

The role of green accounting on profitability in listed mining companies

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Abstract

This study aims to examine the effect of environmental costs, environmental performance, and company size together on company profitability. The research used is quantitative research with a descriptive statistical approach. The data used is secondary data taken from financial reports and annual reports of mining companies listed on the Indonesia Stock Exchange (IDX) for the 2019-2023 period. This study uses multiple linear regression analysis. The results of this study indicate that environmental costs and company size have a negative and significant effect on profitability, while environmental performance has no effect on profitability.

Keywords: green accounting, environmental costs, environmental performance, company size, profitability.

INTRODUCTION

From an economic standpoint, a company's primary objective is to maximize profits. Profitability is the capacity of a business to generate future profits and is a measure of how well its operations are running (Alliyah and Musa, 2024). Companies that seek to increase profitability inevitably impact the continuous use of natural resources, despite the fact that these resources are already scarce and take a long time to renew. It is clear that most modern industries understand that environmental and social issues are an important part of a company's responsibility, in addition to profit-seeking efforts (Juliyaniti et al, 2024).

There is no doubt that the impact of climate change, coupled with the technological advances in the modern economy, has been widely felt by the entire world population. Companies involved in pollution will be considered to have poor environmental performance. In fact, positive environmental performance is a reliable indicator of a company's trustworthiness and can be used to build trust with related parties. (Pratama et al., 2024). The company will allocate special funds for environmental purposes to manage its environmental impacts. However, the company is of the opinion that this environmental cost is nothing more than an additional burden. Conversely, companies are convinced that only a reduction in profits can accommodate environmental costs. The allocation of costs for environmental management reflects the company's ongoing commitment to environmental issues. This commitment builds public trust in corporate social responsibility. Research conducted by Rahmadani et al. (2021) states that environmental costs have a positive influence on financial performance. This contrast to the findings of Alliyah et al. (2023), which state that environmental costs do not affect profitability.

The concept of environmental performance refers to the amount of environmental damage caused by business activities. Less environmental damage will improve environmental performance. Conversely, the greater the impact of environmental damage, the worse the company's performance. A rating programme can be used to assess capabilities in environmental management, known as PROPER, to measure the environmental performance of Indonesian companies (Chasbiandani et al., 2019). Companies are also threatened with severe sanctions if they cannot comply with applicable regulations in Indonesia. Therefore, it is important for companies to pay attention to and improve their environmental performance. (Hapsari et al., 2021). In line with research conducted by Zia et al.

(2021) which proves that environmental performance variables affect profitability. Different results in the research of Alliyah et al. (2020) show that the results of environmental performance have no effect on company profitability. Company size is a critical factor in determining profitability. Company size is the fundamental way of grouping companies into large, medium, and small companies. Company size is determined by a company's assets, total sales, average total sales and average total assets. The larger a company is, the more total assets it can use to meet product demand, which in turn increases the company's profit. Wisnu et al. (2024). Research conducted by Sofia et al. (2024) clearly shows that company size affects profitability. In contrast, research conducted by Rivan et al. (2021) found that company size has no effect on profitability.

The object of this research is mining companies. Because mining activities have a huge impact on environmental costs, for example the mining production process produces waste and can pollute water and soil. In accordance with Law No. 4 Article 100 of 2009 and Minister of Energy and Mineral Resources Regulation No. 7/2014 concerning reclamation and post-mining, companies that carry out exploration are required to submit a reclamation plan and a reclamation-post-mining guarantee fund as a guarantee of environmental improvement on disturbed land.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Literature Review and Hypothesis Development

Free cash flow theory

The agency theory explains the relationship between the principal (investor) and the agent (management). Management has the responsibility of managing the company, while investors have an interest in the responsibility and performance of the company's management in a transparent manner. As part, free cash flow theory refers to the concept of using funds that is not profit-oriented and benefits insiders (Jensen & Meckling, 1976). In this context, insiders tend to use funds to finance projects that have a negative net present value (Jensen & Meckling, 1976). The form of management's responsibility to investors is financial statements, which are used by investors to assess company performance. Green accounting disclosure is expected to serve as a tool to increase investor confidence that the company is not only profit oriented but the company cares about its surroundings. Green accounting disclosure is related to how investors believe in the company, that the company respects the environment and realizes the limited resources available. Environmental costs are one of the projects that must be carried out as a consequence of company activities (Anugrawati et al., 2024, Wicaksono, 2024). However, Wicaksono (2024) also found that costs for environmental interests tend to have a negative impact on company performance (in this case is profit). Previous findings from Apriandi et al. (2022) show that the impact of companies' use of environmental funds tends to increase profitability. This study assumes that using funds for environmental purposes to achieve good environmental performance will be able to improve the company's image and profitability. This condition shows that insiders act in accordance with shareholder expectations, especially in increasing profitability. On the other hand, this study assumes that if environmental costs are just expenditures that are not oriented towards profitability and environmental performance, then indications of agency conflict are likely to occur. Based on those assumptions then the hypothesis of this study is noted as follows.

H1: Environmental cost significant on profitability

H2: Environmental performance significant on profitability

Control variable

Company size is one of the variables that tend to be widely used as an indicator of the success of a company's financial performance. Empirically, Ginting (2019) found that company size has a unidirectional and significant relationship to profitability. Alawiah et al. (2022), and Christiaan (2022) found that the larger the size of a company, the more likely it is to have high profitability. Ainayah

and Winarso (2024) found that in normal economic conditions (before the pandemic), the larger the size of a company, the more likely it is to have good profitability.

H3: Firm size significant on profitability

METHODS

The type of research used in this research is quantitative research using secondary data. This research is taken from the annual report data and financial reports of mining companies listed on the Indonesia Stock Exchange for the period 2019-2023 on the website www.idx.id. The technique used to determine the sample is purposive sampling. There are 20 companies that meet the criteria and there are 100 samples to be tested. In this study, there are two variables, namely environmental performance and environmental costs as independent variables and company size as a control variable and profitability as the dependent variable.

Table 1. List of listed mining firm that fulfil the sample selection criteria

NUMBER	CODE	FIRM NAME
1	ABMM	ABM Investama Tbk
2	ADRO	PT. Adaro Energy Indonesia Tbk
3	ANTM	PT. Aneka Tambang Tbk
4	PTBA	PT. Bukit Asam Tbk
5	GEMS	PT. Golden Energy Mines Tbk
6	HRUM	PT. Harum Energy Tbk
7	ITM	PT. Indo Tambangraya Megah Tbk
8	PTRO	PT. Petrosea Tbk
9	TBS	PT. Toba Bara Sejahtera Tbk
10	TINS	PT. Timah Tbk
11	INCO	PT. Vale Indonesia Tbk
12	ENRG	PT. Energi Mega Persada Tbk
13	AKRA	AKR Corporindo Tbk
14	BIPI	Astrindo Nusantara Infrastruktur
15	BSSR	Baramulti Suksessarana Tbk
16	BUMI	Bumi Resources Tbk
17	DSSA	Dian Swastatika Sentosa Tbk
18	INDY	Indika Energy Tbk
19	MEDC	Indo Tambangraya Megah Tbk
20	PGAS	Perusahaan Gas Negara Tbk

The environmental cost variable (X1) is measured by comparing environmental costs with net income. The environmental performance variable (X2) is measured by looking at the company's PROPER score using a dummy variable, namely score 1 for proper gold category and score 0 for non-gold category. The company size variable (X3) is measured by calculating the natural logarithm of the company's total assets. The profitability variable (Y) is measured by Return on Equity (ROE) by comparing total equity with the company's net profit.

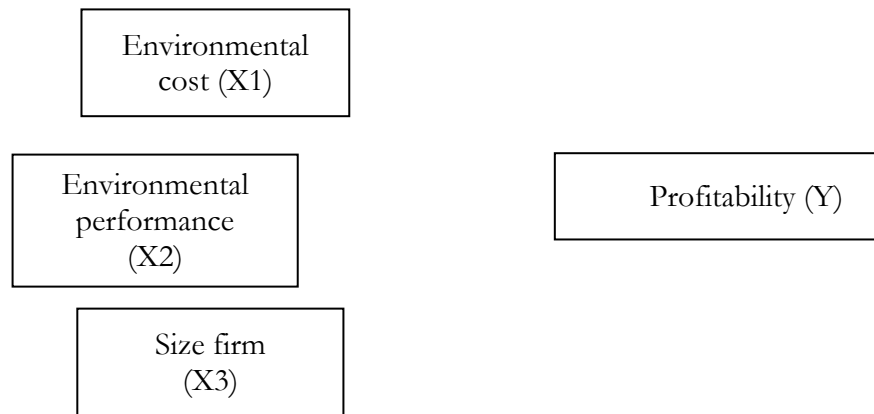


Figure 1. Framework

RESULT AND DISCUSSION

- Descriptive analysis

Tabel 2. Descriptive analysis results

	N	Minimum	Maximum	Mean	Std. Deviation
Profitability	100	.020	18.5	3.5438	5.4019
Environmental cost	100	.001	.956	.182233	2.6401
Environmental performance	100	0	1	.31	.4648
Size firm	100	23.28	33.31	29.8781	2.6401

Table 2, descriptive analysis results show that the amount of data used in this study is 100 data. The dependent variable used in this study is company profitability (Y) as measured using Return On Equity which has an average value of 3.5438% with a deviation value of 5.4019. This shows that the 20 companies that fit the sample selection criteria for the 2019-2023 period used in this study have good profitability in the eyes of investors. The profitability of the company is the highest, which means that the company is in demand by stakeholders and investors who are expected to be able to provide high returns. The independent variable used is environmental costs (X1) which is measured by comparing the amount of environmental costs with the company's net profit. The average value of environmental costs incurred by mining companies used in this study is 0.10625 with a standard deviation of 0.1822. This shows that on average the company incurs environmental costs as a form of corporate responsibility to society. The environmental performance variable measured using the PROPER rating obtained from data on the Ministry of Environment and Forestry (KLHK), this data shows the average sample result is at a value of 0.31 or if rounded up based on the PROPER category, it is ranked 'non-gold'. This shows that the average company is trying to build good character and get appreciation from the Ministry of Environment and Forestry (KLHK) in the form of PROPER. The company size variable as a control variable is measured using the natural logarithm (Ln) of the company's total assets. This data shows that the average value of the Natural Logarithm is 29.8718. This shows that most of the mining companies used in this study have a positive company size with their total assets.

- **Normality Test.** Table 3 the results of the normality test with Kolmogorov Smirnov show the value of Asymp. Sig (2-tailed) is greater than the significance value, namely $0.597 > 0.05$, which means that the independent variable and the dependent variable are normally distributed.

Table 3. Normality test results

	<i>Statistic</i>	<i>P</i>
<i>Kolmogorov-Smirnov</i>	0.0768	0.597

- **Multicollinearity Test.** Table 4 shows that the VIF value of environmental costs is $1.14 < 10$, the VIF value of environmental performance is $1.19 < 10$, and the company size value is $1.19 < 10$. This indicates that there is no multicollinearity between independent variables.

Table 4. Multicollinearity test results

	VIF	Tolerance
Environmental cost	1.14	0.878
Performance cost	1.19	0.837
Size firm	1.19	0.843

- **Heteroscedasticity Test.** Table 5, The results of the heteroscedasticity test using the Goldfeld-Quandt test show that the significance is $0.837 > 0.005$, this means that all independent variables do not occur heteroscedasticity.

Table 5. Heteroscedasticity test results

	<i>Statistic</i>	<i>P</i>
Goldfeld-Quandt	0.747	0.837

- **Autocorrelation Test.** Table 6, the results of the autocorrelation test using the Durbin Watson test show that the significance level value is $0.104 > 0.05$, this means that there is no autocorrelation in the regression model.

Table 6. Autocorrelation test results

Autocorrelation	DW Statistic	p
0.154	1.69	0.104

- **Hypothesis t test.** Table 7, The environmental cost variable has a t-count value of $-1.67 < \text{the } t\text{-tabel value of } 1.66$ with a significance value of $0.099 < 0.10$ which is significant at the 10% level so it is concluded that partially the environmental cost variable has a negative and significant effect on company profitability. This shows that H_0 is rejected and H_1 is accepted. The environmental performance variable has a t-count value of $-1.54 < \text{the } t\text{-tabel value of } 1.66$ with a significance value of $0.128 > 0.10$ which is not significant at the 10% level so it is concluded that partially the environmental performance variable has no significant effect on company profitability. This shows that H_2 is rejected and H_0 is accepted. The firm size variable has a t-count value of $-7.40 < \text{the } t\text{-tabel value of } 1.66$ with a significance value of $0.000 < 0.01$ which is significant at the 10% level, so it is concluded that partially the firm size variable has a negative and significant effect on company profitability. This shows that H_0 is rejected and H_3 is accepted.

Table 7. Hypothesis t result

Predictor	Estimate	SE	t	p
Intercept	14.640	1.9996	7.32	< 0.01**
Environmental cost	-1.587	0.9517	-1.67	0.099***
Environmental performance	-0.587	0.3821	-1.54	0.128***
Size firm	-0.496	0.0670	-7.40	< 0.01**

- **Test the Coefficient of Determination.** Table 8 shows the results of the coefficient of determination test with an Adjusted *R Square* value of 0.419 or 41.9% where the profitability variable can be influenced by environmental cost variables, environmental performance, and company size, which means that this influence can maximise company profitability. Meanwhile, 58.1% of company profitability is influenced by other variables not examined in this study.

Table 8. Coefficient of determination test results

Model	R	R ²	Adjusted R ²
1	0.661	0.436	0.419

Discussions

- **Environmental costs and profitability.** Based on the *t* table, it is stated that environmental costs have no effect on profitability. When environmental costs have a negative and significant effect on profitability, this shows that the higher the environmental costs incurred by the company, it will reduce net income which can reduce return on equity (ROE). This can create tension between managers and shareholders, where managers prefer to allocate funds for environmental initiatives that do not provide quick financial results while shareholders expect higher returns on investment. This creates a situation of manager self-interest where managers tend to prioritise personal interests to improve the company's reputation even if it ignores direct returns to shareholders. The free cash flow theory explains this conflict by showing that when managers believe and decide to spend on environmental costs will improve the company's reputation but they ignore the potential returns to shareholders. Costs incurred on the environment reduce ROE (Return on Equity) because the expenditure reduces the cash flow available for distribution to shareholders, this will cause shareholders to feel aggrieved that managers are not prioritising their interests.
- **Environmental performance and profitability.** The partial test results (*t* test) of the environmental performance variable on profitability show that partially the environmental performance variable no has effect on profitability. When the company's environmental performance proxied by the PROPER level is not significant to Return On Equity (ROE), it means that the PROPER rating obtained by mining companies in the gold and non-gold categories (blue and green) is not able to have an impact on profitability. Although companies are committed to improving environmental performance through programmes such as PROPER, the results obtained do not always contribute to increasing company profits. The inability of environmental performance to increase ROE may lead to dissatisfaction among shareholders, who expect a higher return on investment. Free cash flow theory explains that companies that incur significant costs to meet environmental standards often have to incur high costs. These costs can reduce available free cash flow, thereby reducing net income even though spending on the environment with the aim of getting a better environmental performance rating does not add to the company's profitability in the short term. The powerlessness of environmental performance in influencing

profitability can create conflicts between managers and shareholders. This can trigger agency conflicts where managers are more interested in allocating cash to environmental initiatives without considering risk than providing returns to shareholders, creating tension between the short-term goals of shareholders and the long-term strategy of the company.

- **The effect of size firm on profitability.** The partial test results (t test) show that the company size variable has a negative and significant effect on company profitability. This shows that H0 is rejected and H3 is accepted. This is in line with research conducted by Rivan et al, 2021. When company size as a variable has a negative effect on Return on Equity (ROE), it means that the larger the size of the company, the smaller the ROE will be. This is due to the higher operating costs associated with larger companies, which can reduce net income and reduce ROE. Although large companies usually have better access to resources and capital, this does not necessarily guarantee that they will generate higher profits. If managers do not use free cash flow efficiently, for example by allocating it to environmentally unfavourable projects, the resulting net profit will be low, and ROE will not increase.

CONCLUSION

Based on the analysis it can be concluded that environmental costs and company size have a negative and significant influence on company profitability. This indicates that the greater the costs incurred by the company for environmental management, as well as the greater the size of the company, can actually reduce the level of profitability. This finding implies that the environmental investment made has not provided an optimal return, and the expected economies of scale from company size have not been realised in increased profitability. Meanwhile, environmental performance, as measured through the indicators used in this study, is not proven to have a significant influence on company profitability. This indicates that good environmental performance, as reflected in these indicators, has not been able to have a measurable positive impact on company profitability.

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