



Does Green Accounting Matter for Financial Performance? Evidence from the Indonesia Mining Sector

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ABSTRACT

This study examines the influence of green accounting–environmental cost, environmental disclosure, and environmental performance–on the financial performance of companies in the mining sector. The population were mining companies listed on the Indonesia Stock Exchange from 2020 to 2023. The samples were selected using the purposive technique and the number of observations is 144 firm-years. Using the multiple regression method, this study revealed that green accounting positively affects the financial performance of the sample companies. Disclosure and environmental performance positively impact financial performance, while the effect of environmental costs on financial performance is not significant.

Apakah Akuntansi Hijau Berpengaruh pada Kinerja Keuangan? Bukti dari Sektor Pertambangan Indonesia

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ABSTRAK

Penelitian ini menguji pengaruh akuntansi hijau-biaya lingkungan, pengungkapan lingkungan, dan kinerja lingkungan-terhadap kinerja keuangan perusahaan. Populasi dalam penelitian ini adalah perusahaan pertambangan yang terdaftar di Bursa Efek Indonesia dari tahun 2020-2023. Dengan menggunakan teknik purposive sampling, jumlah observasi adalah 144 observasi. Data dianalisis dengan menggunakan analisis regresi berganda. Hasil penelitian menunjukkan bahwa akuntansi hijau berpengaruh positif terhadap kinerja keuangan perusahaan di sektor pertambangan yang terdaftar di Bursa Efek Indonesia. Secara parsial, pengungkapan dan kinerja lingkungan berpengaruh positif terhadap kinerja keuangan. Sebaliknya, biaya lingkungan berpengaruh terhadap kinerja keuangan secara tidak signifikan.

1. Introduction

The financial performance of the mining sector is often unstable due to major factors affecting sales or inventory such as dependence on commodities, external factors, and environmental volatility (Mancini & Sala, 2018). Commodity prices often fluctuate significantly caused by global market factors such as demand and supply, the global energy crisis, government policies, geopolitical situations,

and commodity price volatility (Zhang et al., 2022). Price fluctuations, government policies regarding industry regulation, and changing market needs have a direct impact on the instability of financial well-being (Jamin et al., 2023). However, some advantages make financial performance more attractive due to higher revenues (Sun & Hasi, 2024). These fluctuations in financial performance are described in Table 1.

Table 1. Return on assets of mining companies Indonesia in 2020-2023

Code of share	ROA 2020	ROA 2021	ROA 2022	ROA 2023
MBSS	-7.69%	6.84%	12.13%	9.97%
ABMM	-4.56%	17.96%	17.25%	14.63%
MYOH	14.91%	16.44%	8.32%	7.81%
FIRE	2.73%	-9.29%	-25.99%	3.47%
BIPI	2.01%	2.30%	2.16%	1.88%

Source: Data processed from the company's financial statements (2024)

Table 1 shows the profitability fluctuation of the mining sector from 2020 - 2023. These fluctuations occurred due to changes in environmental policies and regulations related to environmental protection (Sun & Hasi, 2024). Some important aspects of environmental policy include environmental requirements, exploration restrictions, and fines or sanctions for violators. Environmental policy is related to PROPER (Corporate Performance Rating Program in Environmental Management) issued by the Ministry of Environment and Forestry of the Republic of Indonesia. This policy is also reinforced by the decision of the United Nations (UN) conference in 2022. The policy is intended to reduce the negative impact of mining on the environment, however, it imposes additional costs on mining companies, such as waste management costs because the mining sector is one of the causes of environmental damage and damage to human resources.

Waste management costs in mining companies affect fluctuations in profit growth (Badakhshan et al., 2023). According to the earth.org report (2022), environmental damage still occurs in many mining areas. Pollution generated by mining companies is one of the factors that can affect fluctuations in financial performance. Mining companies pay more attention to the environment and its impact. Quoted from the Ministry of Energy and Mineral Resources (ESDM) in 2023, there was an increase in Acute Respiratory Infection (ARI), Asthma, Tuberculosis (TBC), heart disease, stroke, cancer and stunting. The company is committed to addressing social and environmental issues as an important part of its operations (Wu & Tham, 2023). To reduce and treat waste, a company sacrifices higher costs

(Badakhshan et al., 2023). Reporting environmental aspects in the company's financial statements are the duties of accountants in corporate environmental and social responsibility (Ortiz-Martínez et al., 2023). The practice used is called green accounting. Green accounting identifies, measures, assesses and discloses costs associated with company activities related to the environment (Chang et al., 2024) and becomes a factor that affects financial performance (Dura & Suharsono, 2022). The application of green accounting is written in Government Regulation No. 47 of 2012 Article 2 concerning Social and Environmental Responsibility of Limited Liability Companies which explains the practice of green accounting, environmental preservation, including green accounting in the annual work plan, reporting green accounting practices in the annual report, reporting green accounting to shareholders. The application of green accounting focuses on measuring the environmental costs and benefits resulting from company activities (Gonzalez & Vines, 2023). The application of green accounting can increase the efficiency of resource use and minimize environmental risks.

The application of green accounting focuses on measuring the environmental costs and benefits resulting from a company's activities, reflecting the importance of environmental responsibility in the company's overall strategy as seen from the growing accounting practices (Gonzalez & Vines, 2023). Companies improve resource use efficiency and minimize environmental risks by implementing green accounting practices. Mining companies need green accounting to help management ensure compliance with sustainable development responsibilities in their business objectives (Melenia

et al., 2023). The more complete the disclosure of green accounting, the more impact it has on investors' investment decisions so that it can increase company profitability (Dura & Suharsono, 2022).

This study examines the effect of the whole concept of green accounting – environmental costs, environmental disclosure, and environmental performance – on financial performance in one comprehensive model to catch the effect of green accounting as a whole on financial performance. Several prior studies showed varying results regarding these influences partially. Previous research by Al-Mawali (2021) illustrated that the effect of environmental costs and environmental disclosure on the company's financial performance is positive and significant. This is in line with results by Indayani & Wandira (2022); Abban & Hasan (2021); and Diantimala (2018) which stated that environmental disclosure and performance affect the company's financial performance. In contrast, Riyadh et al., (2020) stated that the effect of environmental costs and disclosure on corporate financial performance is significant. Previous research took research samples from the year before COVID-19, when companies were just starting to pay attention to environmental impacts so the accounting reporting applied had not focused on green accounting. While this study tested samples during and after COVID-19, many companies began to focus on implementing “green recovery” policies that benefited the company. Therefore, the study contributes to the growing literature on green accounting and financial performance.

2. Theoretical Framework and hypotheses development

Stakeholder theory was introduced by Robert Edward Freeman (Dmytriiev et al., 2021). Freeman (1983) describes stakeholders as individuals or groups with an interest or are affected by the company's decisions and activities. Stakeholders are all parties that affect the company's operations such as customers, employees, shareholders, competing

companies, government, and society (Dmytriiev et al., 2021).

Stakeholder theory asserts that companies operate not only in their interests but for the benefit of other stakeholders (Hörisch et al., 2020). Companies must be able to meet current and future stakeholder expectations to achieve business sustainability (Fobbe & Hilletoft, 2021). So that by fulfilling stakeholder interests and expectations, the company's reputation can increase and have a positive impact on financial performance (Bose et al., 2021). Efforts that companies can make to fulfil stakeholder interests include disclosing economic, social and environmental information (Currás-Pérez et al., 2018).

Financial performance

Financial performance is a description of the financial position of a company in a certain period, both in terms of raising funds and allocating capital according to Financial Accounting Standards (SAK) Generally Accepted Accounting Principles (GAAP) and other regulations (Amilin, 2017). Information about financial performance can be identified from the balance sheet, profit and loss, cash flow, and other factors that help in evaluating financial performance. The analysis is used to evaluate financial statements through ratio calculations. Ratio analysis is an analysis used to express a certain relationship between one number and another from a financial statement which includes (Seto et al., 2023). The most dominant financial ratios used as a reference to see financial performance are liquidity, solvability, and profitability ratios (Fahmi, 2012). In this study, the ratio used to measure financial performance is the profitability ratio. The profitability ratio used in this study is the Return on Assets (ROA). ROA is a financial ratio used to measure the ability to generate profits from the assets owned by the company (Włodarczyk et al., 2024). This ratio is important in determining the extent of the company's ability to generate profits from operating and non-operating activities.

Environmental cost

The concept of green accounting includes environmental cost, a cost accounting system that systematically identifies, measures, and analyses cost related to the environmental impact of company activities (Dhar et al., 2022); Basuki & Irwanda, 2018). The environmental costs are an important component of green accounting because they include costs to manage the environmental impacts of company operations, such as waste treatment costs, land remediation costs, and investments in environmentally friendly technologies. Based on law number 4 of 2009 article 100 concerning mineral and coal mining, mining companies should carry out restoration and recovery activities after mining in the managed area. The company is responsible for overcoming waste problems by managing the company's operational waste so that it requires a special cost budget, therefore the company is required to record environmental costs in detail in the financial statements including the estimated costs that will be allocated as collateral for environmental costs related to reclamation or post-mining (Basuki & Irwanda, 2018).

Environmental costs include costs associated with reducing production processes that impact the environment (internal) and costs associated with repairing damage caused by waste (external). Environmental costs are regulated in Government Regulation No. 96 Article 1 paragraph (39) 2021 concerning the Implementation of Mineral and Coal Mining Business Activities. Environmental costs are taken from the company's operating costs because these costs are an integral part of operations and corporate social responsibility (Wang et al., 2023). Data from environmental costs can be seen from the annual report, and the company's sustainability report regarding the allocation of funds for the company's environmental development program which is calculated using the ratio of environmental development program funds to net profit generated by the company (Indayani & Wandira, 2022).

Environmental disclosure

Environmental disclosure is an integral aspect of green accounting that includes the disclosure, preparation, and presentation of company-reported environmental information (Liu et al., 2024). Environmental reports are usually associated with detailed quantitative reporting of environmental data in the non-financial section of the annual report or in the company's sustainability report. Environmental reports include emissions of soil, air or water pollution as well as conditions related to the destruction or restoration of wild animal habitats (Nakhle et al., 2024). It also includes liabilities, commitments and remedies for issues such as the clean-up of contaminated land or other financial issues arising from pollution. In the mining sector, environmental disclosure includes three main components, namely environmental performance, environmental costs, and profitability (Rini & Adhariani, 2021). Environmental disclosure in mining sector companies can assist companies in meeting environmental regulatory requirements, improving environmental performance, and improving corporate image (Zhang et al., 2024).

Environmental disclosure can be measured using the GRI (Global Reporting Initiative). GRI is a standard for measuring and reporting information about economic, social, and environmental impacts (Dissanayake et al., 2021). This study uses GRI 300 because it focuses on corporate environmental performance disclosure standards to improve the quality and utilisation of environmental disclosure. The environmental metrics outlined in GRI 300 (2016) cover various aspects, including materials (3 items), energy (5 items), water and waste (5 items), biodiversity (4 items), emissions (7 items), sewage and waste (5 items), waste (5 items), environmental compliance (1 item), and supplier environmental assessment (2 items), with a total of 37 performance indicators. The assessment includes a comparison between checklist items and company disclosures. A value of 1 is assigned if an item is disclosed, while a value of 0 is assigned otherwise. The calculation of the environmental disclosure index relies on the

aggregate disclosure scores obtained from this evaluation process.

Environmental performance

Environmental performance is an important aspect in the concept of green accounting. Environmental performance is an effort to control ecosystem impacts as a result of company operations in creating a green environment (Indayani & Wandira, 2022). Environmental performance reports are issued to assess a company's compliance with the environment. Companies whose activities have a direct impact on the environment are required to report environmental performance annually (Soana, 2024). Environmental performance reflects the results obtained by the company through efforts in managing the surrounding environment, with a focus on social and environmental responsibility. The application of green accounting through environmental performance aims to improve environmental management by evaluating environmental performance from the perspective of environmental costs and the resulting economic benefits (Endiana et al., 2020). Environmental performance includes various aspects such as reducing greenhouse gas emissions, waste management, efficient use of resources, and implementing sustainable practices that support environmental preservation (Abban & Hasan, 2021).

The Ministry of Environment and Forestry (MOEF) plans a corporate performance assessment program as a step to evaluate companies carrying out their responsibilities towards the environment in Indonesia (Indayani & Wandira, 2022). PROPER is used as a tool to assess the company's environmental performance. The PROPER program is a form of the government's seriousness in encouraging the implementation of green accounting in companies in Indonesia. The PROPER rating system ranks a company's environmental performance in 5 categories: Gold, Green, Blue, Red, and Black. Companies that get a gold predicate in PROPER will get a good reputation from stakeholders. The gold predicate indicates that the company has managed

the environment well and has strived for sustainable development of the community.

The effect of environmental costs on financial performance

The process of producing minerals creates waste that must be addressed to prevent environmental damage (Dhar et al., 2022). This management will lead to environmental expenditures that are necessary for the company. Under stakeholder theory, the company's favorable image is attributed to its handling of environmental expenses (Indayani & Wandira, 2022). Environmental costs are long-term investments that affect both reputation and financial performance. The allocation of environmental expenditures showcases the company's steadfast commitment to environmental stewardship, aiming to foster trust within the community (Haholongan et al., 2016). Companies that are committed to environmental costs can create consumer and investor confidence (Hensher & Wei, 2024). By allocating environmental costs the company can create a positive image among the public. Consumers tend to prefer products from companies that are considered environmentally responsible (De Canio, 2023). Therefore, a good reputation can contribute to increased sales.

However, companies face significant risks if they do not effectively manage environmental costs. Errors in allocating environmental costs can lead to financial losses such as fines, repair costs, and damage the reputation that has been built (Firoozi et al., 2024). This reputation damage can reduce consumer confidence which can then switch to competitors who have a better reputation for managing environmental costs. Therefore, effective environmental cost management is not only a legal obligation but also an important strategy to maintain the company's reputation and attract consumers who are increasingly concerned about sustainability (Litvinenko et al., 2022). Through environmental costs, companies can protect themselves from risks while strengthening their competitiveness in the

market (Ribeiro & Soares, 2024). Based on this analysis, the hypothesis states:

H1: Environmental cost positively influences financial performance

The effect of environmental disclosure on financial performance

Environmental concerns have garnered public interest, shaping consumer preferences towards eco-friendly products and amplifying the need for disclosing environmental information (Song et al. 2019). Environmental disclosure is an important part of the concept of green accounting. Green accounting integrates information related to environmental impacts into the company's financial statements. Through environmental disclosure, companies can report the impact of their operational activities on the environment, such as the impact of pollution, resource consumption, and environmental conservation efforts. Effective disclosure of environmental data has the potential to enhance corporate financial outcomes (Abban & Hasan, 2021). This is because such disclosure fosters trust and assurance among investors and the general public regarding the company's operations and commitments. Based on stakeholder theory, companies must be able to meet current and future stakeholder expectations to achieve business sustainability (Fobbe & Hilletoft, 2021). Currently, environmental disclosure is a stakeholders' demand so companies are starting to be concerned about this disclosure. Apart from stakeholders, the authorities also continue to demand companies consider social welfare and environmental sustainability as an important part of the company (Dissanayake, 2021). Disclosure of environmental information can improve the operational efficiency of the company so that it can reduce production costs and waste disposal costs. Girón et al. (2021) presentation illustrates that publishing sustainability reports in Asia and Africa may enhance a company's financial performance. It suggests that disclosing environmental information typically correlates with

improved financial outcomes (Girón et al. 2021).

Based on this analysis, the hypothesis states:

H2: Environmental disclosure positively influences financial performance

The effect of environmental performance on financial performance

Environmental performance as part of green accounting provides an overview of how well the company manages environmental impacts that can affect the company's reputation in the eyes of the public and investors. Annual reports serve as a tool for the public, investors, and various stakeholders to gauge a company's environmental responsibility level (Indayani & Wandira, 2022). The effectiveness of a company's environmental practices is evaluated through the Program for the Environmental Performance of Retailers (PROPER) administered by the Ministry of Environment and Forestry. According to stakeholder theory, participation in the PROPER program reflects a commitment to sound environmental management. This participation signifies corporate responsibility towards stakeholders, aiming to mitigate the environmental impact of operational activities. Effective environmental management enhances the company's public perception, leading to environmental benefits that contribute to improved financial performance. Environmental disclosure positively influences the financial performance of mining companies (Abban & Hasan, 2021). This research is supported by Andries & Stephan (2019) who describe that environmental performance is developed in response to public concern. Based on this analysis, the hypothesis states:

H3: Environmental performance positively influences financial performance

3. Research method

This study collected and used data from annual reports and sustainability reports of mining companies listed on the Indonesia Stock Exchange in 2020-2023. Based on purposive sampling, we determined the criteria for selecting a sample,

namely, for the last 4 years, mining companies have been listed on the Indonesia Stock Exchange (IDX) and published financial and sustainability reports. Table 2 exhibits the process of sample selection. From 65 mining companies listed on the Indonesia Stock Exchange, 5 companies were excluded from

the sample because they did not publish their 2020-2023 financial statements and 24 companies did not publish their 2020-2023 sustainability reports. As a result, samples consist of 36 companies per year or 144 observations.

Table 2 Process of sample selection

No.	Criteria	Not according to the criteria	Total
1	Mining companies listed on the Indonesia Stock Exchange during the years of study.		65
2	Mining companies publish financial statements during the years of study.	(5)	60
3	Mining companies publish Sustainability Reports during the years of study	(24)	36
	The sample number that meets the criteria		36
	Years of study		4 Years
The total number of sample observations			144

The data was collected from relevant published financial statements of mining firms listed on the Indonesia Stock Exchange (IDX) from 2020 to 2023. Mining firms published financial statements may be downloaded straight from the Indonesia Stock Exchange (IDX) or the website at each company's official website.

Variables operationalization

Dependent variable

The main variable in this research is financial performance. Financial performance is a description of the financial position of a company in a certain period, both in terms of raising funds and allocating capital according to Financial Accounting Standards (SAK), Generally Accepted Accounting Principles (GAAP), and other regulations (Amilin, 2017). Information about financial performance can be identified from the balance sheet, profit and loss, cash flow, and other factors that help in evaluating financial performance (Seto et al., 2023). The analysis is used to evaluate financial statements through ratio calculations.

In this study, the ratio used to measure financial performance is the profitability ratio. The profitability ratio used in this study is the Return on Assets (ROA). This is in line with Rini & Adhariani

(2021), the financial performance used in this study following the management perspective is reflected in Return on Asset (ROA). Because ROA represents the entity's ability to generate net income before tax to total assets, ROA measures how the entities utilize their assets to earn profits and the rate of return on investment by using all of their assets. ROA is a financial ratio used to measure the company's ability to generate profits from its assets (Włodarczyk et al., 2024).

$$ROA = \frac{\text{Net Income}}{\text{Total Asset}}$$

Independent variable

Environmental cost

Environmental cost is a part of green accounting in a cost accounting system that systematically identifies, measures and analyzes costs related to the environmental impact of company activities (Basuki & Irwanda, 2018). Environmental costs include costs associated with reducing production processes that impact the environment (internal) and costs associated with repairing damage caused by waste (external). Environmental costs are regulated in Government Regulation No. 96 Article 1 paragraph (39) 2021 concerning the Implementation of Mineral

and Coal Mining Business Activities. Environmental costs are taken from the company's operating expenses because these costs are an integral part of operations and corporate social responsibility (Wang et al., 2023). Data from environmental costs can be seen from the annual report, and the company's sustainability report on the allocation of funds for the company's environmental development program is calculated using the ratio of environmental development program funds to the net profit generated by the company (Indayani & Wandira, 2022). A comparison of total environmental costs and company net income will be the basis for measuring environmental costs, using the reference formula from Indayani & Wandira (2022).

$$\text{Environmental cost} = \frac{\text{Total Environmental Cost}}{\text{Net Income}}$$

Environmental disclosure

Environmental disclosure is an integral aspect of green accounting including the disclosure, preparation, and presentation of company-reported environmental information (Liu et al., 2024). Environmental disclosure can be measured using GRI (Global Reporting Initiative). GRI is a standard for measuring and reporting information about economic, social and environmental impacts (Dissanayake et al., 2021). This study used GRI 300 because it focuses on corporate environmental performance disclosure standards to improve the quality and utilization of environmental disclosure.

Environmental indicators in GRI 300 are materials (3 items), energy (5 items), water and effluent (5 items), biodiversity (4 items), emissions (7 items), effluent and waste (5 items), waste (5 items), environmental compliance (1 item), and supplier environmental assessment (2 items) with a total performance indicator reaching 37 indicators. This measurement is accomplished by matching the items on the checklist with the items disclosed by the

company. If item y is disclosed then a value of 1 is given, if item y is not disclosed then a value of 0 is given on the checklist. The total disclosure value is used to measure the environmental disclosure index. As (Sisaye, 2021), the measurement is used to calculate environmental disclosure.

$$SRI = \frac{\sum XY_i}{ni}$$

Environmental performance

Environmental performance is an activity to control ecosystem impacts as a result of company operations in creating a green environment (Indayani & Wandira, 2022). In this study, environmental performance was measured by using the PROPER index published by the Ministry of Environment. PROPER is one of the efforts made by the Ministry of Environment and Forestry to encourage corporate governance in environmental management. Based on the Regulation of the Minister of Environment and Forestry of the Republic of Indonesia No. 1 of 2021, the PROPER assessment ranks the company's environmental performance in five categories namely; Gold, Green, Blue, Red, and Black. Table 3 exhibits the PROPER Score Rating.

Table 4 describes the operationalization of variables. Companies that get a "gold" predicate in PROPER will get a very good reputation from stakeholders. The gold predicate indicates that the company has managed the environment well and strived for sustainable development of the community. Conversely, a company that gets a "black" predicate indicates that the company does not manage the environment well (very bad) and deliberately damages the environment. Environmental performance is adapted from a score level in the PROPER ranking through the Ministry of Environment's website which is peroxide with a rating of 1-5 which is categorized by levels of five colouring concepts as follows.

Table 3 PROPER score rating

Colour	Description	Score
Gold	Very good	5
Green	Good	4
Blue	Enough	3
Red	Bad	2
Black	Very bad	1

Table 4 Operationalization of variables

Variable	Operational definitions	Measurement	
Dependent variable			
Financial performance	Return on Asset (Włodarczyk et al., 2024)	$ROA = \frac{\text{Net Income}}{\text{Total Asset}}$	
Environmental cost	Total environmental costs and company net income (Indayani & Wandira, 2022).	$EC = \frac{\text{Total Environmental Cost}}{\text{Net Income}}$	
Environmental disclosure	GRI 300 environmental standards (Sisaye, 2021)	$SRI = \frac{\sum XY_i}{ni}$	
Environmental performance	PROPER Ranking (Dissanayake, 2021)	Gold (very good)	5
		Green (good)	4
		Blue (enough)	3
		Red (bad)	2
		Black (very bad)	1

Data analysis method

Classical assumption test

A non-parametric Kolmogorov-Smirnov (K-S) analysis was employed for the normality test. The multicollinearity assessment was measured by a variance inflation factor (VIF). When the VIF value exceeds ten and the tolerance value is below 0.10, the regression model is identified as having no multicollinearity. To ensure a reliable regression model, independent variables should not exhibit strong linear relationships, and efforts should be made to minimize multicollinearity. The heteroscedasticity test utilizes scatterplot analysis. A scatterplot is used to see whether the regression model has residual variance from one observation to another observation. If the points are randomly dispersed, it can be inferred that there is no presence of heteroscedasticity in the regression model.

Hypothesis testing

We used multiple regression analysis methods to test the hypothesis between environmental cost,

environmental disclosure, and environmental performance on financial performance. To test the hypothesis, the following model is used.

$$FPit = \alpha + \beta_1 ECit + \beta_2 EDit + \beta_3 EPit + \varepsilon_i$$

FP represents a financial performance measured by ROA; α is a constant; β is the regression coefficient; EC is environmental cost; ED is environmental disclosure; EP is environmental performance and ε is an error term

4. Results and discussion

There were 144 data in the normality test however, the regression findings showed that the data could not be normally distributed. As a result, the researcher detected and removed outliers and produced 7 outliers. So, after removing outliers from the observation data, the regression results show that the data fulfils the normality test with 137 sample observations. Furthermore, hypothesis testing is carried out by a partial test.

Descriptive statistics

The average (mean), maximum, minimum, and standard deviation of financial performance, environmental cost, environmental disclosure, and environmental performance can be seen in Table 5. The descriptive statistics show that the average profitability of mining companies listed on the

Indonesian Stock Exchange is 6.8%. The average environmental cost on net income is 4.2%. The average ratio of total environmental disclosure ratio measured using the GRI 300 Standard is 36.8%. The average environmental performance obtained from the PROPER rating is 3,50.

Table 5 Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
EC _{it}	137	-0.319	0.605	0.043	0.111
ED _{it}	137	0.027	0.865	0.369	0.259
EP _{it}	137	3	5	3.50	0.759
FP _{it}	137	-0.260	0.403	0.068	0.100

Notes: EC is environmental cost; ED is environmental disclosure; EP is environmental performance; FP is financial performance.

Table 6 provides an overview of the outcomes regarding classical assumption testing. According to the findings, it can be concluded that the study is devoid of classical assumption issues. The

heteroscedasticity tests whether the variance between one observation and another in a regression model is similar or unequal.

Table 6. Pre-regression test results

Variables	Normality test	Multicollinearity test	
	Kolmogorov-smirnov	VIF	Tolerance
(Constant)			
EC _{it}		0.984	1.016
EP _{it}	0.090	0.558	1.791
ED _{it}		0.560	1.784

Heteroscedasticity testing in this study uses a scatterplot graph. If there is a certain pattern in the graph, it means heteroscedasticity occurs. In a good regression model, usually, there are no symptoms of heteroscedasticity. In Figure 1, it can be seen that the

points spread randomly and are scattered above and below the number 0 on the Y-axis. So, it can be concluded that there are no symptoms of heteroscedasticity in the regression model.

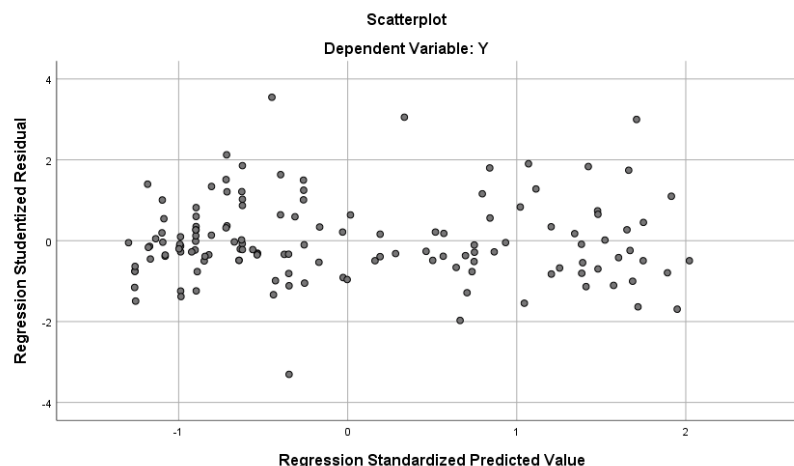


Figure 1. Heteroscedasticity test result

Multiple Regression Analysis

Table 7 presents the results of hypothesis testing (H1, H2, and H3). The effect of environmental costs on financial performance is negative but not significant indicating that H1 is not accepted. This result is consistent with Riyadh et al., (2020). ROA

indicator of profitability does not correlate with environmental costs implying that high profit is not an obligation for companies to allocate environmental costs. The result summarizes that profitability derived from using assets is not allocable for all operations.

Table 7. Multiple regression analysis

Coefficients			
Variable	Standardized Coefficients	t	Sig.
EC _{it}	-0.015	-0.319	0.750
ED _{it}	0.734	11,475	0.000
EP _{it}	0.144	2,262	0.025
F-Test	101.746		0.000 ^b
R Square	0.697		
Adjusted R Square	0.690		

Dependent variable: FP

Notes: EC is environmental cost; ED is environmental disclosure; EP is environmental performance; FP is financial performance.

According to the result of H2 testing, the effect of environmental disclosure on financial performance is a positive significant at a 1% significant level indicating that H2 is supported. This result is consistent with Girón et al., (2021) and Dincer et al., (2023). ROA indicator of profitability correlates with environmental disclosure implying that high profit is an obligation for companies to allocate environmental disclosure. The result summarizes that profitability derived from the use of assets is allocable for the operations of the companies.

According to the result of H3 testing, the effect of environmental performance on financial performance is positively significant at a 5% level of significance indicating that H3 is accepted. This result is consistent with Abban & Hasan (2021). ROA indicator of profitability correlates with environmental performance implying that high profit is an obligation for companies to allocate environmental disclosure. The results summarize that profitability derived from the use of assets is allocable for the operations of the companies.

Table 8. Summary of hypotheses results

Items	Hypotheses	Result
H1	Environmental cost positively affects financial performance	R
H2	Environmental disclosure positively affects financial performance	+ accepted
H3	Environmental performance positively affects financial performance	+ accepted

Notes: (+) is a positive significant effect; (-) is a negative significant effect; R is rejected

The impact of environmental cost on financial performance

Based on the test results, we find that environmental costs do not affect financial

performance with a significance value of 0,750 (greater than 0,05). This indicates that an increase in environmental costs does not lead to an increase in financial performance, and similarly, a decrease in

financial performance does not necessarily result in increased environmental costs. These findings are consistent with previous research by (Riyadh et al., 2020), which also concluded that environmental costs have no significant impact on financial performance. This outcome contradicts stakeholder theory, which posits that companies can enhance their reputation by incurring environmental costs (Indayani & Wandira, 2022). The results of this study suggest that stakeholders may still harbour doubts about the credibility and substance of the environmental costs reported by mining companies. Stakeholders might perceive these environmental costs as merely formalistic, without being accompanied by genuine efforts in effective environmental management. Consequently, environmental costs are viewed as greenwashing, which refers to the practice of companies creating an impression of environmental responsibility without substantive actions (Yildirim, 2023).

This situation can arise because government regulations mandate companies to report environmental costs but do not specify the required percentage of these costs. As a result, some companies allocate minimal funds to fulfil reporting obligations, primarily to avoid government fines, without genuinely investing in substantial environmental initiatives. Small environmental costs do not significantly impact a company's financial performance, especially when other factors such as commodity prices, productivity levels, and global economic conditions play more critical roles. These factors are often more influential in determining financial outcomes than the relatively minor environmental costs reported.

The notion of greenwashing implies that companies may engage in symbolic gestures of environmental concern to placate stakeholders without implementing meaningful changes. This practice can undermine stakeholder trust and diminish the perceived value of environmental disclosure. For instance, if a company spends minimally on environmental projects while heavily promoting its environmental efforts, stakeholders

may perceive this as disingenuous. The lack of a substantial link between environmental costs and financial performance underscores the need for stricter regulatory guidelines that mandate not only the reporting of environmental costs but also the effectiveness and impact of these expenditures.

Furthermore, the study's findings highlight the importance of transparent and credible environmental disclosure. Companies must go beyond minimal compliance and demonstrate genuine commitment to environmental stewardship. This approach can help build trust with stakeholders and potentially lead to long-term financial benefits through enhanced reputation and customer loyalty. By addressing the underlying issues of greenwashing and minimal compliance, companies can better align their environmental and financial goals, ultimately contributing to sustainable business practices and improved financial performance.

The impact of environmental disclosure on financial performance

Based on the test results, environmental disclosure positively affects financial performance with a significance value of 1%. The result indicates that environmental disclosure significantly impacts financial performance. These findings align with previous research, which also found that environmental disclosure influences financial performance (Girón et al., 2021) and (Dincer et al., 2023). This result is under stakeholder theory, where mining companies are not only responsible for maximum profits for investors and owners but also have a responsibility to provide benefits to society, the environment, society and government (Hörisch et al., 2020).

The study results suggest that environmental disclosures by mining companies build trust and support from the surrounding community. This is crucial for maintaining good relations and avoiding potential conflicts that could disrupt company operations. Effective environmental disclosure practices demonstrate a company's commitment to sustainable development and can attract investors

who prioritize sustainability. This trust from investors and the community can lead to improved financial performance as it enhances the company's reputation and supports its operations. Moreover, good environmental disclosure practices can mitigate risks related to environmental issues, such as fines, lawsuits, and decreased productivity due to environmental damage. By addressing these risks, companies can maintain stability and sustainability in their financial performance over the long term. Transparent environmental disclosure helps ensure that the company is not merely engaging in greenwashing but is genuinely committed to environmental stewardship. This can improve operational efficiency, reduce costs associated with environmental harm, and foster a more resilient business model.

In conclusion, the positive effect of environmental disclosure on financial performance underscores the importance of transparency and accountability in corporate environmental practices. Companies that proactively disclose their environmental impacts and efforts are better positioned to gain stakeholder trust, enhance their market reputation, and achieve long-term financial success. These practices are essential not only for compliance with regulations but also for building a sustainable business that can thrive in an increasingly environmentally conscious market.

The impact of environmental performance on financial performance

Based on the test results, environmental performance positively impacts financial performance with a significance value of 5%. This means that environmental performance significantly impacts financial performance. These findings align with previous research indicating that environmental performance positively influences the financial performance of mining companies (Abban & Hasan, 2021). Environmental performance in this study is measured using the PROPER index rating, a tool used by the Indonesian government to evaluate and

categorize companies based on their environmental management practices.

The sample showed that most companies received blue and green ratings. In the PROPER ranking system, a company is considered “obedient” if it receives a blue rating, indicating that it has implemented environmental management practices according to regulations. Achieving a good PROPER rating not only reflects that the company is disclosing environmental information but also shows that it is taking effective environmental management measures in line with governmental standards. This outcome supports the stakeholder theory, which stresses the importance of businesses considering the interests of all stakeholders, including society and the environment, in their operations (Hörisch et al., 2020). Companies that excel in environmental performance often enjoy long-term benefits. For instance, they tend to build a positive image in the eyes of the public, maintain good relations with regulators, and gain the trust of investors who prioritize sustainability. These factors can significantly enhance a company's reputation, making it more attractive to environmentally conscious investors and consumers.

Moreover, good environmental performance can lead to better access to funding sources. Investors are increasingly interested in supporting companies with strong sustainability practices, viewing them as less risky and more forward-thinking. Additionally, effective environmental management can reduce the likelihood of fines, lawsuits, and operational disruptions caused by environmental issues. By minimizing these risks, companies can achieve greater financial stability and sustainability.

In conclusion, the positive effect of environmental performance on financial performance underscores the critical role that responsible environmental practices play in the success of mining companies. It highlights the importance of transparency, effective management, and adherence to environmental standards. These practices not only comply with regulatory

requirements but also foster trust and support from various stakeholders. It ultimately contributes to the long-term financial health and sustainability of the company.

5. Conclusions

This study examines the effect of green accounting–environmental cost, environmental disclosure, and environmental performance–on the financial performance of companies in the mining sector. It is important to understand that green accounting includes three main aspects; environmental costs, environmental disclosure, and environmental performance. Environmental costs include expenditures made by companies to reduce negative impacts on the environment. Environmental disclosure refers to a company's transparency in reporting actions related to the environment. Environmental performance measures the effectiveness of a company's efforts in reducing environmental impacts. Since previous studies rarely investigate the role of environmental performance, this study adds a new variable, namely, environmental performance. This study adds environmental performance variables because previous research only focuses on environmental costs and environmental disclosures. The results showed that environmental costs did not affect environmental performance. This is because regulations in Indonesia only require the reporting of environmental costs without setting a minimum amount to be incurred. However, some companies allocate special funds to fulfil environmental obligations and avoid fines. Stakeholders perceive minimal environmental costs as an act of greenwashing so it does not affect financial performance. On the other hand, there is a positive relationship between environmental disclosure and environmental performance on financial performance. This result confirms that companies consider environmental aspects in their operations.

The results of three hypotheses show that mining companies in Indonesia prefer to allocate profits to environmental disclosure and performance

compared to environmental costs. Because, environmental costs in this study relate to the costs for environmental allocation to be a statutory obligation but, in reality, environmental costs are not a priority for mining companies in Indonesia. On the other hand, environmental disclosure and environmental performance have a major impact on investor interest and a measure of acceptance in the sphere of social responsibility. This is under stakeholder theory which emphasizes the importance of companies to consider the interests of all stakeholders, including society and the environment, in carrying out operations (Hörisch et al., 2020). With the trust of investors and the public, mining companies can improve financial performance. In addition, good environmental disclosure practices can reduce risks related to environmental issues such as fines, lawsuits, and decreased productivity due to environmental damage. This can help maintain the stability and sustainability of the company's financial performance in the long term.

These findings have several implications. These findings have several implications. Theoretically, this research contributes to expanding the study of the application of green accounting to the financial performance of mining companies in Indonesia. Practically, for regulators or the government, this study provides additional information about green accounting in mining companies. Information regarding green accounting before COVID-19 mining companies were just starting to pay attention to environmental impacts so the accounting reporting applied was not perfect, while this study tested samples during and after COVID-19, when many companies began to focus on implementing green accounting that benefited the company.

There are several limitations in this research. First, in 2020-2021 the COVID-19 pandemic occurred; however, this study did not test the difference in that year. Due to the limited data on mining company sustainability reports. In 2020 companies that publish sustainability reports are still voluntary and not mandatory, but in 2021 the

government passed the Financial Services Authority Circular Letter (SEOJK) Number 16 of 2021 concerning technical guidelines for preparing annual and sustainability reports for issuers and public companies, disclosure of sustainability reports has become an obligation for issuers and public companies in Indonesia. Second, for further research can be able to conduct different tests during the COVID-19 pandemic and after COVID-19. Third, this study only focuses on mining companies so the sample coverage is too small, so it is recommended for future researchers to explore research samples in other environmentally sensitive sectors such as manufacturing, transportation, and energy. Fourth, this study uses the ROA proxy to measure financial performance, so it is recommended to use proxies other than ROA to measure the company's financial performance to provide a more comprehensive picture of the factors that affect the company's financial performance. Fifth, environmental costs do not affect financial performance, further research can consider adding other variables such as carbon emissions disclosure, commodity prices, CSR disclosure, company size and renewable energy.

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