

## **The Influence of Environmental, Social, and Governance Disclosure and Carbon Emission Disclosure on the Financial Performance of Mining Companies on the Indonesia Stock Exchange**

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### **Abstrak**

Sektor pertambangan di Indonesia masih menghadapi tantangan dalam menjaga stabilitas struktur permodalan seiring dengan meningkatnya tuntutan terhadap pengungkapan keberlanjutan perusahaan. Penelitian ini bertujuan untuk menguji pengaruh *Environmental, Social, and Governance Disclosure* serta *Carbon Emission Disclosure* terhadap *Financial Performance* pada perusahaan pertambangan yang tercatat di Bursa Efek Indonesia selama periode 2020-2024. Penelitian dilakukan karena hasil penelitian sebelumnya masih menunjukkan perbedaan temuan. Metode penelitian yang digunakan adalah pendekatan kuantitatif dengan teknik purposive sampling. Dari total 41 perusahaan, diperoleh 21 perusahaan sebagai sampel penelitian dengan jumlah observasi sebanyak 105 data. Pengolahan data dilakukan menggunakan analisis regresi linear berganda melalui IBM SPSS Statistics 27. Hasil penelitian menunjukkan bahwa secara parsial *environmental disclosure* dan *social disclosure* memiliki pengaruh negatif namun tidak signifikan terhadap *financial performance*. Sementara itu, *governance disclosure* dan *carbon emission disclosure* menunjukkan pengaruh positif tetapi tidak signifikan. Secara simultan, *ESG disclosure* dan *carbon emission disclosure* juga tidak memberikan pengaruh signifikan terhadap *financial performance* perusahaan pertambangan. Hasil tersebut menunjukkan bahwa praktik pengungkapan keberlanjutan pada sektor pertambangan di Indonesia masih lebih berorientasi pada pemenuhan regulasi dibandingkan sebagai faktor yang memengaruhi struktur permodalan perusahaan.

**Kata Kunci:** *ESG Disclosure; Carbon Emission Disclosure; Kinerja Keuangan; Sektor Pertambangan.*

### **Abstract**

The mining industry in Indonesia continues to encounter challenges in maintaining capital structure stability amid the increasing demand for sustainability disclosure. This study examines the effect of Environmental, Social, and Governance Disclosure together with Carbon Emission Disclosure on Financial Performance in mining companies listed on the Indonesia Stock Exchange during the 2020-2024 period. The study was conducted due to the inconsistent findings reported in previous research. A quantitative approach was applied using purposive sampling, resulting in 21 selected companies out of 41 companies with a total of 105 observations. The data analysis employed multiple linear regression using IBM SPSS Statistics 27. The findings show that, partially, environmental disclosure and social disclosure have a negative but insignificant relationship with financial performance. Meanwhile, governance disclosure and carbon emission disclosure demonstrate a positive yet insignificant relationship with financial performance. Simultaneously, ESG disclosure and carbon emission disclosure were also found to have no significant influence on the financial performance of mining companies. These findings suggest that sustainability disclosure

practices within the Indonesian mining sector are still mainly implemented to comply with regulatory requirements rather than functioning as a key factor influencing corporate capital structure.

**Keywords:** ESG Disclosure; Carbon Emission Disclosure; Financial Performance; Mining Sector.

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## INTRODUCTION

Financial performance is a fundamental objective that underpins the continued existence of a company, and is the main indicator for investors in assessing the prospects and risks of investment. According to the Global Corporate Sustainability report published by the OECD (2023), modern companies are required to shift their focus from mere profit achievement to sustainable value creation through effective and transparent resource management. Baby et al. (2024) emphasize that financial performance reflects not only profitability but also capital stability and the company's ability to withstand external changes. One proxy used to assess financial performance from the perspective of capital structure stability is the Debt to Asset Ratio (DAR), where, in accordance with POJK Number 30/POJK.05/2014, a healthy DAR is set at a maximum threshold of 0.70.

However, in reality, the DAR condition of mining companies in Indonesia still shows significant instability. Based on research data from 21 mining companies listed on the IDX during 2020-2024, the average overall DAR reached 0.60, with a maximum value up to 2.42 recorded by CNKO, far exceeding the healthy threshold of 0.70 set by POJK Number 30/POJK.05/2014. In addition, several companies consistently recorded DARs above the healthy threshold throughout the observation period, such as ARII (0.84-0.92), CNKO (2.36-2.42), and DOID (0.73-0.88). This indicates that most mining companies in Indonesia still face serious pressure in managing their capital structure, thus underscoring the importance of examining factors that may affect financial performance, one of which is through sustainability disclosure.

Sustainability disclosure has recently become an important topic in academic discussions. However, previous studies still show inconsistent results regarding the relationship between ESG Disclosure, Carbon Emission Disclosure, and financial performance. Putriningtyas (2024) explained that ESG disclosure may weaken the short-term financial performance of mining companies because implementing sustainability practices requires considerable costs. Likewise, Putri & Maryani (2025) and Khotimah & Maryani (2025) reported that ESG disclosure does not significantly affect financial performance. On the other hand, Sari & Maryama (2024) found that ESG practices can improve company profitability. Nurrohmah & Ambarwanti (2024) also stated that better carbon emission disclosure tends to strengthen the company's capital structure. These findings indicate that the effect of sustainability disclosure on financial performance may differ depending on company conditions and research settings. In addition, studies that use DAR as a proxy for financial performance in Indonesian mining companies are still limited.

This study also refers to legitimacy theory in explaining the relationship between ESG Disclosure, Carbon Emission Disclosure, and financial performance. According to Suchman (1995), companies need public acceptance to maintain their business sustainability because their activities are closely related to social values and community expectations. Companies that are unable to fulfill sustainability expectations may face reputational problems and regulatory pressure, which can eventually influence their financial performance (Trinks et al. 2020). Therefore, ESG and carbon emission disclosure are considered important because they may create economic consequences that are reflected in the company's financial condition.

The mining industry was selected as the focus of this study because it is characterized by capital-intensive operations, high business risk, and strong sensitivity to fluctuations in global commodity prices (PricewaterhouseCoopers, 2023). Therefore, the stability of a company's funding structure, as measured by the Debt to Asset Ratio (DAR), is considered an important indicator in evaluating financial performance. Fadiah & Maryani (2025) explained that the performance of mining companies listed on the IDX is largely influenced by operational activities and changes in commodity market conditions. This finding suggests that a company's financial structure may also be affected by other factors, including sustainability disclosure practices related to environmental, social, governance, and carbon emission issues.

The growing pressure from regulators and increasing stakeholder awareness have encouraged companies to strengthen Environmental, Social, and Governance (ESG) Disclosure as a reflection of their commitment to sustainable business practices. In Indonesia, the implementation of sustainable finance is regulated under POJK No. 51/POJK.03/2017. Jayanti et al. (2024) found that ESG disclosure had a negative effect on the value of companies included in the IDXESGL index, indicating that higher ESG scores do not always lead to better corporate performance. Based on the research findings, all sample companies maintained social and governance disclosure scores of 1.00 during the 2020-2024 period. Meanwhile, environmental disclosure scores showed improvement, increasing from an average range of 0.88-0.94 in 2020 to 1.00 in both 2023 and 2024.

Besides ESG disclosure, carbon emission disclosure has increasingly attracted investor attention because carbon emissions are now widely recognized as a financial risk factor. Trinks et al. (2020) explained that companies capable of managing carbon emissions effectively tend to achieve more stable financial performance. In contrast, Kustinah (2025) reported that carbon emission disclosure does not significantly influence firm value due to the high costs involved and the voluntary nature of such disclosure practices. Likewise, Rahmatika & Lestari (2024) found no significant relationship between carbon emission disclosure and firm value in energy sector companies listed on the IDX. These findings indicate that voluntary carbon disclosure has not yet become a major consideration for investors when making investment decisions. Although all sample companies recorded a Carbon Emission Disclosure Index (CED) score of 1.00 during 2020-2024, the ESDM (2023) report revealed that the mining sector still contributes approximately 30% of national carbon emissions. This condition reflects a discrepancy between formal disclosure practices and the actual effectiveness of emission reduction efforts in the field.

Several phenomena also illustrate the complexity of the relationship between sustainability disclosure and financial performance. PT Aneka Tambang Tbk was reported to have caused environmental pollution in the Moronopo coastal area (Mongabay, 2021), while PT Timah Tbk became involved in an illegal mining case that resulted in ecological losses estimated at Rp157.83 trillion (News, 2024). Wahdah & Jayanti (2023) further found that environmental disclosure does not significantly affect the financial performance of coal companies listed on the IDX. This finding suggests that environmental disclosure practices in Indonesia's mining industry may still be ineffective in improving corporate financial performance. As a result, ESG and carbon emission disclosures are often viewed merely as forms of regulatory compliance intended to avoid sanctions rather than as evidence of a genuine commitment to sustainability implementation. Adi & Lestari (2022) also explained that formal compliance in corporate practice is frequently carried out to maintain business continuity instead of reflecting substantive corporate responsibility. In practice, companies may appear compliant administratively while their actions are primarily motivated by the need to fulfill obligations and minimize regulatory risk. At the same time, mining companies continue to prioritize profit generation through intensive production activities, causing sustainability reporting to remain insufficiently integrated into long-term business strategies that could directly influence financial performance.

This study seeks to examine both the partial and simultaneous effects of Environmental Disclosure, Social Disclosure, Governance Disclosure, and Carbon Emission Disclosure on Financial Performance measured by DAR. The study is motivated by the continuing inconsistency in previous research findings as well as the limited number of studies that apply DAR as a proxy for financial performance in the mining sector. Mining companies listed on the Indonesia Stock Exchange during the 2020-2024 period were selected as the research sample because the sector is characterized by high environmental impact and increasing pressure to comply with sustainability regulations.

## METHODOLOGY

This research adopts a quantitative approach using a causal associative design to identify the relationship between the independent variables and the dependent variable. The study investigates how Environmental Disclosure, Social Disclosure, Governance Disclosure, and Carbon Emission Disclosure influence Financial Performance in mining companies listed on the Indonesia Stock Exchange (IDX) during the 2020–2024 observation period.

The research population comprises all mining companies listed on the IDX within the study period. Sample selection was carried out through purposive sampling based on several predetermined criteria, including companies that consistently publish annual reports or sustainability reports and provide accessible financial statement information during the observation period. Based on these criteria, 21 companies met the sampling requirements. With five years of observation, the study initially generated 105 observations. However, after conducting normality testing and removing outlier data, the final number of observations used for regression analysis was reduced to 100.

The study relies on secondary data collected from annual reports, sustainability reports, and published financial statements issued by the sampled companies. Data collection was conducted through documentation techniques by identifying, recording, and classifying information associated with the research variables. Environmental disclosure was assessed using the Global Reporting Initiative (GRI) 300 indicators consisting of 32 disclosure items. Social disclosure was measured through the GRI 400 indicators with 35 disclosure items. Governance disclosure employed GRI 2, 3, 201, 202, 203, 204, 205, 206, and 207 indicators totaling 50 disclosure items. Meanwhile, carbon emission disclosure was evaluated using the GRI 103 and 305 indicators consisting of 11 disclosure items.

The disclosure assessment applied a content analysis method. Companies received a score of 1 when a disclosure item was reported and a score of 0 when it was not disclosed. The disclosure index was calculated by dividing the total disclosed items by the total disclosure items expected under the measurement criteria.

Financial Performance, as the dependent variable, was proxied by the Debt to Asset Ratio (DAR), which was obtained by comparing total liabilities with total company assets. DAR was selected because it reflects the company's capability to manage funding structure and leverage risk. The research data were analyzed using multiple linear regression with IBM SPSS Statistics version 27. Prior to hypothesis testing, classical assumption tests consisting of normality, multicollinearity, heteroscedasticity, and autocorrelation tests were conducted to ensure the regression model fulfilled statistical assumptions. Hypothesis testing was subsequently performed using the t-test to analyze partial effects and the F-test to evaluate simultaneous effects of the independent variables on the dependent variable.

## RESULTS AND DISCUSSION

In this section, the researcher explains the results generated from statistical and regression analyses applied in the study. The procedures include descriptive statistics, classical assumption testing, and hypothesis examination to determine the effect of Environmental, Social, Governance, and Carbon Emission disclosures on the financial

performance of mining companies registered on the Indonesia Stock Exchange from 2020 to 2024.

**Table 1.** Results of Descriptive Statistical Test

	N	Minimum	Maximum	Mean	Std. Deviation
Financial Performance	105	,09	2,42	,5984	,45404
Environmental Disclosure	105	,16	1,00	,6026	,23912
Social Disclosure	105	,11	1,00	,6377	,26643
Governance Disclosure	105	,28	1,00	,8156	,20950
Carbon Emission Disclosure	105	,18	1,00	,6465	,37915
Valid N (listwise)	105				

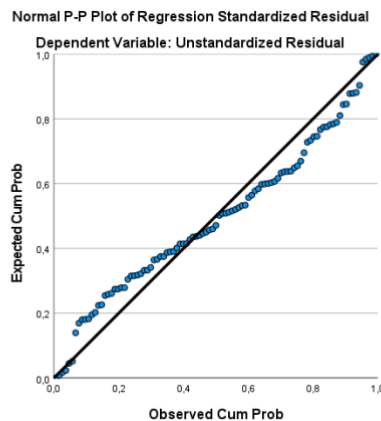
Source: SPSS 27 Output (Processed Data, 2026)

Based on the descriptive statistical analysis, financial performance recorded a mean value of 0.5984 and a standard deviation of 0.45404, which reflects a relatively wide variation in the financial performance of mining companies throughout the observation period. Furthermore, the average values for environmental disclosure, social disclosure, carbon emission disclosure, and governance disclosure were 0.6026, 0.6377, 0.6465, and 0.8156, respectively. Among these variables, governance disclosure demonstrated the highest average value, suggesting that the sample companies generally exhibit a strong level of sustainability disclosure, particularly in the governance dimension (Table 1).

**Table 2.** Results of Normality Test

Model	Kolmogrov-Smirnov	Remark
Unstandardized Residual	Sig: 0,200	Normally Distributed

Source: SPSS 27 Output (Processed Data, 2026)



**Figure 1.** Probability P-Plot Test Results

The Kolmogorov-Smirnov normality test conducted on the initial 105 observations produced an Asymp. Sig. (2-tailed) value of 0.000, which was below the significance level of 0.05, indicating that the data were not normally distributed. Following the outlier treatment through the elimination of extreme values, the total observations were reduced to 100 samples. The second normality test then generated an Asymp. Sig. (2-tailed) value of 0.200, exceeding 0.05, which suggests that the data had met the normality requirement. In addition, the Normal P-Plot graph illustrates that the plotted points tend to spread around and follow the diagonal line, supporting the conclusion that the data are normally distributed and suitable for further classical assumption testing (Table 2 and Figure 1).

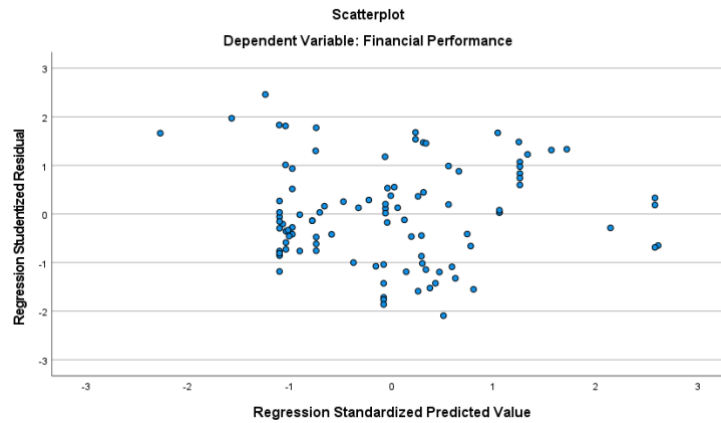
**Table 3.** Results of Multicollinearity Test

Variable	Tolerance	VIF
Environmental Disclosure	0,211	4,747
Social Disclosure	0,140	7,151

Governance Disclosure	0,399	2,505
Carbon Emission Disclosure	0,652	1,533

Source: SPSS 27 Output (Processed Data, 2026)

Based on the multicollinearity test results, all independent variables have a tolerance value above 0.10 and a VIF value below 10, so it can be concluded that there is no multicollinearity problem in the regression model. (Table 3)



**Figure 2.** Scatterplot Test Results

Based on the heteroscedasticity test through the scatterplot analysis, the residual values are spread randomly both above and below the zero point on the Y-axis without forming a specific pattern. These results indicate that the regression model is free from heteroscedasticity issues (Figure 2).

**Table 4.** Results of Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,646 <sup>a</sup>	,417	,411	,16459619	1,892

Source: SPSS 27 Output (Processed Data, 2026)

An autocorrelation test was performed to examine whether there was a correlation between the residual errors in the current period and those in the previous period. The presence of such a relationship indicates autocorrelation within the model. After the data transformation process, the Durbin-Watson statistic obtained was 1.892, which lies above the dU value of 1.7582 and below the value of 4-dU at 2.2418. These findings suggest that the regression model does not exhibit autocorrelation problems. (Table 4)

**Table 5.** Multiple Linear Regression Analysis

Variable	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	0,458	0,104		4,424	0,000
ENV	-0,054	0,211	-0,055	-0,254	0,800
SOC	-0,286	0,232	-0,330	-1,236	0,220
GOV	0,299	0,178	0,266	1,685	0,095
CE	0,035	0,072	0,060	0,485	0,629

Source: SPSS 27 Output (Processed Data, 2026)

Based on the results of multiple linear regression analysis, the regression equation obtained is:  $Y = 0.458 - 0.054X_1 - 0.286X_2 + 0.299X_3 + 0.035X_4 + \varepsilon$ . These results show that environmental disclosure and social disclosure have negative coefficients, indicating an inverse relationship with financial performance. Meanwhile, governance disclosure and carbon emission disclosure have positive coefficients, indicating a direct relationship with financial performance. However, overall the regression results show that the influence of each independent variable on financial performance remains weak, so further testing is required with partial and simultaneous hypothesis testing. (Table 5)

**Table 6.** Correlation Coefficient Analysis Results

Control Variables		FP	ENV	SOC	GOV	CE
FP	Pearson Correlation	1	-,146	-,139	,008	-,025
	Sig. (2-tailed)		,147	,167	,937	,807
	N	100	100	100	100	100
ENV	Pearson Correlation	-,146	1	,887**	,643**	,504**
	Sig. (2-tailed)	,147		,000	,000	,000
	N	100	100	100	100	100
SOC	Pearson Correlation	-,139	,887**	1	,768**	,582**
	Sig. (2-tailed)	,167	,000		,000	,000
	N	100	100	100	100	100
GOV	Pearson Correlation	,008	,643**	,768**	1	,507**
	Sig. (2-tailed)	,937	,000	,000		,000
	N	100	100	100	100	100
CE	Pearson Correlation	-,025	,504**	,582**	,507**	1
	Sig. (2-tailed)	,807	,000	,000	,000	
	N	100	100	100	100	100

Source: SPSS 27 Output (Processed Data, 2026)

The correlation coefficient analysis indicates that all independent variables demonstrate a very weak association with financial performance. The correlation coefficients range from -0.146 to 0.008, suggesting that the relationship between sustainability disclosure and the financial performance of mining companies during the observation period is relatively low (Table 6).

**Table 7.** Coefficient of Determination Test Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,234 <sup>a</sup>	,055	,015	,21795	,707

Source: SPSS 27 Output (Processed Data, 2026)

Based on the coefficient of determination test, the R Square value obtained is 0.055 or 5.5%. This finding implies that the four independent variables contribute to explaining only 5.5% of the variation in Financial Performance, whereas the remaining 94.5% is affected by other variables beyond the research model, including operational conditions, fluctuations in commodity prices, and the ownership structure of the company (Table 7).

**Table 8.** Partial Hypothesis Test Results (t-test)

Variable	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	0,458	0,104		4,424	0,000
ENV	-0,054	0,211	-0,055	-0,254	0,800
SOC	-0,286	0,232	-0,330	-1,236	0,220
GOV	0,299	0,178	0,266	1,685	0,095
CE	0,035	0,072	0,060	0,485	0,629

Source: SPSS 27 Output (Processed Data, 2026)

The results of the partial hypothesis testing using the t test, with a t-table value of 1.985, are presented in table 8. Environmental Disclosure has a negative but not significant effect on Financial Performance, with a t-value of -0.254 and significance of 0.800. This insignificance is supported by the correlation coefficient analysis, which shows a correlation value between environmental disclosure and financial performance of only -0.146, indicating

a very weak relationship. In addition, the average value for environmental disclosure is 0.6026, with a fairly varied data range (0.16-1.00), indicating that although there is variation in environmental disclosure between companies, this variation is not strong enough to affect the capital structure as reflected by the DAR. The negative direction indicates that an increase in environmental disclosure may actually add to the cost burden of implementation, which suppresses the stability of the capital structure of mining companies in the short term.

Social Disclosure has a negative but not significant effect on Financial Performance, with a t-value of -1.236 and significance of 0.220. Based on descriptive statistics, the average value of social disclosure is 0.6377, with a maximum value of 1.00, and the correlation coefficient results show a very weak relationship between social disclosure and financial performance, at only -0.139. This insignificance is also reinforced by the ceiling effect phenomenon, where the majority of sampled companies record very high and uniform social disclosure values approaching 1.00, so that the very limited variation makes it difficult to detect a statistically significant effect. In addition, the impact of corporate social programs is not immediately reflected in changes to the capital structure as measured by DAR in the short term.

Governance Disclosure has a positive but not significant effect on Financial Performance, with a t-value of 1.685 and significance of 0.095. Based on descriptive statistics, governance disclosure has the highest average among all independent variables, at 0.8156, indicating a very high level of governance disclosure within the sample companies. The correlation value between governance disclosure and financial performance is only 0.008, which is the weakest among all variables, showing that, in practice, there is almost no linear relationship between the two. Nevertheless, the significance value approaching 0.05 indicates potential influence that might be more detectable if tested with a larger sample or a longer observation period.

Carbon Emission Disclosure has a positive but not significant effect on Financial Performance, with a t-value of 0.485 and significance of 0.629. Based on the correlation coefficient analysis, the relationship between carbon emission disclosure and financial performance is only -0.025, which is a very weak and statistically negligible relationship. This condition is reinforced by research data showing that all sampled companies recorded very high and uniform Carbon Emission Disclosure Index (CED) values, so there is not enough variation to detect any significant effect on DAR. With a significance value of 0.629, far from the 0.05 threshold, it can be concluded that carbon emission disclosure during the research period was not able to significantly affect the capital structure of mining companies.

**Table 9.** Results of Hypothesis Testing Simultaneously (F Test)

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,261	4	,065	1,373	,249 <sup>b</sup>
	Residual	4,513	95	,048		
	Total	4,773	99			

Source: SPSS 27 Output (Processed Data, 2026)

The results of the simultaneous hypothesis testing using the F test show an F-value of 1.373 with significance of 0.249, which is greater than 0.05. Thus, H<sub>0</sub> is accepted and it can be concluded that Environmental Disclosure, Social Disclosure, Governance Disclosure, and Carbon Emission Disclosure together do not have a significant effect on Financial Performance (table 9). The low R Square value of 5.5% further strengthens this finding, indicating that these four sustainability disclosure variables can only explain a small portion of the variation in the financial performance of mining companies. This aligns with Fadiah & Maryani (2025), who found that the performance of mining companies on the IDX is determined more by operational factors and commodity market conditions than by sustainability disclosure. Overall, there are several fundamental factors explaining why ESG

disclosure and carbon emission disclosure do not significantly affect financial performance in this study. First, sustainability disclosure in Indonesian mining companies remains a formal regulatory obligation driven by compliance with POJK No. 51/POJK.03/2017, rather than being an integrated business strategy within corporate operations. Second, the uniformity of disclosure values nearing perfection (ceiling effect) leads to limited data variation required for detecting an effect statistically. Third, the DAR proxy is mainly determined by structural factors such as fluctuations in global commodity prices, capital expenditure needs of mining projects, company expansion policies, as well as macroeconomic conditions such as interest rates and exchange rates, which collectively explain 94.5% of the variation in financial performance outside the model of this study.

## CONSLUSION

Based on the research findings regarding the effect of Environmental Disclosure, Social Disclosure, Governance Disclosure, and Carbon Emission Disclosure on Financial Performance in mining companies listed on the Indonesia Stock Exchange during the 2020–2024 period, several conclusions may be highlighted. The partial test results indicate that each independent variable does not significantly influence financial performance, meaning that none of the proposed partial hypotheses are supported empirically. In addition, the simultaneous test also shows that the four variables collectively do not have a significant impact on financial performance. This result is reflected in the F-statistic value of 1.373 with a significance level of 0.249. Furthermore, the R Square value of 5.5% suggests that the remaining 94.5% of variations in financial performance are explained by factors outside the research model.

The results of this study provide several important implications. First, ESG disclosure and carbon emission disclosure among mining companies in Indonesia still tend to function primarily as a form of regulatory compliance aimed at fulfilling POJK requirements rather than reflecting substantial operational implementation. Second, the use of DAR as a measurement of financial performance indicates that the influence of sustainability disclosure may be more long-term and therefore not directly visible in short-term capital structure performance. Third, the findings reveal a discrepancy between the quality of ESG reporting and the actual implementation of sustainability practices in the field. This condition suggests the need for regulators to encourage more substantive and impact-oriented reporting standards. Future studies are recommended to incorporate moderating or mediating variables, expand the observation period, and apply additional proxies for measuring financial performance.

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