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## Profitability as Moderation on The Influence of Green Accounting on Sustainability Development

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### ABSTRACT

Limited natural resources will affect the company's sustainability development. If the government and business people do not manage natural resources properly, it will hamper the sustainability of the Company's development. One way to overcome sustainability development problems is through the application of green accounting. This study aims to examine the influence between green accounting and sustainability development moderated by profitability. Mining companies listed on the Indonesia Stock Exchange (IDX) for the 2019-2021 period are the population of this study and sampling by purposive sampling so that 102 observational data were obtained. The data was analyzed using the Partial Least Square (PLS) Technique with the help of Smart PLS application version 3.2.9. The results showed that green accounting has no influence on sustainability development and profitability cannot be a moderation variable between green accounting and sustainability development.

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## 1. PENDAHULUAN

Limited natural resources are an important problem in the business world. Business people must manage limited natural resources to meet human needs by paying attention to their impact on the environment. Based on data from the Institute Public de Sondage (IPSOS) in 2023, it is stated that the problem of running out of natural resources in Indonesia received 36% attention from respondents and ranked fifth of environmental problems in Indonesia (Trends, 2023). This shows that the problem of running out of natural resources is an important problem that must be solved by the Indonesian government, including business people for sustainable development. The Company's ability to manage natural resources and the Company's concern for climate change, the environment, and pollution are part of sustainability development (Buric et al., 2022; Dai, Yijia; Chen, 2023; Dhar et al., 2022). Companies that use natural resources have the potential to hurt the environment (Endiana et al., 2020).

According to Law Number 4 of 2009 concerning Mineral and Coal Mining, a mining company is any business that conducts research, management, and exploitation of minerals or coal, including general investigation, exploration, feasibility studies, construction, mining, processing and refining, transportation and sales, and post-mining activities. This definition of a mining company also includes companies that stage activities partially or fully. Based on this understanding, mining companies are the companies that use natural resources the most in their production activities. Activities from mining companies have the potential to pollute the environment. In 2019, there were eleven mining companies that polluted the environment in the period 2017-2018. The companies were sanctioned by the Ministry of Environment and Forestry (Amelia, 2019).

Environmental problems can be reduced by implementing green accounting. The idea behind green accounting is that businesses should employ environmental costs to lessen their negative environmental effects in order to promote sustainable development. (Agarwal & L, 2018; Owen et al., 1997). With limited natural resources and environmental pollution behavior by mining companies, the application of green accounting is very necessary. Green accounting integrates environmental costs into a company's finances. Financial statements should reflect the environmental costs that must be paid by the company to obtain economic benefits (Dhar et al., 2022).

The application of green accounting aims to realize harmonious development between the environment and the economy for the better (Dhar et al., 2022). Green accounting addresses how companies calculate environmental costs consisting of prevention costs, detection costs, internal failure costs and external failure costs. By calculating the environmental costs, it is expected that the company can carry out production activities effectively and efficiently (Sunaningsih, 2020). There are many benefits for companies that take environmental costs into account in their production activities, including increasing efficiency, avoiding potential liabilities, being better positioned to meet or achieve standards and creating barriers to entry for potential competitors. When the company gets these benefits, it will increase the trust of stakeholders and the community so that the company can achieve maximum profitability (Endiana et al., 2020).

Green accounting is based on an external concept where every company's economic activity is calculated and recorded in financial statements. Consequently, financial statements include integrated social and environmental information in addition to financial data

(Sunaningsih, 2020). In order to minimize information asymmetry between the business and pertinent external stakeholders, as well as the likelihood of obtaining accurate information based on green accounting reports, disclosure of environmental cost information needs to be honest and comprehensive. The disclosure of such information will influence investment decisions and will have a significant impact on the sustainability development of companies that have heavy environmental pollution (Ben-Amar et al., 2021). This is in accordance with stakeholder theory (Jones et al., 2002) which states that companies that disclose both financial and non-financial information will increase stakeholder attention to the company. Every activity of the Company is monitored by stakeholders, if the Company takes actions that harm the environment and have a negative impact on sustainability development, it will threaten the availability of resources used in the Company's operations, namely reduced ability to produce products (Russell & Thomson, 2009). This will affect the income received by stakeholders and encourage external stakeholder actions to make decisions not to invest in the Company.

Sustainability development is very important in the business market competition because it refers to the revenue growth that can be achieved by the company (Azzahra et al., 2022). The effective and efficient use of resources in the long term greatly helps the company in maintaining its sustainability development. According to (Marota, 2017) green accounting affects the company's sustainability development because it helps companies in carrying out environmentally friendly, social, economic and technological production activities. The results of research by Endiana et al., (2020) prove that companies that implement green accounting are able to increase sustainability development because in green accounting companies are able to manage environmental costs, meaning that companies are able to manage natural resources that will have a positive impact on the company's sustainability development.

Green accounting research is measured by the ratings obtained by the Company in the Environmental Management Performance Rating Assessment Program (PROPER). Based on the Regulation of the Minister of Environment and Forestry Number 1 of 2021 concerning the Company Performance Rating Assessment Program in Environmental Management (PROPER) requires companies to preserve the environment by controlling water pollution, air, waste management and the application of AMDAL. Ratings in PROPER include gold, green, blue, red and black ratings. Companies that are ranked in PROPER indicate that the Company complies with environmental management and it is indicated that the Company applies green accounting because the Company's compliance in environmental management means that the Company takes into account environmental costs in the Company's operations (Rosaline et al., 2020).

Profitability is another variable that affects sustainability development (Riwayadi, 2019). On the one hand, mining companies will use natural resources as efficiently as possible to preserve the environment. However, on the other hand, the limited use of natural resources will hamper the ability to produce products and have an impact on the ability to generate profits or profitability (Oweis & Hachum, 2009). The Company's policy for profitability must be able to pay attention to the adverse impact on sustainability development. Increased profitability means that the Company is able to manage resources so that it has a positive impact on sustainability development. Profit generation will enable the Company to carry out sustainability development activities to gain recognition from interested parties. In accordance with stakeholder theory (Mahajan et al., 2023) that to get support from various parties, the Company needs to show good

financial performance and environmental management that can maximize dividends for shareholders and meet stakeholder needs.

Previous research on green accounting and corporate social responsibility has been widely conducted. However, research on green accounting, profitability and sustainability development is still very little, especially in mining companies that are closely related to the environment. This research refers to research (Dura & Suharsono, 2022) which conducts research on green industry companies using green accounting, sustainability development and company performance variables. The investigation differs in that it focused on mining firms that operate in close proximity to the environment and employ profitability metrics, such as Net Profit Margin (NPM). The use of NPM as a variable measurement tool for profitability because it shows a comparison between profit after tax and sales so that it better represents the ability to generate profits and is often used as a basis for decision making by investors (Kusmiyati & Hakim, 2020). This research aims to present empirical evidence demonstrating how green accounting influences sustainable development and how this effect is mediated by business profitability. Figure 1 depicts the conceptual foundation for this study.

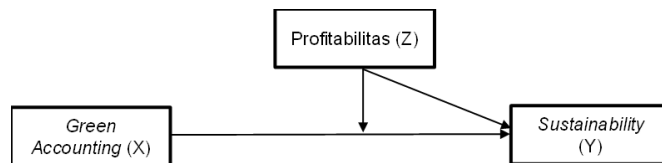


Figure 1. Conceptual Framework for Research.

## 2. RESEARCH METHODOLOGY

This study is a quantitative, systematic study. Because This investigation looked at the independent variable's causal link with multiple dependent variables, a structured method was used (Pesak et al., 2019). Green accounting as an independent variable, sustainability development and profitability as dependent variables. All mining businesses registered between 2019 and 2021 on the Indonesia Stock Exchange (IDX) comprise the study's population. The annual financial reports and sustainability reports from mining companies listed on the IDX covering the 2019–2021 timeframe comprise the secondary data. The purposive sampling method was utilized to obtain a representative sample of mining companies that meet specific criteria, such as being listed on the Indonesia Stock Exchange, submitting sustainability reports and financial statements, and receiving the PROPER (Company Performance Rating Assessment Program) award between 2019 and 2021.

Green accounting as an independent variable is an accounting concept that shows companies have sincerity in improving environmental performance by controlling environmental costs (Eni, 2020). The Republic of Indonesia's Ministry of Environment and Forestry uses PROPER to quantify green accounting variables (KLHK). PROPER is an evaluation of the business's adherence to environmental management, according Minister of Environment Regulation Number 1 of 2021 regarding the Company Performance Rating Assessment Program. The use of this assessment is to measure the application of green accounting based on research conducted

by (Eni, 2020) and (Rosaline et al., 2020). If the company gets a PROPER award, it is rated 1 and

Number	Sample Criteria	Number of Companies	Number of Observation Data
1	Mining companies listed on the IDX for the period 2019-2021	47	141
2	Businesses who don't take part in the KLHK PROPER program	(5)	(15)
3	Companies reporting losses during the observation period	(6)	(10)
4	Businesses who don't release sustainability reports	(9)	(12)
5	Businesses whose financial statements are not available for viewing	(1)	(2)
<b>Total</b>		<b>26</b>	<b>102</b>

vice versa if it is not rated 0. Data management for binary and nominal scales simultaneously based on research (Dhar et al., 2022). This study did not use measurements based on PROPER ratings because PROPER ratings were used to measure environmental performance (Rosaline et al., 2020).

Profitability is a dependent variable as well as a moderation variable measured using net profit margin (NPM), which is a ratio that shows the amount of profit after tax earned by the company on each sale (Risal et al., 2020). NPM proxies are as follows:

$$\text{NPM} = (\text{Earning After Tax (EAT)}) / \text{Sales}$$

Sustainability development as a dependent variable is measured using four dimensions of sustainability development by (Marota, 2017), specifically the social, technological, environmental, and economic dimensions. Sales, net profit, and investment show the economic aspects. The social dimension is measured by salary and pension funds. The environmental dimension is seen from utility costs and K3. The technology dimension is seen from the cost for research and development in the field of technology. Sustainability development is proxied as follows (Dura & Suharsono, 2022):

$$\text{Sustainability development} = \text{Economic Dimension} + \text{Social Dimension} + \text{Environmental Dimension} + \text{Technology Dimension}$$

### 3. RESULTS AND DISCUSSION

This study uses mining companies registered on the IDX in 2019-2021 as a population of 47 companies with a total of 141 observational data. Based on the sampling criteria, the observation data of this study is 102 data. Table 1 shows a sample of this study:

Table 1. Research Sample

Number	Sample Criteria	Number of Companies	Number of Observation Data
1	Mining companies listed on the IDX for the period 2019-2021	47	141
2	Businesses who don't take part in the KLHK PROPER program	(5)	(15)
3	Companies reporting losses during the observation period	(6)	(10)
4	Businesses who don't release sustainability reports	(9)	(12)
5	Businesses whose financial statements are not available for viewing	(1)	(2)
	<b>Total</b>	<b>26</b>	<b>102</b>

Source: Data from IDX processed, 2023

### Descriptive Statistics

The majority of mining businesses, or 67.6%, have adopted green accounting by adhering to the Ministry of Environment and Forestry's PROPER program, according to the statistical data analysis results in Table 2. With regard to environmental management, the company has used environmental expenses, as indicated by this value. Furthermore, profitability shows an average value of 18.6%. This means that during the 2019-2021 period, many mining companies have net profits from each sale but in a small ratio. An average score of 20,403 from sustainability development shows that only a few mining companies carry out sustainability development activities.

Table 2. Descriptive Statistics

Variable	N	Average	Minimum	Maximum	Standard Deviation
Green accounting	102	0.676	0	1	0.468
Profitability	102	0.186	0	6.60	0.651
Sustainability	102	20.403	11.900	29.340	4.263

Source: SmartPLS data processing results, 2023.

### Model Partial Least Square (PLS)

Using the Smart PLS 3.2.9 program and PLS analysis methodologies, the hypothesis was evaluated. The study PLS model's schematic is displayed in Figure 2.

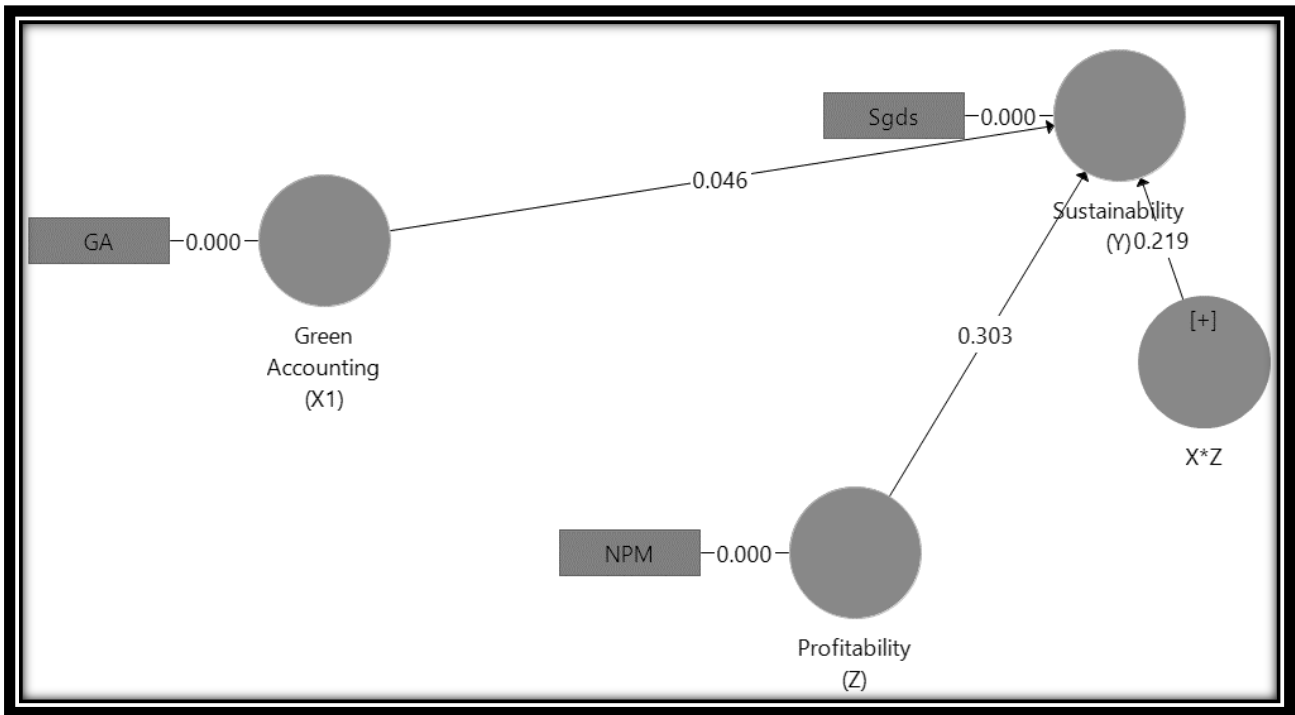


Figure 2. Smart PLS Program Model Scheme

**Outer Model**

Convergent validity to measure the correlation between indicators or meters and their constructs. Convergent validity can be tested using outer loading or loading factor values and Average Variance Extracted (AVE). A good association between the gauge and the construct requires the loading factor value to be larger than 0.7 and the AVE to be greater than 0.5. The test results show that the outer loading value of each gauge is greater than 0.7 and the AVE value is greater than 0.5.

Internal consistency is used to measure reliability at the construct level. Internal consistency is measured using composite reliability and Cronbach's alpha. The higher the internal consistency value, the higher the reliability of a construct. Therefore, the value of composite reliability and Cronbach's alpha must be greater than 0.7. Based on the results of composite reliability and Cronbach's alpha test greater than 0.7.

**Inner Model**

The hypothesis was tested using bootstrapping calculations in the Smart PLS 3.2.9 application. The results of hypothesis testing can be seen in table 3. Parameter coefficients to see the direction of positive or negative relationships between independent and dependent variables and P values to see the influence of independent variables on dependent variables. The hypothesis is supported if the P value  $\leq 0.05$ . Based on hypothesis testing, it shows that the P value of all research hypotheses  $\geq 0.05$ , meaning that all research hypotheses are not supported. To see the relationship between the dependent variable and the independent variable, the r-square test is used. It can be seen in table 3 that the results of the r-square sustainability development test show a figure of 0.003. This indicates that while profitability and green accounting factors have an impact on 0.3% of sustainable development indicators, other factors beyond the scope of the study have an impact on the remaining variables.

Table 3. Hypothesis Test Results and R-Square

Hipotesis	Coefficient Parameter	P Value	Result	R-Square
H1	-0.007	0.964	Not Supported	
H2	-0.145	0.762	Not Supported	0.003
H3	0.152	0.827	Not Supported	

Source: Smart PLS data processing results, 2023

### The Effect of Green Accounting on Sustainable Development

The results of the first hypothesis test are known that green accounting has no effect on sustainability. The lack of influence of green accounting on sustainability development can be seen in the average value of sustainability development of 20,403 or the lack of awareness of mining companies in making sustainability reports. Mining companies did not calculate the four dimensions used in this study, namely economic, social, environmental and technological dimensions. This means that mining companies in this research are not included in the category of companies that pay attention to sustainability development.

The negative direction shown in the parameter coefficient between green accounting and sustainability development means that the greater the costs incurred by the Company in implementing green accounting will hinder the Company's sustainability development. Such as research (Anam, 2021) that the application of green accounting does not fully carry out sustainability development activities, namely natural resource management. The Company manages environmental costs due to its impact on the Community. This research contradicts the stakeholder theory (Jones et al., 2002) that companies that do not preserve the environment will encourage negative reactions from stakeholders. However, from a different side, the Company makes cost savings in order to increase the value of the Company to increase the prosperity of stakeholders.

### The Effect of Profitability on Sustainability Development

The second hypothesis test indicates that profitability has no effect on *sustainability development*. Mining companies in this study have an average NPM ratio of 18.6%, meaning that the ratio of net profit obtained by the Company is below 1. This means that the profitability policy of mining companies this research pays attention to the impact on sustainability development. (Rifandi, 2017) revealed that the lack of profitability on sustainability development is likely because small profitability does not allow the Company to carry out sustainability development activities. Companies will focus on how to produce products and earn profits compared to managing natural resources. Another opinion from (Utami Eryadi et al., 2021) that sustainability development is a must for the Company to continue to produce products so that both large and small profits generated do not affect sustainability development.

### The Effect of Profitability as a Moderation Variable on the Relationship Between Green Accounting and Sustainability Development

The results of hypothesis testing indicate that profitability cannot moderate the relationship between green accounting and sustainability development. Independently, green accounting and sustainability development have no effect so that profitability is not able to strengthen or weaken



the relationship between the two variables. The relationship between green accounting and sustainability development cannot be strengthened or weakened by profitability because profitability is used to see the ability of the Company to generate profits. It can also be seen in descriptive statistics on the average value of green accounting and profitability which shows that mining companies in this study have applied a lot of green accounting but are not able to increase profitability. This is when viewed from the accounting side where the more costs incurred, the smaller the ability of the profit generated.

#### 4. CONCLUSION

The results of research and hypothesis testing prove that green accounting has no effect on sustainability development and profitability moderation variables are not able to strengthen or weaken the relationship between green accounting and sustainability development. The implementation of green accounting does not encourage the sustainability development of mining companies because the large costs incurred for green accounting will hamper the sustainability development of the Company in the short term. The company will focus on the profit obtained compared to investing through the application of green accounting for sustainability development.

The relationship between green accounting, profitability and sustainability needs to be reviewed directly through questionnaires or interviews in order to find out why green accounting does not affect sustainability development and profitability is not able to moderate the relationship between green accounting and sustainability development. In the next study, the amount of observational data can be added and add or use other variables that can affect sustainability development.

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