ESG Disclosure To Financial Risks of Coal Companies: The Role of Profitability and Operational Capability

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Abstract

Growing expectations for sustainable business practices have encouraged coal mining companies to strengthen Environmental, Social, and Governance (ESG) disclosure as part of their corporate accountability. Despite this development, prior studies have reported inconsistent evidence regarding the relationship between ESG Disclosure and financial risk, particularly within Indonesia's coal mining industry. This study examines the effect of ESG Disclosure on financial risk while investigating the moderating roles of profitability and operational capability. Secondary data were obtained from the annual reports and sustainability reports of 10 coal mining companies listed on the Indonesia Stock Exchange (IDX) during 2021–2025, resulting in 50 firm-year observations. The hypotheses were tested using panel data regression and Moderated Regression Analysis (MRA). The findings indicate that ESG Disclosure does not exert a statistically significant direct effect on financial risk. However, profitability, measured by Return on Assets (ROA), and operational capability, measured by Total Asset Turnover (TATO), significantly strengthen the relationship between ESG Disclosure and financial risk. These findings imply that the effectiveness of ESG Disclosure in supporting financial risk management depends on a company's financial capacity and operational efficiency rather than on sustainability disclosure alone.

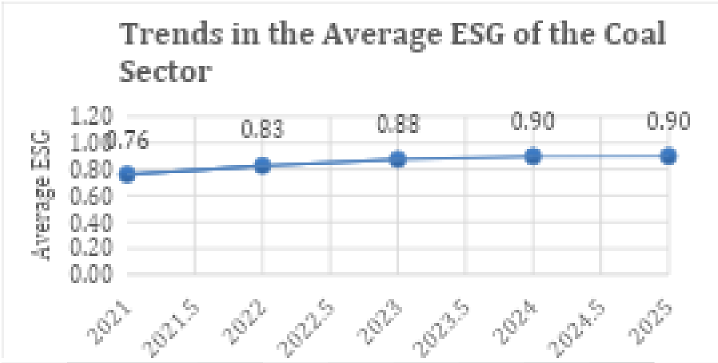
Keywords: ESG Disclosure, Financial Risk, Profitability, Operational Capability

Introduction

Corporate sustainability has become an integral aspect of contemporary business management as organisations are increasingly expected to create value not only through financial performance but also through responsible environmental, social, and governance (ESG) practices. Stakeholders, including investors, regulators, and society, now demand greater transparency regarding how companies manage sustainability-related issues. Consequently, ESG Disclosure has developed into an important reporting mechanism that communicates a firm's commitment to sustainable business practices. In this study, ESG Disclosure is employed as the independent variable because it reflects the extent to which companies disclose sustainability-related information. According to Stakeholder Theory and Agency Theory, transparent ESG reporting helps reduce information asymmetry, enhances stakeholder confidence, and provides investors with additional information for evaluating corporate prospects and financial risk (Parashar et al., 2024).

As one of Indonesia's strategic industries, the coal mining sector makes substantial contributions to export earnings, government revenue, employment opportunities, and national energy security. Despite its economic importance, this sector is frequently associated with environmental degradation, carbon emissions, and various social issues that have intensified public scrutiny of corporate sustainability practices. At the same time, mining companies operate under volatile commodity prices, evolving regulations, and uncertain economic conditions, all of which influence financing decisions and expose firms to different levels of financial risk. These circumstances increase the importance of ESG Disclosure as a means of demonstrating corporate accountability while maintaining stakeholder confidence.

Figure 1 presents the average level of ESG Disclosure among coal mining companies listed on the Indonesia Stock Exchange during 2021–2025. The data indicate a gradual improvement in disclosure practices throughout the observation period, suggesting that companies have become increasingly committed to reporting information related to environmental protection, social responsibility, and corporate governance. This upward trend reflects growing awareness of the importance of sustainability reporting in supporting long-term corporate development.



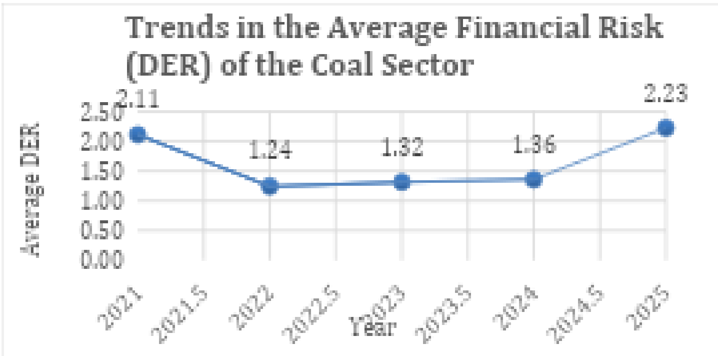


Figure 2. Average Financial Risk (DER) of Coal Mining Companies in Indonesia During 2021-2025
Source: Indonesia Stock Exchange (www.idx.co.id), processed by author

Figure 2 illustrates the movement of financial risk, measured by the Debt-to-Equity Ratio (DER), over the same period. The fluctuations observed from year to year indicate that companies adopted different financing strategies in response to changing business conditions. Variations in debt utilisation demonstrate that financial risk remained dynamic throughout the observation period, highlighting the need to examine factors that may influence corporate financial stability, including ESG Disclosure.

Earlier empirical studies have produced inconsistent conclusions regarding the relationship between ESG Disclosure and corporate financial outcomes. Some studies reported that sustainability disclosure improves corporate performance and strengthens stakeholder trust (Buallay, 2020; Shan, 2024). Conversely, Kunaifi et al., (2025) argued that implementing ESG initiatives may initially increase operational costs, thereby creating additional financial pressure. Other researchers, including Parashar et al., (2024), found that ESG practices contribute positively to long-term financial stability. Furthermore, Ridwan & Alghifari, (2024) suggested that the effectiveness of ESG implementation depends on internal corporate characteristics, particularly profitability and operational capability. These inconsistent findings indicate that additional evidence is required, especially for Indonesia's coal mining industry where research on ESG Disclosure and financial risk remains relatively limited.

Unlike many other industries, coal mining companies operate under highly volatile commodity prices, substantial capital requirements, and increasingly stringent carbon-emission regulations. These industry-specific conditions increase financing uncertainty, suggesting that the effectiveness of ESG Disclosure may depend on firms' internal capabilities. Therefore, profitability and operational capability are proposed as moderating variables to explain whether financially and operationally stronger firms can translate ESG Disclosure into lower financial risk more effectively.

Considering the increasing pressure on coal mining companies to maintain both sustainability performance and financial resilience, further investigation into the role of ESG Disclosure is necessary. Accordingly, this study aims to analyse the influence of ESG Disclosure on financial risk among coal mining companies listed on the Indonesia Stock Exchange while examining whether profitability and operational capability strengthen this relationship. The findings are expected to broaden the existing literature on ESG and provide practical insights for companies seeking to improve financial stability through effective sustainability implementation.

Literature Review

Stakeholder Theory explains that business organisations are responsible not only to shareholders but also to various stakeholder groups that influence or are influenced by corporate activities. Consequently, companies are expected to maintain transparent communication by providing comprehensive information regarding both financial and sustainability performance. ESG Disclosure represents one of the principal communication channels through which organisations demonstrate accountability for their environmental, social, and governance responsibilities. By improving the quality of disclosure, companies are better able to strengthen stakeholder trust and support long-term organisational sustainability (Chung et al., 2024). Legitimacy Theory argues that organisations seek to ensure that their operations remain consistent with the values, norms, and expectations accepted by society. To preserve public legitimacy, companies are encouraged to disclose sustainability-related information that reflects responsible environmental and social practices. ESG reporting therefore serves not only as a transparency mechanism but also as evidence that corporate activities are conducted in accordance with stakeholder expectations. Continuous disclosure of ESG information helps organisations strengthen credibility and maintain long-term legitimacy (Maji & Lohia, 2024). Agency Theory explains that differences in information possessed by managers and shareholders may create information asymmetry and agency conflicts. One approach to reducing these conflicts is to improve the transparency of corporate disclosures. ESG Disclosure complements conventional financial reporting by providing additional information regarding sustainability practices, enabling investors and other stakeholders to evaluate corporate risk and long-term performance more comprehensively. As a result, broader disclosure can improve decision quality while reducing uncertainty arising from incomplete information (Nguyen, 2026; Nur & Canli, 2025).

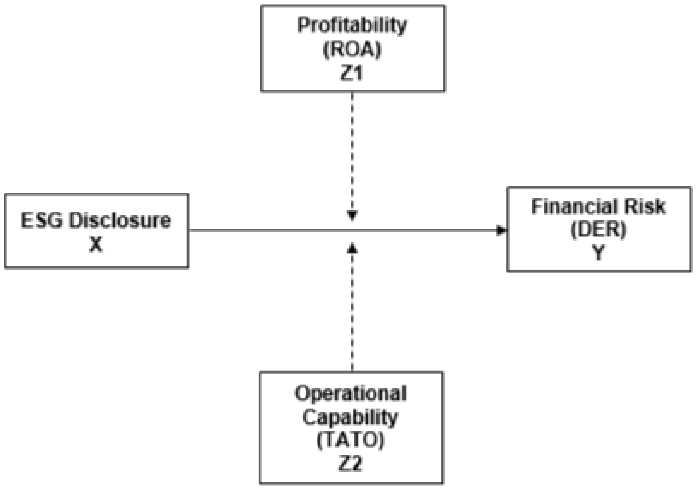
ESG Disclosure refers to the extent to which companies report information concerning environmental, social, and governance activities. In this study, disclosure is assessed using the ESG Disclosure Index (ESGDI), which is based on 32 indicators derived from the Global Reporting Initiative (GRI) Standards. A higher ESG disclosure score reflects greater corporate transparency in communicating sustainability-related activities and performance. Such disclosure enables stakeholders to evaluate how effectively firms manage sustainability issues that may influence corporate financial risk (Chung et al., 2024). Previous empirical evidence suggests that companies providing more comprehensive ESG information generally demonstrate stronger transparency and more effective long-term risk management. Although the financial benefits of ESG implementation may not be realised immediately, sustainability disclosure contributes to improved stakeholder confidence and corporate resilience over time (Kunaifi et al., 2025; Nguyen, 2026). Based on these theoretical arguments and prior findings, ESG Disclosure is expected to influence the level of financial risk experienced by coal mining companies.

H1: ESG Disclosure has a significant effect on the financial risk of coal mining companies in Indonesia.

Profitability reflects a company's capacity to generate earnings from the assets employed in its business activities. Firms with stronger profitability generally possess greater financial resources to support sustainability programmes and absorb the costs associated with ESG implementation. Consequently, profitable companies are more likely to implement ESG initiatives consistently without compromising financial stability (Nur & Canli, 2025). Ridwan & Alghifari (2024) suggested that profitability enhances the effectiveness of ESG implementation because financially healthy firms have greater flexibility to integrate sustainability initiatives into their corporate strategy. Therefore, companies with higher profitability are expected to obtain greater benefits from ESG Disclosure in managing financial risk than firms with weaker financial performance.

H2: Profitability moderates the relationship between ESG Disclosure and the financial risk of coal mining companies in Indonesia.

Operational capability describes a company's ability to utilise its assets and operational resources efficiently in generating revenue. Firms with higher operational efficiency are generally more capable of incorporating sustainability initiatives into their business processes while maintaining productivity and controlling operating costs. Efficient resource utilisation therefore supports the successful implementation of ESG practices within daily operations (Parashar et al., 2024). Moreover, efficient operational performance allows firms to maximise the benefits generated from sustainability initiatives while minimising unnecessary operational burdens. Consequently, operational capability is expected to reinforce the relationship between ESG Disclosure and financial risk.
H3: Operational capability moderates the relationship between ESG Disclosure and the financial risk of coal mining companies in Indonesia.



Method
This study employed a quantitative research design to investigate the relationship between ESG Disclosure and financial risk in Indonesian coal mining companies. In addition, the study examined whether profitability and operational capability strengthen the association between ESG Disclosure and financial risk by acting as moderating variables. To address these objectives, panel data regression combined with Moderated Regression Analysis (MRA) was applied. The analysis was based on secondary data obtained from annual reports, sustainability reports, and audited financial statements of coal mining companies listed on the Indonesia Stock Exchange (IDX) covering the period from 2021 to 2025.

The sample was determined using a purposive sampling technique to ensure that every observation satisfied the research objectives. Companies were included if they remained listed on the IDX throughout the study period, consistently published annual and sustainability reports, and disclosed all information required to calculate the research variables. Based on these criteria, 10 coal mining companies were selected, producing a total of 50 firm-year observations.

Financial risk serves as the dependent variable and is proxied by the Debt-to-Equity Ratio (DER), which measures the proportion of debt financing relative to shareholders' equity. A higher DER reflects a greater reliance on external financing and indicates a higher level of financial risk. DER was selected because coal mining is a capital-intensive industry that relies heavily on external financing to support exploration, heavy equipment, and long-term infrastructure investments. Therefore, DER appropriately reflects the financing risk associated with firms' dependence on debt and is widely used as a proxy for financial risk in capital-intensive industries. The independent variable is ESG Disclosure, measured using the ESG Disclosure Index (ESGDI), which consists of 32 disclosure indicators adapted from the Global Reporting Initiative (GRI) Standards. Profitability is represented by Return on Assets (ROA), while operational capability is measured using Total Asset Turnover (TATO). These two variables are incorporated into the model as moderating variables to evaluate whether they strengthen the influence of ESG Disclosure on financial risk.

The measurement formulas for each research variable are presented as follows:
Financial Risk (DER):

$$DER = \frac{Total\ Liabilities}{Total\ Equity}$$

ESG Disclosure:

$$ESGDI = \frac{\sum Xij}{Nj}$$

Profitability (ROA):

$$ROA = \frac{Net\ Income}{Total\ Assets}$$

Operational Capability (TATO):

$$TATO = \frac{Net\ Sales}{Total\ Assets}$$

Data processing was performed using EViews 13**.** The analysis began with descriptive statistics to summarise the characteristics of each variable. Next, panel data model selection was carried out through the Chow Test and Hausman Test to determine the most appropriate estimation model (Baltagi, 2021; Wooldridge, 2021). After selecting the panel model, classical assumption tests, including multicollinearity, heteroscedasticity, and autocorrelation tests, were conducted to evaluate model adequacy. The research hypotheses were subsequently examined using Moderated Regression Analysis (MRA), followed by the coefficient of determination (R^2), F-test, and t-test to assess the explanatory power and statistical significance of the estimated models (Hair et al., 2022). A normality test was not performed because panel data estimation does not require normally distributed residuals to produce the Best Linear Unbiased Estimator (BLUE), particularly when the sample size is considered sufficient (Gujarati et al., 2021).

The regression models are specified as follows:
Model 1:
$DER = \alpha + \beta_1 ESG + \varepsilon$

Model 2:
$DER = \alpha + \beta_1 ESG + \beta_2 ROA + \beta_3 (ESG \times ROA) + \varepsilon$

Model 3:
$DER = \alpha + \beta_1 ESG + \beta_2 TATO + \beta_3 (ESG \times TATO) + \varepsilon$

Where DER represents financial risk, ESG represents ESG Disclosure, ROA represents profitability, TATO represents operational capability, α denotes the constant term, β represents the regression coefficients, and ε represents the error term.

Results and Discussion

Descriptive statistical analysis was conducted as an initial step to describe the distribution and characteristics of the research variables before hypothesis testing. The results indicate that the observed coal mining companies exhibit considerable variation in ESG Disclosure, financial risk, profitability, and operational capability throughout the study period. Such variation suggests differences in financial structure, sustainability practices, and operational performance among the sampled firms.

Table 1. Descriptive Statistics

Statistics	DER	ESG	ROA	TATO
Mean	1.528000	0.852200	0.144920	0.668257
Median	0.745000	0.910000	0.119000	0.602821
Maximum	11.80000	0.970000	0.585000	1.270000
Minimum	0.210000	0.500000	-0.215000	0.203903

Std. Dev	2.249281	0.115887	0.153398	0.267117
Observation	50	50	50	50

Source: EViews 13 (Processed Data)

As shown in table 1, the average Debt-to-Equity Ratio (DER) is 1.528, indicating that the level of debt financing differs substantially across the sampled companies. Meanwhile, the average ESG Disclosure score reaches 0.852, implying that most firms have implemented sustainability reporting at a relatively high level. The mean values of ROA (0.145) and TATO (0.668) further indicate that the companies vary in terms of profitability and operational efficiency, reflecting different capacities to generate earnings and utilise assets effectively.

Selecting the most appropriate panel regression model is an essential step prior to hypothesis testing. Therefore, the estimation process began with the Chow Test, followed by the Hausman Test.

Table 2. Chow Test Results

Effect Test	Statistic	d.f.	Prob.
Cross-section F	2.214473	(9,39)	0.0419
Cross-section Chi-square	20.639652	9	0.0144

Source: EViews 13 (Processed Data)

The Chow Test compares the Common Effect Model (CEM) with the Fixed Effect Model (FEM). Since the probability value is below the 5% significance level, the null hypothesis is rejected. Accordingly, the Fixed Effect Model is considered more appropriate than the Common Effect Model for analysing the panel data used in this study.

Table 3. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section Random	7.880347	1	0.0050

Source: EViews 13 (Processed Data)

The Hausman Test was subsequently performed to determine whether the Fixed Effect Model or the Random Effect Model should be employed. The significant probability value indicates that the Fixed Effect Model provides more reliable and consistent parameter estimates. Consequently, the Fixed Effect Model was selected as the final estimation model for the regression analysis.

Prior to estimating the regression equations, several diagnostic tests were conducted to evaluate whether the selected model satisfies the classical assumptions required for reliable statistical inference.

Table 4. Multicollinearity Test Results

Variable	ESG	ROA	TATO
ESG	1.0000	0.1713	0.1942
ROA	0.1713	1.0000	0.6308
TATO	0.1942	0.6308	1.0000

Source: EViews 13 (Processed Data)

The correlation matrix demonstrates that all correlation coefficients among the independent variables remain below the recommended threshold of 0.80. These findings indicate the absence of serious multicollinearity, suggesting that each explanatory variable contributes distinct information to the regression model.

Table 5. Heteroscedasticity Test Results

Model	Variable	Probability
H1	ESG	0.4502

H2	ESG	0.3492
	ROA	0.9518
	ESG_ROA	0.8774
H3	ESG	0.5527
	TATO	0.7691
	ESG_TATO	0.7379

Source: EViews 13 (Processed Data)

The heteroscedasticity test reveals that every probability value exceeds 0.05, indicating that the residual variances remain constant across observations. Therefore, the estimated regression models do not exhibit heteroscedasticity and satisfy the homoscedasticity assumption.

Table 6. Autocorrelation Test Results

Model	**Durbin-Watson Statistic**
H1	1.728451
H2	2.041405
H3	1.725713

Source: EViews 13 (Processed Data)

The Durbin-Watson statistics reported in table 6 indicate that all estimated models satisfy the autocorrelation assumption. Based on the Durbin-Watson critical values for 50 observations and one independent variable, the upper bound (dU) is approximately 1.63 and the value of 4-dU is approximately 2.37. Since all Durbin-Watson values fall between dU and 4-dU, it can be concluded that the regression models do not experience autocorrelation problems. Therefore, all research models satisfy the autocorrelation assumption and are appropriate for further panel data regression analysis.

Regression analysis was undertaken to evaluate both the direct influence of ESG Disclosure on financial risk and the moderating effects of profitability and operational capability.

Table 7. Regression Results of ESG Disclosure and Financial Risk

Variable	**Coefficient**	**t-Statistic**	**Probability**
C	6.746117	2.550659	0.0157
ESG	-6.123113	-1.960480	0.0571
Model Statistics		Value	
R-Squared		0.670670	
Adj. R-Squared		0.586227	
F-Statistic		7.942242	
Prob(F-Statistic)		0.000001	

Source: EViews 13 (Processed Data)

The estimation results show that ESG Disclosure has a regression coefficient of −6.123113, indicating a negative association with financial risk. However, the corresponding probability value of 0.0571 is greater than the 5% significance level. Therefore, ESG Disclosure does not have a statistically significant direct effect on financial risk among the sampled coal mining companies.

Table 8. Moderated Regression Results of Profitability

Variable	Coefficient	t-Statistic	Probability
ESG	-11.75532	-3.432224	0.0022
ROA	-28.06208	-2.446829	0.0208
ESG_ROA	27.90341	2.175514	0.0378

Model Statistics	Value
R-Squared	0.727952
Adj. R-Squared	0.639721
F-Statistic	8.250471
Prob(F-Statistic)	0.000000

Source: EViews 13 (Processed Data)

The interaction between ESG Disclosure and profitability produces a positive coefficient of 27.90341, with a probability value of 0.0378. This finding indicates that profitability significantly strengthens the relationship between ESG Disclosure and financial risk. Companies with stronger profitability are therefore more capable of enhancing the effectiveness of sustainability disclosure in relation to financial risk management.

Table 9. Moderated Regression Results of Operational Capability

Variable	Coefficient	t-Statistic	Probability
ESG	-21.36502	-3.443875	0.0017
TATO	-21.32087	-2.735650	0.0100
ESG_TATO	20.73341	2.174085	0.0380

Model Statistics	Value
R-Squared	0.734322
Adj. R-Squared	0.648156
F-Statistic	8.522205
Prob(F-Statistic)	0.000000

Source: EViews 13 (Processed Data)

The interaction term between ESG Disclosure and operational capability also yields a positive coefficient (20.73341) and is statistically significant (p = 0.0380). This result confirms that operational capability reinforces the influence of ESG Disclosure on financial risk.

Table 10. Coefficient of Determination Results

Research Model	R-Squared	Adjusted R-Squared
ESG on DER	0.670670	0.586227
ROA Moderation	0.727952	0.639721
TATO Moderation	0.734322	0.648156

Source: EViews 13 (Processed Data)

The coefficient of determination indicates that the explanatory power differs across the estimated models. Among the three specifications, the regression model incorporating operational capability as the moderating variable records the highest R-squared value (0.734322). This is followed by the profitability moderation model (0.727952) and the direct effect model (0.670670). These findings suggest that including moderating variables improves the ability of the regression models to explain variations in corporate financial risk.

Discussion

The regression analysis indicates that ESG Disclosure does not significantly influence the financial risk of coal mining companies in Indonesia. Although the estimated coefficient shows a negative direction, the probability value (0.0571) exceeds the 5% significance level, indicating that the relationship is not statistically significant. Therefore, the findings do not provide sufficient evidence to support the first hypothesis. This result implies that differences in the level of ESG Disclosure among the sampled companies are not the primary factor explaining variations in corporate financial risk during the observation period.

From the perspective of Stakeholder Theory, companies are encouraged to disclose comprehensive information that enables stakeholders to evaluate corporate performance from both financial and sustainability perspectives. ESG Disclosure functions as an additional source of information that improves transparency and strengthens communication between companies and stakeholders (Chung et al., 2024). Likewise, Legitimacy Theory argues that sustainability reporting allows firms to demonstrate that their business activities are aligned with social expectations, thereby maintaining organisational legitimacy (Maji & Lohia, 2024). Furthermore, Agency Theory suggests that broader disclosure reduces information asymmetry by providing investors with more complete information regarding corporate activities beyond traditional financial reports (Nguyen, 2026; Nur & Canli, 2025).

Despite these theoretical expectations, the findings reveal that ESG Disclosure alone does not significantly reduce financial risk. This implies that sustainability reporting is not the primary determinant of financing decisions or capital structure within the sampled firms. Rather, corporate financial risk is likely influenced by a combination of internal and external factors beyond sustainability disclosure (Chung et al., 2024; Maji & Lohia, 2024). Since financial risk in this study is represented by the Debt-to-Equity Ratio (DER), it reflects the extent to which companies depend on debt financing. Such financing decisions are also shaped by profitability, liquidity, cash flow, business risk, market conditions, and fluctuations in coal prices. Consequently, improvements in ESG Disclosure may not immediately translate into lower financial risk, particularly in an industry that remains highly sensitive to external economic conditions (Ridwan & Alghifari, 2024). Furthermore, the benefits generated by ESG implementation generally emerge over a longer period rather than immediately after disclosure (Kunaifi et al., 2025). Consequently, ESG Disclosure alone is insufficient to immediately reduce corporate financial risk, H1 is not supported.

The moderating regression analysis demonstrates that profitability significantly strengthens the relationship between ESG Disclosure and financial risk. The positive interaction coefficient (27.90341) and its statistically significant probability value (0.0378) indicate that companies with stronger profitability obtain greater benefits from ESG Disclosure in managing financial risk.

According to Stakeholder Theory, firms with higher profitability possess greater financial resources to respond to stakeholder expectations through investments in sustainability programmes (Chung et al., 2024). Strong financial performance enables companies to implement ESG initiatives more consistently without disrupting operational activities or creating additional financial pressure. Consequently, profitable firms are more capable of converting sustainability commitments into improvements in corporate performance.

The findings also support the argument proposed by Ridwan & Alghifari (2024), that profitability enhances the effectiveness of ESG implementation. Companies generating higher profits have greater flexibility to allocate financial resources to environmental programmes, governance improvements, and social initiatives while maintaining stable financial performance. Under these circumstances, ESG Disclosure becomes more meaningful because sustainability commitments are supported by sufficient financial capacity rather than being limited to disclosure alone. Thus, H2 is supported.

The significant moderating role of profitability also suggests that sustainability disclosure becomes more valuable when supported by adequate financial capacity. Firms with stronger profitability are better positioned to finance ESG activities over the long term without creating additional financial pressure. Under these circumstances, ESG Disclosure contributes more effectively to corporate financial risk management.

The empirical results further reveal that operational capability significantly moderates the relationship between ESG Disclosure and financial risk. The positive interaction coefficient (20.73341) with a significance level below 5% confirms that companies operating more efficiently are better able to maximise the benefits associated with ESG implementation.

From the perspective of Legitimacy Theory, organisations are expected to conduct business activities in a manner that satisfies societal expectations while maintaining accountability for environmental and social impacts (Maji & Lohia, 2024). Companies with stronger operational capability generally possess more efficient production processes and better resource utilisation, enabling them to integrate sustainability initiatives into their operational activities without reducing productivity.

This finding is consistent with Parashar et al. (2024) and Ridwan & Alghifari (2024), who reported that operational efficiency increases the effectiveness of ESG implementation. Efficient asset utilisation allows companies to optimise sustainability programmes while controlling operational costs, thereby generating greater financial benefits. Consequently, firms with stronger operational capability are better positioned to transform ESG commitments into improvements in financial resilience.Therefore, H3 is supported.

Furthermore, the results indicate that operational capability serves as an essential supporting factor in improving the effectiveness of ESG Disclosure. Efficient utilisation of corporate assets enables sustainability initiatives to generate operational improvements that ultimately contribute to stronger financial stability. Therefore, the contribution of ESG Disclosure to financial risk management becomes more pronounced when firms possess higher operational capability. Practically, firms with higher TATO utilize their assets more efficiently to generate revenue and cash flow, enabling them to recover the initial costs of ESG implementation more quickly. This operational efficiency reduces the financial burden of sustainability investments while allowing ESG initiatives to contribute more effectively to long-term financial stability.

Overall, the empirical findings demonstrate that ESG Disclosure does not independently explain variations in financial risk among Indonesian coal mining companies. However, its effectiveness increases substantially when firms possess adequate profitability and strong operational capability. These results indicate that sustainability disclosure alone is insufficient to improve financial stability unless companies also have the financial resources and operational efficiency required to implement ESG initiatives successfully. Consequently, the relationship between ESG Disclosure and financial risk should be understood as being contingent upon the internal capabilities of the firm rather than being solely determined by the extent of sustainability reporting.

Conclusion

This study investigated the influence of ESG Disclosure on the financial risk of coal mining companies listed on the Indonesia Stock Exchange during the 2021–2025 period while examining the moderating roles of profitability and operational capability. The empirical findings indicate that ESG Disclosure does not have a statistically significant direct effect on financial risk. Although sustainability disclosure enhances corporate transparency and demonstrates accountability toward stakeholders, the results suggest that it is not sufficient to explain variations in financial risk across the sampled companies. This finding implies that financial risk is influenced by a broader combination of financial, operational, and external business factors rather than ESG Disclosure alone (Chung et al., 2024; Kunaifi et al., 2025)

The study further reveals that profitability significantly moderates the relationship between ESG Disclosure and financial risk. Companies with stronger financial performance possess greater flexibility to finance sustainability initiatives, enabling ESG practices to generate greater value in supporting financial stability. Likewise, operational capability also acts as a significant moderating variable, indicating that firms with more efficient asset utilisation are better able to integrate ESG initiatives into their operational activities and transform sustainability commitments into financial benefits. These findings demonstrate that the effectiveness of ESG Disclosure depends not only on the extent of sustainability reporting but also on the firm's internal capabilities to implement ESG practices effectively.

From a practical perspective, the findings suggest that coal mining companies should not regard ESG Disclosure merely as a reporting obligation. Instead, sustainability disclosure should be accompanied by continuous improvements in profitability and operational efficiency to maximise its contribution to financial stability. Companies that integrate sustainability initiatives with sound financial management and efficient operational practices are more likely to achieve long-term resilience while responding effectively to stakeholder expectations. Accordingly, improving operational efficiency and profitability should accompany ESG Disclosure to ensure that sustainability investments enhance corporate resilience rather than becoming an additional financial burden.

This research is subject to several limitations. First, the analysis focuses exclusively on coal mining companies listed on the Indonesia Stock Exchange, limiting the generalisability of the findings to other industries. Second, financial risk is measured solely using the Debt-to-Equity Ratio (DER), whereas future studies may consider alternative indicators to provide a broader assessment of corporate financial risk. Future research is also encouraged to extend the observation period, incorporate additional moderating variables, or examine other industrial sectors to obtain a more comprehensive understanding of the relationship between ESG Disclosure and financial risk.

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