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The Role of Financial Performance in Corporate Environmental Expenditure Moderated by Independent Commissioners

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ABSTRACT
This study analyzes the influence of profitability, liquidity, and leverage on environmental costs, moderated by independent commissioners. The sample consists of 126 mining and palm oil companies listed on the Indonesia Stock Exchange for 2021–2023, totaling 378 observations. This Study were analyzed using panel data regression method. the results show that profitability significantly increases environmental costs, while liquidity has a significant negative effect and leverage is insignificant. Independent commissioners do not directly affect environmental costs but strengthen the link between liquidity and environmental spending. These findings suggest that financial performance shapes environmental commitments in different ways, whereas the supervisory role of independent commissioners remains limited. Theoretically, this study reinforces stakeholder theory by confirming that profits extend beyond shareholders to social–environmental needs and enriches environmental accounting literature by revealing liquidity constraints on sustainability. The implications are relevant for companies, boards, and regulators in enhancing sustainability governance.

1. INTRODUCTION

The growth of business entities in Indonesia contributes significantly to the national economy, both through increased state revenue and employment. However, behind these benefits, many companies' operations have a negative impact on the environment and surrounding communities, particularly in the mining, manufacturing, and palm oil sectors. In this situation, companies are required to not only focus on profit, but also pay attention to the balance between economic, social, and environmental aspects as reflected in the triple bottom line concept (people, planet, profit). This concept encourages companies to be responsible to all stakeholders including the community and the environment affected by their business activities. One concrete form of this responsibility is environmental expenditure, which includes efforts to prevent pollution, control waste, and restore ecological damage (Taufiq & Silaturahmi, 2022).

This practice is part of the implementation of green accounting, which is recognized as capable of improving the effectiveness of environmental management and supporting transparency in financial reporting (Chairia et al., 2022). In addition, carbon emission disclosure as part of green accounting is considered important to ensure sustainability and environmental preservation (Sisdianto & Ramdani, 2024), although this disclosure does not yet fully reflect the principles of deep ecology that are in harmony with nature (Heniwati & Asni, 2019).

In Indonesia, although there are no comprehensive regulations requiring the implementation of green accounting, limited liability companies engaged in natural resources are required to carry out social and environmental responsibilities as stipulated in PP No. 47 Tahun 2012. In addition, the PROPER program organized by the Ministry of Environment also serves as an instrument for assessing companies' environmental performance (Setyaningsih & Asyik, 2016). However, in practice, many large companies are still suboptimal in managing their environmental impact, despite their considerable financial capacity. For example, the waste produced by PT Vale Indonesia has caused an increase in the rate of sedimentation, creating land that has reduced the area of Lake Mahalona by 151 hectares and caused deforestation covering an area of 4,449.22 hectares (Jatmiko, 2022). As well as the new case involving PT Timah, which caused environmental damage amounting to Rp271 trillion (Hardiantoro & Afifah, 2024). This phenomenon raises the question: are companies with strong financial conditions truly committed to the environment, or do they actually ignore it?

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Previous studies have shown that profitability has a significant positive effect on corporate social responsibility (CSR) activities undertaken by (Swandari & Sadikin, 2016). Meanwhile, liquidity also has a positive and significant effect on corporate sustainability spending (Farhan et al., 2023). While leverage tends to have a negative impact on environmental performance (Wihandoko et al., 2022). On the other hand, the presence of independent commissioners is believed to strengthen sustainability practices through objective oversight functions (Wen et al., 2020). However, most previous studies have focused more on environmental disclosure than on the actual costs incurred by companies. Thus, this study aims to fill this gap by directly examining how financial performance affects environmental costs and evaluating the moderating role of independent commissioners in this relationship.

Stakeholder Theory

The stakeholder theory states that every internal and external party has an interest in the company, so that every policy can affect them and the company (Ningtiyas & Riharjo, 2018). According to Ghozali & Chairi (2020), companies not only pursue their own interests, but also create value for affected parties. In the context of companies that damage the environment, the community as an affected party needs to be considered because their activities often cause environmental damage. For this reason, companies allocate funds for social and environmental activities to meet the interests of the community as one of their stakeholders. In addition to the community, companies also have an obligation to fulfill the interests of shareholders and creditors. Therefore, the amount of maturing debt needs to be considered before allocating environmental funds. Companies with debts smaller than their resources are generally better able to fulfill their obligations to other stakeholders, including the community, through CSR funds.

Agency Theory

Jensen & Meckling, cited from Juniartha & Dewi (2019), explain that the relationship or contract between the principal, as the owner of a company, and the agent, who is employed and given responsibility to manage the company in the principal's interests, can lead to conflicts of interest. According to this theory, conflicts of interest can arise between the agent and the principal, with the agent tending to pursue their own interests without regard for the interests of the company owner. Therefore, investors assign commissioners to oversee the performance of managers so that they remain oriented towards the interests of the owners. Commissioners also ensure that companies implement good corporate governance, namely transparency, accountability, fairness, independence, and responsibility as a form of manager responsibility to the owners. The principle of responsibility relates to CSR and environmental responsibilities that companies must fulfill. However, this often causes conflict because managers want to maximize profits but have to incur large costs for CSR and the environment. To mitigate the inconsistency of the principle of responsibility in GCG, commissioners play a role in supervising the implementation of all GCG principles and preventing problems that are detrimental to company owners. With the supervision of commissioners, managers are potentially more compliant and funding for environmental programs can be maximized in accordance with the impact of the company's operations.

Research Hypothesis

High profitability in a company indicates that the company is capable of generating high profits from its business operations. High profits expand the company's ability to fund its operational activities, expand, and fund environmental expenditures, whether for prevention, detection, or failure response activities. Stakeholder theory explains that a company is not an organization that acts solely in its own interests, but also provides value to those who are directly and indirectly affected (Ghozali & Chairi, 2020). The community, as the affected party, has interests that must be fulfilled by the company. As part of its responsibility to the community, the company funds programs related to the environment as compensation for the pollution of the ecosystem caused by the mining company's operational activities. Previous research was written by Swandari & Sadikin (2016) shows that profitability has a significant impact on corporate social responsibility (CSR) activities undertaken by companies. According to the study, high profits generated by companies give them the flexibility to fund corporate activities, one of which is CSR. Another study conducted by Rini & Adhariani (2021) indicates that profitability has a positive and significant effect on environmental costs. From the above explanation, the researcher suspects that increased profitability causes an increase in the total environmental costs incurred by the company, so the researcher proposes the following hypothesis:

H1: Profitability has a significant effect on environmental costs

Liquidity reflects a company's ability to settle obligations that will expire within a year (Siswanto, 2021). According to stakeholder theory, companies must fulfill their obligations to stakeholders, one of which is creditors.

Creditors, as stakeholders, need to be taken into consideration by company management in regulating company expenditures. The fulfillment of company obligations to creditors is very binding, so the allocation of funds to redeem maturing debts is a priority. This assumption is supported by research Farhan et al (2023) which explains the results that liquidity has a positive effect on corporate sustainability spending, which consists of environmental and social aspects. These results can be explained because companies with low liquidity need to cut company expenditures, one of which is sustainability expenditures, to ensure the availability of funds to meet their primary obligations to creditors. Based on the above explanation, the researchers hypothesize that an increase in company liquidity will increase company expenditures on environmental contributions. Thus, the following research hypothesis is obtained:

H2: Liquidity Significantly Affects Environmental Costs

Leverage reflects how much debt a company uses in its expenditures (Siswanto, 2021). High leverage indicates that a company finances its operations with large amounts of debt, thereby increasing the potential for default. Stakeholder theory suggests that companies act to meet the interests of their stakeholders, one of which is creditors. This has an impact on companies, which tend to cut back on spending in order to prepare funds to repay their debts. In addition, companies that use high debt financing tend to reduce their CSR programs in order to avoid attracting the attention of creditors (Budidarma, 2011). Previous research was conducted by Wihandoko et al (2022) concludes that leverage has a negative and significant effect on environmental performance. According to this study, these results can be concluded because high leverage increases corporate risk, which ultimately causes companies to reduce funding for the environment. Based on the above explanation, the researchers hypothesize that an increase in corporate leverage will reduce corporate spending on environmental contributions. Thus, the following research hypothesis is obtained:

H3: Leverage Significantly Affects Environmental Costs

The agency theory highlights the relationship between the principal as the owner of the company and the company manager in managing the company. In this case, the management has direct control over the company, giving them more freedom in regulating and obtaining information related to the company, which puts managers in a position of superiority over the owners of the company Juniartha & Dewi (2019). To ensure that managers lead the company in the right direction, supervision is needed to monitor their performance, which is one of the functions of commissioners, including independent commissioners. Commissioners not only supervise managers' performance in generating profits, but also ensure that managers run the company in accordance with existing regulations and that managers maintain good relationships with all stakeholders, such as creditors, shareholders, and the community, with the aim of avoiding problems that could harm the company in the future. Therefore, commissioners supervise managers in implementing CSR and environmental programs as a way of maintaining good relations with the community. Research conducted by Susanto et al (2024) and Kamaludin et al (2022) concludes that independent commissioners have a significant influence on ESG disclosure. Independent commissioners play an important role in improving the company's ability to make strategic decisions and also in ESG policies. The independent board contributes to simplifying ESG-related communication and balancing financial objectives with the company's social obligations (Chebbi & Ammer, 2022):

H4: Independent Commissioners Have a Significant Impact on Environmental Costs

Agency theory explains the relationship between company owners as principals and agents or managers who are given the authority to manage the company. Because agents or managers control the company directly and have more information than principals, managers have an advantage over company owners, which tends to give rise to opportunistic behavior on the part of managers. Therefore, commissioners are appointed to oversee performance and ensure that managers do not harm stakeholders in their management of the company. With the presence of commissioners, the opportunistic nature of managers can be suppressed and managers can run the company well and be oriented towards meeting the needs of all stakeholders, one of which is the community affected by the company's operations. This pressure motivates companies that generate high profitability or profits to implement corporate ESG programs. Research by Ardi & Yulianto (2020) shows that independent commissioners moderate profitability in influencing improvements in corporate environmental disclosure. The actions of independent commissioners in terms of strict supervision cause companies to move in a positive direction to gain legitimacy from the public. From this description, the following hypothesis is obtained:

H5: Independent Commissioners Moderate the Relationship Between Profitability and Environmental Costs

Liquidity describes the ratio between a company's current assets and short-term liabilities to its creditors. Companies operate to protect the interests of stakeholders, including creditors and shareholders. In this context, companies must find a balance between paying their liabilities to meet the interests of their creditors and also to protect the interests of shareholders. According to agency theory, agents, in this case managers, act in the interests of principals, namely stakeholders. However, differences in objectives and information asymmetry give rise to conflicts of interest between principals and agents, requiring companies to implement oversight to protect the interests of principals. The existence of independent commissioners strengthens the company's goal of being more oriented towards the interests of stakeholders, suppressing the opportunistic nature of managers that can harm stakeholders, and carrying out company operations responsibly towards the affected community and environment. Sofwan's (2019) research shows that the board of commissioners is able to strengthen the positive influence of liquidity on CSR disclosure. Oversight by the board of commissioners has been proven to control managers' attitudes so that they do not act contrary to the principal's wishes. In situations where liquidity increases, indicating that the company has more assets than just to meet the interests of creditors, independent commissioners will exert pressure to fund activities related to the environment:

H6: Independent Commissioners Moderates Liquidity Relationships with Environmental Costs

Leverage shows how much debt a company uses to finance itself. High leverage indicates a high amount of debt, which increases financial risk. Stakeholder interests are the basis for a company's actions. Stakeholders include not only shareholders, but also creditors, the community, and the government. In this case, the company considers the interests of creditors before undertaking other financing, particularly in relation to the environment. According to agency theory, agents, in this case managers, act in the interests of principals, namely stakeholders. However, differences in objectives and information asymmetry give rise to conflicts of interest between principals and agents, requiring companies to implement oversight to protect the interests of principals. Supervision by independent commissioners will put pressure on company managers to allocate funds for social and environmental needs if there are still funds available after fulfilling all obligations to creditors, considering that supervision by commissioners causes companies to move in a positive direction in order to gain legitimacy from the public (Ardi & Yulianto, 2020). Research by Safitri & Rofiuddin (2021) reveals that independent commissioners can moderate the relationship between leverage and Islamic Social Reporting (ISR) or CSR. A high proportion of independent commissioners allows for more objective decision-making to protect stakeholders, so that the company can be managed properly.

H7: Independent Commissioners Moderates the Relationship Between Leverage and Environmental Costs

2. METHOD

This study's population includes all mining companies listed on the Indonesia Stock Exchange from 2021 to 2023. The sample was taken using purposive sampling, which is the selection of samples based on specific criteria. The criteria for the sample in this study were mining and palm oil plantation companies that published annual reports on the official website of the Indonesia Stock Exchange and the official website of each company for the period 2021-2023, mining and palm oil plantation companies that released sustainability reports for the 2021-2023 period on their respective websites, mining, palm oil, and manufacturing companies that disclosed the nominal amount of environmental costs in their sustainability reports, and mining and palm oil companies that had complete data and met the requirements for data related to the research variables. Based on the research criteria outlined above, a sample of 126 companies that met the criteria was obtained. The research was conducted over three years, resulting in a sample of 378 data points.

Table 1. Sample Criteria Selection

No	Criteria	Total
1	Number of mining, palm oil plantation, and manufacturing companies listed on the IDX in 2021-2023	308
2	Mining companies that have not been audited	0
3	Not Publishing Annual or Sustainability Reports for the 2021-2023 Period	-54
4	Did not provide information related to environmental costs during the 2021-2023 period	-128
	Total of Sample Companies	**126**
	Number of sample data (126 x 3)	**378**

The independent variables in this study consist of profitability, liquidity, and leverage. The dependent variable in this study is environmental costs. Profitability is a measure of a company's ability to utilize its resources to generate profits. Measurements can be taken at several companies over a certain period of time. Measurements can be taken at several companies over a certain period of time, covering both increases and decreases, as well as the factors that cause these changes (Fitriana, 2024). In this study, the return on assets (ROA) ratio represents the profitability variable. Liquidity reflects the availability of a company's current assets to pay off liabilities with a maturity of less than one year by utilizing current assets consisting of cash, accounts receivable, and inventory. In this study, liquidity is measured using the current ratio. Leverage reflects the amount of debt used as a source of funding for the company's operational activities and the extent to which the company's assets and equity can cover the debt (Hantono et al., 2023). There are several ways to measure a company's leverage level, but this study uses the financial leverage ratio.

The moderating variable in this study is independent commissioners. The board of commissioners is part of the company that is tasked with supervising the company's activities, both overall and specific, referring to the provisions in the articles of association, and submitting proposals to the board of directors. Independent commissioners are commissioners who have no affiliation with parties that have family and business relationships with the company's shareholders (Sudarmanto et al., 2021). Independent commissioners are measured by looking at the composition of independent commissioners relative to the total number of commissioners. The dependent variable in this study is environmental costs. Environmental costs are expenses incurred by companies due to poor environmental conditions and as a result of the company's operations in generating profits. Environmental expenditures can be categorized into prevention costs, identification costs, failure costs that occur within the company's control, and failure costs that occur outside the company's control (Almunawwaroh et al., 2022). Environmental costs are measured by looking at the total environmental costs contained in the company's sustainability report and converting them into natural logarithms.

Table 2. Summary of Variable Definition, Measurement and Sources

Variable	Symbol	Definition/Measurement	Source
Profitability	P	A ratio that measures a company's ability to utilize its resources to generate profits. Measurements can be taken for several companies over a specific period of time. (Fitriana, 2024). $\frac{Net\ Profit}{Total\ Assets}$ (Febriana et al., 2021)	Annual Report/Financial Statements
Liquidity	LK	A ratio that reflects the availability of a company's current assets to settle liabilities with a maturity of less than one year by utilizing current assets consisting of cash, accounts receivable, and inventory. (Siswanto, 2021). $\frac{Current\ Assets}{Current\ Debt}$ (Siswanto, 2021)	Annual Report/Financial Statements
Leverage	LV	A ratio that reflects the amount of debt used as a source of funding for the company's operational activities and the extent to which the company's assets and equity can cover the debt (Hantono et al., 2023). In this study, leverage represented by debt to equity rasio. $\frac{Total\ Debt}{Total\ Equity}$ (Siswanto, 2021)	Annual Report/Financial Statements

Independent Commissioner	KI	Commissioners are tasked with supervising the company's activities in accordance with the articles of association and providing recommendations to the board of directors. Independent commissioners are commissioners who are not affiliated with parties that have family or business relationships with shareholders. (Sudarmanto et al., 2021). $\frac{Independent\ Commissioners}{Total\ Board\ Of\ Commissioners}$ Ramadhan & Firmansyah (2022) and Christian et al (2024)	Annual Report
Environmental Costs	BL	Environmental costs are expenses incurred by companies as a result of poor environmental conditions caused by operational activities to generate profits (Almunawwaroh et al., 2022). Ln(Total of Environmental Cost) (Almunawwaroh et al., 2022)	Sustainability Report

Moderated regression analysis is the method applied in the analysis in this study. This method is used to evaluate the relationship between independent variables and dependent variables by including moderating variables that can increase or decrease the strength of the relationship between independent variables and dependent variables. Because the data is panel data, Eviews is used as an analysis tool. Testing the determination of the panel data regression model to determine the best model in regression testing. The selected model can be a Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). After the best model is known, the testing procedure continues to the classical assumption testing stage so that there is no bias in the regression model (Kusumaningtyas et al., 2022).

According to (Kusumaningtyas et al., 2022), classical assumption tests are basically conducted with the aim of ensuring that the regression model is free from bias and its parameters are BLUE or Best Linear Unbiased Estimators. However, not all models meet all tests in classical assumptions. According to Basuki & Arifin (2014), because panel data is cross-sectional, the autocorrelation test is not required in classical assumption tests for panel data, considering that autocorrelation only occurs in time series data. The classical assumption tests in this study consist of normality tests, heteroscedasticity tests, and multicollinearity tests. Normality tests are performed to ensure that the research data is normally distributed so that the regression model is not biased. There are two ways to determine whether the data is normally distributed, namely Jarque-Bera and histogram (Kusumaningtyas et al., 2022). The heteroscedasticity test is performed to ensure that the data is free from heteroscedasticity, which is the inequality of variance between the residuals of one observation and another. In this study, the Glejser test was used as a method for testing heteroscedasticity. Multicollinearity tests were conducted to determine whether there were relationships between each independent variable due to small sample sizes, limitations in the sampled population, overdetermined models, and common trends (Kusumaningtyas et al., 2022).

Hypothesis testing in the moderation regression model was conducted to determine whether the previously formulated hypotheses could be accepted or rejected. There are two ways to determine whether a hypothesis can be accepted or rejected, namely by using the T-statistic value or the probability value. There are two equations in the moderation regression model analysis in this study, as follows:

$$BLi,t = \alpha 0 + \beta 1Pi,t + \beta 2LKi,t + \beta 3LVi,t + \beta 4KIi,t + ei,t \quad (1)$$

$$BLi,t = \alpha 0 + \beta 1Pi,t + \beta 2LKi,t + \beta 3LVi,t + \beta 4KIi,t + \beta 5Pi,t*KIi,t + \beta 6LKi,t*KIi,t + \beta 7LVi,t*KIi,t + ei,t \quad (2)$$

3. RESULT AND DISCUSSION

Based on the test results shown in Table 3, a Chi-Square statistic value of 604.172916 with a p-value of 0.0000 was obtained. Since the p-value is much smaller than the significance level of 5% (0.05), the null hypothesis (H_0), which states that the Common Effect model is better, is rejected. Thus, it can be concluded that the Fixed Effect model is significantly better at explaining the variability of panel data than the Common Effect model. Therefore, the Fixed Effect model is a more appropriate choice at this early stage.

Table 3. Model Selection

Test	Chi-Sq Statistic	P-Value	Selected Models
Chow test	604.172916	0.0000	Fixed Effect Model
Haussman test	3.850007	0.4267	Random Effect Model
Lagrange Multiplier Test		0.0000	Random Effect Model

Source: Data Processed, 2025

The next test result a Chi-Square statistic value of 3.850007 with a p-value of 0.4267. Since the p-value is greater than 0.05. These results indicate that the random effect model is better than the fixed effect model. The Lagrange Multiplier test results show a p-value of 0.0000, which is less than 0.05. These results indicate that the random effect model is better than the common effect model. Considering the results of these three tests, the Random Effect model is selected as the most appropriate panel data regression model to be used in further analysis.

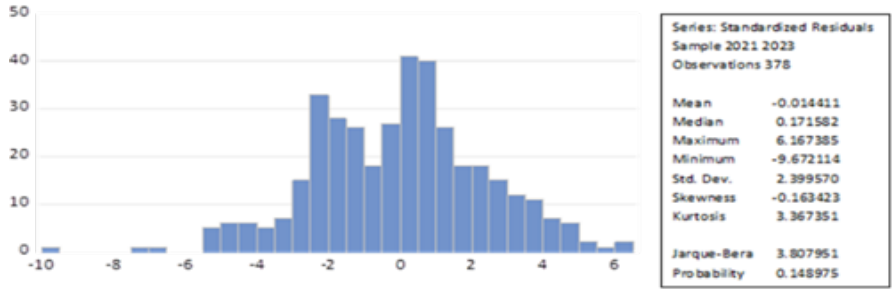

Figure 1. Normality Test

Source: Data Processed, 2025

From the normality test shown in Figure 1, it is known that the probability value of the Jarque-Bera test is 0.148975, which is greater than the specified significance level of 0.05. Thus, the results indicate that the data are normally distributed. This means that the data used in this study can be said to have met the normality assumption so that the regression results are free from bias.

Table 4. Multicollinearity Test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
P	0.382210	1.230442	1.151797
LK	9.66E-05	2.140628	2.005919
LV	9.52E-05	1.855550	1.804727
KI	2.019188	13.16159	1.000917

Source: Data Processed, 2025

The multicollinearity test shown in Table 4 indicates that the Centered Variance Inflation Factor (VIF) values for all independent variables are well below 10, which is the general threshold for detecting multicollinearity. The VIF values for each variable are as follows: variable P is 1.151797, variable LK is 2.005919, variable LV is 1.804727, and variable KI is 1.000917. These values indicate that there is no high correlation between the independent variables in the model. Thus, it can be concluded that the regression model used is free from multicollinearity issues, so that each independent variable can be interpreted validly and contribute independently in explaining the dependent variable.

Table 5. Heteroscedasticity Test

F-statistic	0.739573	Prob. F(4,241)	0.5658
Obs*R-squared	2.983049	Prob. Chi-Square(4)	0.5607
Scaled explained SS	4.326708	Prob. Chi-Square(4)	0.3636

Source: Data processed, 2025

The heteroscedasticity test in Table 5 shows an Obs*R-squared value of 2.983049 with a probability value of 0.5607. In addition, the probability value for the F statistic of 0.5658 and the Chi-Square on the explained sum of squares scale of 0.3636 also show similar results. All of these probability values are greater than the 5% significance level (0.05). These results can be concluded that the regression model used meets the assumption of homoscedasticity, and the estimation results can be considered efficient and can be interpreted more reliably.

Table 6. Partial t Hypothesis Test

	Model 1		Model 2	
Variable	**Coefficient**	**Probability**	**Coefficient**	**Probability**
C	21.38410	0.0000	20.42905	0.0000
P	1.081908	0.0140	6.490041	0.0576
LK	-0.025727	0.0094	0.060741	0.1272
LV	-0.004077	0.7343	-0.049011	0.5963
KI			2.126080	0.1589
KI*P			-10.46399	0.1308
KI*LK			0.225346	0.0206
KI*LV			0.128453	0.5567

Source: Data processed, 2025

Table 6 presents the results of hypothesis testing for model 1 and model 2. The profitability variable has a probability value of 0.0140, which is less than the significance level of 5%. This indicates that variable P has a significant effect on the dependent variable with a coefficient of 1.0819, showing that profitability has a positive effect on environmental costs. An increase in company profitability indicates that the company is earning high profits, thereby increasing the company's ability to fund various operational activities that must be fulfilled by the company on a daily basis, as well as voluntary activities, one of which is sustainable activities related to the environment (H. S. Putri & Mulyantini, 2025). These environmental expenditures are due to regulations that require companies that are harmful to the environment to fulfill their environmental responsibilities as stipulated in UU No. 40 Tahun 2007 concerning Limited Liability Companies. In addition, the implementation of environmental responsibility by companies also enhances the positive image of companies in the eyes of the surrounding community, making it easier for companies to be accepted by the communities around them.. This study is in line with research related to environmental aspects conducted by Farlinno & Bernawati (2020) and Yanto et al (2020).

According to the test results, the liquidity variable is significant at the 5% level with a probability value of 0.0094 and a coefficient of -0.0257, indicating a negative relationship between liquidity and environmental costs. Low liquidity reflects a condition in which a company's short-term liabilities approach or even exceed the amount of current assets it has. This negative relationship between liquidity and environmental costs indicates that companies tend to rely on short-term liabilities as a source of funding for environmental responsibility activities or that companies use many of their current assets to fund environmental responsibility activities (Tan & Tuluca, 2024). As a result, when the allocation of environmental costs increases, the company's liquidity position experiences pressure or a decline.

The test results indicate that leverage has a probability value of 0.7343, which is well above the threshold of 0.05. This means that statistically, leverage does not have a significant effect on environmental expenditure in companies. These results show that the company's environmental expenditures are not influenced by the company's capital structure, namely the increase or decrease in total liabilities. This indicates that the company uses other sources of funding more than debt, so that increases or decreases in the leverage ratio, which also reflects the company's debt level, do not have a significant impact on the company's environmental expenditures (Shen & He, 2022). These results are supported by related research on environmental accounting by Wihandoko et al., (2022), Adawia (2023), Luciawati & Efendi (2021), and Putri & Mulyantini (2025).

Model 2 indicates that the independent commissioner variable has a probability of 0.1589, which means that statistically this variable is not significant. This indicates that the existence of a board of commissioners does not cause an increase or decrease in the company's environmental costs. This proves that the existence of commissioners has not been able to effectively supervise the company to carry out its operational activities responsibly, especially to the environment. This study is in line with related environmental studies by Nur et al (2023) and Sumar & Ratmono (2024).

The test results indicate that the interaction between the independent commissioner variable and the profitability variable shows a probability value of 0.1308, which is statistically insignificant. This indicates that the presence of independent commissioners cannot influence company policy with high or low profitability to provide more funding for environmental contributions or reduce environmental costs. This result may occur because independent commissioners focus more on monitoring the company's profits used to improve shareholder welfare, business development, and others, thereby neglecting the aspect of environmental contribution (Alotaibi & Al-Dubai, 2024). The results of this study are in line with research conducted by Alotaibi & Al-Dubai (2024) and Putri et al (2024).

The test results show that the interaction between the independent commissioner and liquidity variables produces a probability value of 0.0206, which is less than 0.05. The interaction between these two variables significantly affects the environmental cost variable. Independent commissioners play a more effective supervisory role in moderating the relationship between liquidity and environmental costs because liquidity is directly related to a company's ability to provide current assets such as cash to meet short-term obligations and provide funds for operational activities, including sustainability programs. When a company has sufficient cash, independent commissioners can ensure that a portion of these current assets is allocated to fulfill environmental responsibilities, in accordance with the principles of good corporate governance and to maintain the company's reputation in the public eye. These results are in line with research by (Ardi & Yulianto, 2020).

According to the test results in model 2, the interaction between the independent commissioner variable and leverage has a probability value of 0.5567, which is not statistically significant. This may indicate that independent commissioners disregard the company's leverage level when considering decisions to incur costs on the environment when providing advice to management. Another indication that may occur is the ineffectiveness of the independent commissioners' supervisory function in overseeing management policies, causing management to act contrary to the independent commissioners' directives (Osim, 2023). These results are in line with research by Ardi & Yulianto (2020) and Lusmeida & Amelia (2023).

4. CONCLUSION

This study aims to explore the role of corporate financial conditions in influencing corporate environmental expenditures and the role of independent commissioners in moderating this influence. The study concludes that financial factors such as profitability, liquidity, and leverage have different effects on environmental costs. Profitability has a significant positive effect, meaning that the higher a company's profits, the greater its ability to finance environmental activities. This finding supports stakeholder theory that profits are not only used for shareholders but also to meet public expectations regarding social and environmental responsibility. Conversely, liquidity has a significant negative effect on environmental costs. Companies with high liquidity tend to hold onto their current assets and do not automatically allocate funds for environmental activities, while a decline in liquidity actually triggers an increase in environmental costs. Leverage has a negative but insignificant effect, indicating that debt is not a major factor in financing environmental activities, as companies rely more on internal assets. In the context of governance, independent commissioners do not have a significant effect on environmental costs. This indicates that their supervisory function has not been effective in encouraging management to pay attention to environmental aspects, even though they nominally have a strong supervisory role. As a moderating variable, independent commissioners do not affect the relationship between profitability and environmental costs. However, they are able to strengthen the relationship between liquidity and environmental costs, namely by ensuring that some cash funds are allocated for environmental activities when the company's financial condition is good. Meanwhile, independent commissioners are unable to moderate the relationship between leverage and environmental costs, because financial pressure due to debt remains more dominant than their supervisory function. Overall, this study provides a comprehensive picture that not all financial factors directly influence corporate decisions in financing environmental activities, and that the effectiveness of the supervisory function of independent commissioners is highly dependent on the specific financial conditions of the company, particularly in relation to liquidity. Therefore, strengthening the role of independent commissioners and formulating more explicit internal policies regarding the allocation of sustainability costs are important to ensure a balance between financial performance and corporate social responsibility.

This finding has several implications. Theoretically, the finding regarding the positive effect of profitability on environmental costs reinforces stakeholder theory, which states that companies use resources to

meet stakeholder demands, including social and environmental responsibilities. The finding regarding the negative effect of liquidity on environmental costs enriches the environmental accounting literature by demonstrating the role of current assets in financing sustainability. Leverage, which has no significant effect, adds to the understanding of capital structure, particularly the funding priorities for non-operational activities such as sustainability. Meanwhile, the limited role of independent commissioners points to weaknesses in the oversight function in agency theory, while opening up opportunities for further research on other factors that influence the effectiveness of supervisory boards in promoting sustainability practices. Practically, these research results provide recommendations for companies, supervisory boards, and policymakers. For companies, it is important to manage profitability and liquidity not only for financial gain but also to support environmental sustainability as part of social responsibility. For boards of commissioners, especially independent commissioners, it is necessary to improve the effectiveness of supervision in order to influence environmental fund allocation decisions, including when companies face financial pressure. Enhancing the capacity, authority, and technical understanding of independent commissioners is key to ensuring they play a meaningful role in upholding sustainability principles. Meanwhile, for regulators, these findings can serve as a basis for formulating policies that strengthen the role of independent commissioners in overseeing sustainability practices, thereby creating a balance between business performance and corporate social responsibility.

There are several limitations to this study. First, the observation period is relatively short, namely three years, so it does not reflect long-term conditions and may be subject to temporal bias. This is because few companies disclosed environmental costs for years prior to 2021. It is recommended that future studies extend the observation period, given the increasing number of companies that have voluntarily disclosed information, including environmental costs, from year to year, and the likelihood that this will continue to increase in the coming years.

The second limitation is that this study measures the variable of independent commissioners only in terms of their number or formal existence, without considering individual quality, experience, or actual effectiveness in supervision. This opens up opportunities for further research to consider other benchmarks in measuring the role of independent commissioners in corporate environmental expenditure and to explore other variables that may influence corporate environmental costs.

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