship between green accounting and financial performance. Similarly, the interaction between environmental performance and firm size has a coefficient of -0.048903, suggesting that firm size also weakens the relationship between

environmental performance and financial performance. Meanwhile, the interaction between earnings quality and firm size has a positive coefficient of 0.007210, indicating that firm size tends to strengthen the relationship between earnings quality and financial performance, although the effect is not statistically significant.

Table 10. Statistical Test Results (FEM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.043436	0.787863	-2.593644	0.0142
GA	0.486976	0.195743	2.487837	0.0183
EDI	0.674932	0.412605	1.635782	0.1117
KL	-0.170939	0.108077	-1.581638	0.1236
SIZE	0.133607	0.041547	3.215801	0.0030
MOD_GA	-0.028653	0.010207	-2.807098	0.0084
MOD_EP	-0.048903	0.022683	-2.155945	0.0387
MOD_EQ	0.007210	0.005878	1.226623	0.2289

Based on the results of the Moderated Regression Analysis (MRA), green accounting has a positive and significant effect on financial performance ($\beta = 0.486976$; $p = 0.0183$). Meanwhile, environmental performance has a negative but insignificant effect on financial performance ($\beta = -0.674932$; $p = 0.1117$). Similarly, earnings quality shows a negative and insignificant effect on financial performance ($\beta = -0.170939$; $p = 0.1236$). In addition, firm size has a positive and significant effect on financial performance ($\beta = 0.133607$; $p = 0.0030$).

In the moderation model, the interaction between green accounting and firm size has a negative and significant coefficient ($\beta = -0.028653$; $p = 0.0084$), indicating that firm size moderates the relationship between green accounting and financial performance. Likewise, the interaction between environmental performance and firm size is also negative and significant ($\beta = -0.048903$; $p = 0.0387$), suggesting that firm size moderates the relationship between environmental performance and financial performance. In contrast, the interaction between earnings quality and firm size is not significant ($\beta = 0.007210$; $p = 0.2289$), indicating that firm size does not moderate the relationship between earnings quality and financial performance.

Table 11. Determination Coefficient (FEM) Test Results

Weighted Statistics			
R-squared	0.877524	Mean dependent var	0.078994
Adjusted R-squared	0.804803	S.D. dependent var	0.077585
S.E. of regression	0.034278	Akaike info criterion	-3.624920
Sum squared resid	0.037599	Schwarz criterion	-2.874441
Log likelihood	114.2479	Hannan-Quinn criter	-3.337204
F-statistic	12.06709	Durbin-Watson stat	3.141952
Prob(F-statistic)	0.000000		

Based on the coefficient of determination test after including the moderating variable, the adjusted R-squared value is 0.804803. This result indicates that green accounting (X₁), environmental performance (X₂), earnings quality (X₃), and firm size (Z) explain 80.4% of the variation in financial performance (Y), while the remaining 19.6% is explained by other factors that are not included in this study.

DISCUSSION

The Effect of Green Accounting on Financial Performance

The results indicate that Green Accounting has a positive and significant effect on financial performance, suggesting that companies with better environmental accounting practices tend to achieve superior financial outcomes. According to stakeholder theory, companies are responsible not only to shareholders but also to other stakeholders, including investors, government, society, and the environment (Freeman, 1984). Through environmental cost management and transparent environmental disclosure, Green Accounting enhances stakeholder trust and strengthens corporate reputation (Suprihatin et al., 2025). In line with legitimacy theory, companies that demonstrate environmental responsibility are more likely to gain public acceptance (Suchman, 1995). Similarly, signaling theory suggests that Green Accounting sends a positive signal regarding a company's commitment to sustainability and good corporate governance, thereby increasing investor confidence (Spence, 1973). These factors ultimately contribute to improved financial performance (Tambunan et al., 2025). These findings are consistent with previous studies by Ramadhani et al. (2022), Dianty & Nurrahim. (2022), Mustofa & Murtanto. (2024), Suprihatin et al. (2025) and Lonto et al. (2025), Nianty et al. (2023), (Maharani et al., 2024) (Renaldi & Suantha, 2025) which also reported a positive effect of Green Accounting on financial performance. This finding suggests that Green Accounting should be regarded as a strategic investment that enhances stakeholder confidence and supports long-term business performance rather than merely fulfilling regulatory requirements. In the authors' opinion, Green Accounting serves as a strategic tool to improve stakeholder confidence and strengthen long-term financial performance.

The Effect of Environmental Performance on Financial Performance

The results indicate that environmental performance has a positive but insignificant effect on financial performance, suggesting that higher environmental performance is associated with higher financial performance, although the effect is not statistically significant. This may occur because improving environmental performance requires substantial investments in waste management, pollution control, and environmentally friendly technologies, which increase operational costs (Amal & Kholmi, 2025). Based on stakeholder and legitimacy theories, companies improve their (Isnaini & Liyundira, 2025) environmental performance to meet stakeholder expectations and maintain social legitimacy. However, the financial benefits of these initiatives are generally realized over the long term rather than immediately (Mulyanti et al., 2025). Similarly, Mulyanti et al., (2025) found that environmental costs and environmental performance require substantial financial resources, limiting their immediate contribution to corporate profitability. This finding is consistent with Okterianda et al. (2025) who also reported that environmental performance does not necessarily improve financial performance in the short term (Al-Mawali, 2021). This finding suggests that, particularly in the mining sector, environmental investments should be viewed as long-term strategic initiatives although their financial benefits may not be immediately realized. In the authors' opinion, the insignificant effect may be attributed to the high environmental costs incurred in the short term, which may limit the immediate financial benefits of environmental initiatives.

The Effect of Earnings Quality on Financial Performance

The results show that earnings quality does not have a significant effect on financial performance, indicating that variations in earnings quality did not influence the financial performance of mining companies during the study period. This may be because investors consider various factors beyond earnings quality, such as profitability, commodity prices, industry conditions, corporate stability, and future growth prospects when making investment decisions Syahzuni & Sari. (2022). Furthermore, fluctuations in operating cash flows caused by changes in commodity prices and global market conditions may limit the ability of earnings quality to reflect the overall financial condition of mining companies Nianty et al. (2023). Based on stakeholder, legitimacy, and signaling theories, high-quality earnings are expected to provide reliable information that supports investor confidence. However, the findings indicate that earnings quality did not provide a sufficiently strong signal to improve financial performance. This result is consistent with Syahzuni & Sari. (2022), who also found no significant relationship between earnings quality and financial performance. These findings suggest that investors place greater emphasis on overall business performance and future prospects than on earnings quality alone when evaluating mining companies. In the authors' opinion, earnings quality alone is insufficient to improve financial performance, as investors tend to consider broader financial and operational factors.

The Effect of Firm Size on Financial Performances

The findings of this study indicate that firm size has a positive and significant effect on financial performance. This suggests that larger firms are more likely to achieve better financial performance than smaller firms. Companies with larger total assets generally have greater resources, stronger operational capacity, and better access to external financing. These advantages enable them to improve operational efficiency, expand their business activities, and generate higher profits. In addition, larger firms are often perceived as being more financially stable and having stronger long-term prospects, which increases investor confidence. From the perspective of signaling theory, firm size serves as a positive signal of a company's ability to sustain its operations and create value in the future. Stakeholder theory also suggests that larger companies face greater expectations from their stakeholders. As a result, they are encouraged to improve their performance in order to meet these expectations and maintain strong relationships with various stakeholder groups. Therefore, larger firms have a greater opportunity to strengthen their financial performance. These findings are consistent with those of Angelina and Nursasi (2021), who also found that firm size has a positive effect on corporate financial performance. In the authors' opinion, larger firms have greater financial resources and operational capacity, enabling them to improve efficiency and maintain better financial performance than smaller firms.

The Effect of Firm Size in Moderating the Relationship between Green Accounting and Financial Performance.

The analysis shows that firm size significantly moderates the relationship between Green Accounting and financial performance. Based on stakeholder theory, larger firms are expected to respond to greater demands from investors, regulators, and society by adopting environmentally responsible business practices. These companies are generally under greater public scrutiny and are therefore more likely to implement Green Accounting as part of their sustainability strategy. Despite these expectations, the moderating effect of firm size is negative, indicating that the positive influence of

Green Accounting on financial performance becomes weaker as firm size increases. A possible explanation is that larger firms incur substantially higher costs in implementing Green Accounting, including environmental management, pollution control, compliance, and environmental reporting. Although these investments support environmental responsibility and regulatory compliance, they may place additional pressure on short-term profitability. Furthermore, while large firms possess greater financial and operational resources, the economic benefits of Green Accounting are often realized only in the long run through improved reputation, stronger stakeholder relationships, and enhanced competitive advantage. Consequently, the interaction between Green Accounting and firm size significantly weakens its impact on financial performance during the period of observation. In the authors' opinion, the negative moderating effect suggests that larger firms incur higher environmental management and compliance costs. Consequently, the short-term financial benefits of Green Accounting become less pronounced as firm size increases.

The Effect of Firm Size in Moderating the Relationship between Environmental Performance and Financial Performance.

The results indicate that firm size significantly moderates the relationship between environmental performance and financial performance. From the perspective of legitimacy theory, larger firms receive greater public attention and are therefore expected to demonstrate stronger environmental responsibility. As a result, they tend to invest more resources in improving their environmental performance to maintain public trust and social legitimacy. However, the findings suggest that firm size weakens the effect of environmental performance on financial performance. One possible explanation is that larger firms incur higher costs in achieving better environmental performance, including expenditures on waste management, pollution control, and investments in environmentally friendly technologies. In the mining industry, these environmental investments can substantially increase operating costs, reducing the short-term financial benefits associated with improved environmental performance. Therefore, although the interaction between environmental performance and firm size is statistically significant, it weakens the relationship between environmental performance and financial performance. This suggests that, for larger mining companies, the financial burden of environmental initiatives may outweigh their immediate economic benefits, while the positive returns are more likely to be realized over a longer period. In the authors' opinion, larger mining companies require greater environmental investments to meet stakeholder expectations and regulatory requirements. As a result, these additional costs weaken the positive contribution of environmental performance to financial performance in the short term.

The Effect of Firm Size in Moderating the Relationship between Earnings Quality and Financial Performance.

The results of this study indicate that firm size does not moderate the relationship between earnings quality and financial performance. From the perspective of signaling theory, high-quality earnings are expected to provide a positive signal to investors by reflecting a company's actual financial condition and future prospects. However, the findings suggest that firm size neither strengthens nor weakens the effect of earnings quality on financial performance. This result indicates that the role of earnings quality in influencing financial performance is not affected by whether a company is large or small. Instead, investors and other stakeholders appear to place greater emphasis on

factors such as profitability, industry conditions, commodity prices, and future growth prospects when evaluating a company's performance. In the mining sector, where business activities are characterized by high uncertainty and are heavily influenced by fluctuations in commodity prices, earnings quality may not be the primary factor driving financial performance regardless of firm size. As a result, the interaction between earnings quality and firm size does not have a significant effect on financial performance. These findings suggest that firm size does not alter the relationship between earnings quality and financial performance in mining companies. Furthermore, the results are inconsistent with previous studies that reported a significant moderating role of firm size in the relationship between earnings quality and financial performance. In the authors' opinion, firm size does not influence the relationship between earnings quality and financial performance because investors tend to prioritize profitability, operational performance, and future growth over earnings quality alone.

CONCLUSIONS

This study examines the effects of Green Accounting, environmental performance, and earnings quality on financial performance, with firm size as a moderating variable in mining companies listed on the Indonesia Stock Exchange during 2021–2024. The findings show that Green Accounting positively and significantly affects financial performance, supporting H1, while environmental performance has a positive but insignificant effect, leading to the rejection of H2. In contrast, earnings quality does not significantly influence financial performance, leading to the rejection of H3.

The results also indicate that firm size has a positive and significant effect on financial performance, supporting H4. Furthermore, firm size weakens the relationship between Green Accounting and financial performance as well as the relationship between environmental performance and financial performance, supporting H5 and H6. However, firm size does not moderate the relationship between earnings quality and financial performance, resulting in the rejection of H7.

Overall, the findings suggest that Green Accounting contributes to better financial performance, whereas environmental initiatives may not immediately translate into financial benefits due to their implementation costs. In addition, firm size influences the effectiveness of environmental strategies but does not alter the relationship between earnings quality and financial performance. These findings provide useful insights for companies in balancing environmental responsibility with sustainable financial performance.

CONFLICT OF INTEREST

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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DECLARATION OF ARTIFICIAL INTELLIGENCE USE

This study used artificial intelligence (AI) tools and methodologies in the following capacities:

Manuscript writing support: AI-based language models, such as ChatGPT, was employed to:

1. Language refinement to improving the grammar, sentence structure, and readability of the manuscript.
2. Content summarization to assisting in summarizing the findings and conclusions concisely.
3. Technical writing assistance to providing suggestions for structuring complex technical descriptions more effectively.
4. Generate scientific content, interpret data, and draw conclusions.

PLUS

We confirm that all AI-assisted processes were critically reviewed by the authors to ensure the integrity and reliability of the results. The final decisions and interpretations presented in this article were solely made by the authors.

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