# Green Accounting Analysis To Firm Value : Study On Metal And Mineral Companies

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## *ABSTRACT*

Over time, economy continue to expand swiftly and directly proportional to environmental issues. This study aims to find out how green accounting affects to firm value with quantitative approach. In this study, independent variables is green accounting proxied by environmental costs and environmental performance. Environmental cost measured by total environmental cost incurred divided by total operational expenses of company, whereas environmental performance measured by GRI 300 series. Dependent variable is firm value proxied by Tobin's Q. This research was carried out between 2017 - 2021, with secondary data taken from sustainability reports and company's annual reports. Population in this study was metal and mineral industry (B14) firms listed in IDX of 29 companies with purposive sampling methods. The result is, green accounting has no influence on firms value. This is due to green accounting does'nt have direct influence to firm value, but can provide greater long-term benefits in terms of operational efficiency, business sustainability, and reduced environmental risks.

**Keywords** : Green Accounting; Environmental Costs; Environmental Performance; Firm Value; Tobin's Q.

## I. INTRODUCTION

Over time, business and economy in Indonesia have experienced rapid growth across various industrial sectors. By the end of 2022, there were 820 companies lis ted on the Indonesia Stock Exchange (IDX), marking a 7% increase compared to 2021 (Binekasri, 2022). This growth is aligns with the escalating surrounding environmental concerns (Lestari et al., 2021). Globally, environmental issues are being discussed more intensively in relation to global climate change caused by carbon production and emissions (O'Doherty, 2022). Business activities that rely on natural resources are highly vulnerable to environmental sustainability (Noy & Yonson, 2018).

In 2018, the community of Tole held demonstrations in protest against nickel mining conducted by PT Vale Indonesia in South Sulawesi. These demonstrations stemmed by detrimental effects inflicted upon ecosystem of Lake Mahalona, which suffered reduction in size amounting to 151 hectares (Wicaksono, 2022). In October 2022, a leakage occurred in the sediment pond of PT Cita Mineral Investindo, which conducts bauxite mining in West Kalimantan. This incident resulted in the river water becoming turbid and damaging the environment in several surrounding villages. (Mulyadi, 2022). The research conducted by Syarifuddin (2022) on the impact of the nickel mining industry in Morowali Regency provides substantial support for the earlier phenomenon related

to nickel mining that has led to sedimentation issues. The phenomenon indicates that mining companies whose operational activities involve exploration of natural resources have complex impacts on the environment, such as deforestation, soil erosion, and water pollution (KLHK, 2020).

Environmental issues have become a serious concern and are feared to have an impact on the legitimacy and decline on firm value (Wu & Shen, 2010). Legitimacy theory, proposed by Dowling and Pfeffer (1975), states that company's operational activities should be based on principles and standards that are applicable to society and environment in which company operates (Puspitaningrum & Indriani, 2021). Firm value is value of company' s corresponds to degree of achievement it attains in effectively utilizing its resources, as evaluated by its investors (Soedjatmiko et al., 2021).

Therefore, concept of green accounting emerges as a form of accountability in improving efficiency of environmental management from perspective of costs and benefits (Bartelmus, 2013). Ningsih & Rachmawati (2017) define green accounting as a type of accounting that encompasses reporting of indirect costs and benefits related to economic activities, including environmental implications and impacts of business decisions and corporate plans. According to Magablih (2017) green accounting involves disclosure of environmental costs used to measure environmental pollution and expenses incurred for social environmental activities Opinion of Riyadh et al. (2020) which is aligned with previous opinion, states that green accounting encompasses several aspects, including evaluating potential environmental liabilities and analyzing costs in various environmental protection measures. In addition to including environmental costs, green accounting also encompasses corporate environmental performance. Environmental costs incurred are used to finance environmental performance, thus enabling the establishment of effective environmental impact management (Rounaghi, 2019).

Green accounting is expected to enhance firm's value by environmental costs incurred to fund environmental performance. Environmental costs refer to expenses incurred in addressing damages and contamination resulting from company's operations (Meiyana & Aisyah, 2019). Environmental performance is achievement of company regarding its interactions with environment through its activities in producing goods and services (Burhany & Nurniah, 2013).

Research conducted by Fauzi (2022) found that environmental performance has positive influence on firm value. Study by Jo et al. (2016) discovered that environmental costs also have a positive influence on firm value.

Supported by legitimacy theory and previous research findings, hypothesis in this study is green accounting proxied by environmental costs and environmental performance, has positive influence on firm value.

Due to differences in measurement approaches and variations in research subjects, previous studies have yielded diverse results. Therefore, research on

impact of green accounting to firm value still needed, particularly after transition of classification system from BEI to IDX Industrial Classification (IDX-IC). Furthermore, according to KLHK (2020) mining sector has more complex impact on environment compared to other sectors.

## II. RESEARCH METHOD

This study employs quantitative approach utilizing secondary data. Data used in this study are sourced from sustainability reports and annual reports of metal and mineral industry companies listed on the IDX during research period from 2017 to 2021. Green Accounting is measured using the Environmental Cost (X1) proxy which comes from the disclosure of the company's environmental costs divided by total operating costs, and the second proxy is Environmental Performance (X2) which is measured using the GRI 300 Series with the dummy method with a total of 32 Environmental Performance Index. Population for this study consists of 29 metal and mineral industry companies (B14) listed on the IDX during the same research period, resulting in total population size of 145 (number of companies multiplied by research period). Sampling method used in this study is purposive sampling, to ensuring that obtained samples meet the specified criteria (Sugiyono, 85:2013). The number of samples that fulfill the criteria in this study is as follows:

**Table 1. Sample criteria and amount**

| No | Sample Criteria | Amount |
|---|---|---|
| 1. | Have annual reports and/or sustainability reports during 2017-2021. | 131 |
| 2. | Doesn't include environmental costs in their annual reports or sustainability reports during 2017-2021. | (72) |
| **Total samples fulfil criteria** | | **59** |
| **Data Outlier** | | **(7)** |
| **Data used in this study** | | **52** |

Here are the measurements used in this study:

**Table 2. Variable measurement**

| Dependent | Sample Criteria | Measurement |
|---|---|---|
| Green Accounting (X) | EC ($X_1$) | $\frac{Total\ environmental\ costs}{Total\ company\ operating\ costs}$ |
| | EP ($X_2$) | $\frac{Company\ EPI\ score}{Total\ EPI\ score}$ |
| Firm Value (Y) | Tobin's Q | $\frac{Market\ Value}{Total\ Assets}$ |

## III. RESULTS AND DISCUSSION

### Descriptive statistic

Descriptive statistical analysis values are presented in the table below:

**Table 3 Descriptive Statistic**

| | N | Min | Max | Mean | Std. Deviation |
|---|---|---|---|---|---|
| X1 | 52 | ,0000 | ,6550 | ,049152 | ,1114194 |
| X2 | 52 | ,090 | ,810 | ,46236 | ,187387 |
| Y | 52 | ,019 | 2,112 | ,68292 | ,517425 |

*Source : SPSS Output*

### Analysis Prerequisite Test

Duli (2019:114) explains that before conducting a multiple linear regression analysis based on OLS (ordinary least squares), it is necessary to fulfill the requirements of classical assumption tests. This study passed classical assumption tests, including normality test using Kolmogorov-Smirnov test with value of $0.132 \geq 0.05$, multicollinearity test with VIF (Variance Inflation Factor) value of $1.014 \leq 10$ and tolerance value of $0.986 \geq 0.1$, autocorrelation test using runs test with value of $0.05 \geq 0.05$, and heteroscedasticity

test using scatterplot as shown in the figure below:

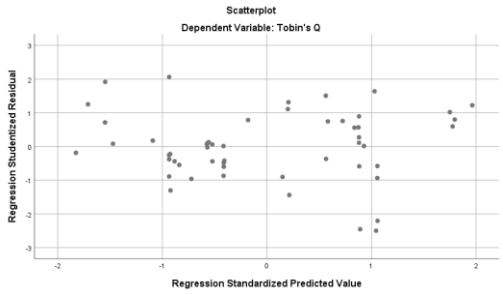


**Figure 1 Scatterplot test result**

*Source : SPSS Output*

## Hypothesis Test Results

### 1. Determination coefficient test

**Table 4 Determination coefficient test**

| Dependent | R | R Square |
|---|---|---|
| Firm Value (Tobin's Q) | 0,136 | 0,018 |

*Source : SPSS Output*

Based on the results of coefficient determination test above, it can be seen that R Square results is 0,018 which contains environmental cost variables ($X_1$) and environmental performance ($X_2$) can explain firm value proxy by Tobin's Q by 1.8% while the remaining 98.2% is explained by other independent variables outside this research.

### 2. Simultan test (F test)

**Table 5 Simultan test result**

| Dependent | F | Sig |
|---|---|---|
| Firm Value (Tobin's Q) | 0,459 | 0,634 |

*Source : SPSS Output*

Based on the results of F test above, it shows that result of F value is 0.459 and significance value is 0.634. These results indicate that F value of 0.459 < 3.18 and significance value of 0.634 > 0.05, so it can be concluded that green accounting which contains environmental cost ($X_1$) and environmental performance ($X_2$) simultaneously and significantly has no effect on firm value. The simultaneous test results in this study show that the two variables that measure green accounting tested together not have significant effect on firm value. Therefore, there is no need to conduct a partial test for each independent variable separately.

## Discussion

In this study, green accounting is measured using environmental cost variable ($X_1$) and environmental performance variables ($X_2$). Hypothesis of this study is green accounting proxied by environmental costs and environmental performance has positive impact on firm value. Based on the results of this study, it was found that green accounting in the metal and mineral industry has no effect on firm value, so hypothesis in this study is rejected.

In this study, green accounting is proxied by environmental cost ($X_1$) and environmental performance ($X_2$). Environmental costs are measured using the ratio of total environmental costs divided by total operating costs. Environmental costs are costs incurred in overcoming damage and pollution arising from company's operations (Meiyana & Aisyah, 2019). Operating costs include all costs incurred by company in carrying out operational activities. The ratio of environmental costs to operating costs provides an overview of the extent to which company allocates financial resources to environment compared to company's core operational activities. Based on table 3 descriptive statistics, it communicates that average ratio of environmental costs divided by operating costs is 0.049152, which means about 2% of

operating costs are spent on environmental costs.

Environmental performance variable is measured by environmental performance score using GRI 300 index. Rahayudi & Apriwandi (2023) define environmental performance as results achieved by environmental management system in controlling environmental aspects. This research use GRI 300 index in measuring environmental performance because GRI 300 2016 standard discusses specifics regarding the reporting of sustainable environmental aspects and adoption of GRI as a sustainability index is regulated in POJK No.51/POJK.03/2017 concerning the implementation of sustainable finance for financial service institutions, issuers, and public companies. Based on table 3 descriptive statistics, it communicates that the average environmental performance reporting score is 0.46236 which means average of metal and mineral companies (B14) report contains 15 environmental performance components in sustainability report using GRI 300.

The lack of influence of green accounting on firm value in this study is due to measurement of firm value proxied by Tobin's q, which is relative measure between market value and book value of the company tending to focus more on financial variables and financial performance. This study considers impact of green accounting conducted by companies in terms of environmental costs and environmental performance cannot be directly observed to be related to financial performance, which leads to the lack of a visible relationship between green accounting and firm value. The lack of influence of green accounting on firm value in this study can also be attributed to industry-specific factors related to natural resources, where entities are required to perform environmental management activities such as post-operational reclamation, energy efficiency, supplier selection, and attention to biodiversity. These responsibilities must be adhered to by company management. When companies comply with environmental regulations and requirements set by government or regulatory bodies, they can avoid penalties and fines that can reduce profitability. Conversely, violating environmental regulations can have a negative impact on company's reputation and create legal risks, which can affect long-term profitability and is concerned that it might affect the company's stock value thus potentially lowering firms value . Although green accounting may not have a direct impact on profitability, the allocation of environmental costs can provide greater long-term benefits in terms of operational efficiency, business sustainability, and reduced environmental risks. In addition to environmental costs incurred, companies also allocate costs to comply with applicable environmental policies, such as Law Number 32 of 2009 on Environmental Protection and Management in Indonesia.

Legitimacy theory states that company operations must be based on principles and standards that apply in the society and environment in which company operates. With an average allocation of environmental costs incurred of 4% of total operating costs and an average disclosure of the GRI index of 15 components in metal and mineral

companies, this already shows sustainable business practices in the metal and mineral industry companies that have responsibility for the environment. In line with legitimacy theory, through the focus and dedication of metal and mineral companies that incure environmental costs in order to create good environmental performance, companies can gain wider and stronger legitimacy in society. In addition, the impact of green accounting carried out by companies takes a longer time to see its effect on firm value, where green accounting carried out by companies can create operational efficiencies such as more efficient energy use, waste reduction, and use of more sustainable raw materials, can reduce long-term operational costs.

The findings of this study align with the research carried out by Sukmadilaga et al. (2023) and Martini et al. (2022), as both studies did not identify any impact of green accounting on firm value. The study assumes that the viewpoint on green accounting being considered has a relatively insignificant economic effect and is regarded as expenses incurred as compensation due to losses or damages caused.

## IV. CONCLUSION

Based on the hypothesis testing results of this study, it can be concluded that green accounting does not have direct impact on firm value. This study considers environmental costs and environmental performance resulting from green accounting practices by companies, which do not show a direct relationship with financial performance. As a result, the relationship between green accounting and firm value is not apparent. Furthermore, environmental costs incurred also serve to comply with existing environmental policies. Environmental performance does not have a significant influence on firm value because the industry examined in this study is related to natural resources, where environmental impact management becomes a responsibility that must be adhered to by company management. This study has limitations, as the sample used is limited to metal and mineral industry. Subsequent research is expected to explore and analyze green accounting in other industries or sectors that have environmental impacts, such as the manufacturing and energy sectors. According to Ditjen PSLB3 (2019), manufacturing industry is the largest waste producer, and according to Climate Watch data, energy sector is the largest contributor to greenhouse gas emissions in Indonesia (Putri 2023).

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