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The Influence of Environmental Accounting on Sustainability Development with Return on Asset as a Moderating Variable

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ABSTRACT

The purpose of this study is to provide strong evidence regarding the effect of environmental accounting on sustainability development with Return on Assets as a moderating variable in mining companies listed on the IDX. Environmental Accounting in research is measured by PROPER. Sustainability Development is measured by SRDI. The company's Return on Assets is measured by ROA. This type of research includes quantitative research. The population in this study are mining companies that have won the PROPER award and have published sustainability reports for 2021-2022. Meanwhile, the sample in the research used purposing sampling, and 25 companies were obtained from members of the population. The data collection technique is documentation techniques. The data management technique of this research uses Microsoft Excel and Eviews 9 applications. The analysis used in this study is regression analysis with moderating variables (MRA). The results in this study prove that environmental accounting has a significant effect on sustainability development, the interaction variable between environmental accounting and corporate ROA has no significant effect on sustainability development, corporate ROA is not classified as a moderating variable thereby weakening the effect of environmental accounting on sustainability development.

Keywords: Environmental Accounting, Sustainability Development, Return on Assets

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INTRODUCTION

Issue environment which causes Indonesia to have various kinds of environmental damage such as mining activities. The mining sector is one of the biggest corporate sectors causing environmental damage in Indonesia. Environmental (Rafizal et al., 2022; Sriadmitum et al., 2022; Wahyudi et al., 2023) pollution is a condition that can be detrimental to living things due to contamination of abiotic components so that the benefits are not obtained as they should (Abdulla, 2021) . Negative environmental impacts caused by companies such as noise, air pollution, water pollution, soil contamination and other pollution and many companies prioritize profits over the surrounding environment (Abdullah & Amiruddin, 2020) . Environmental phenomena have a direct or indirect influence on the company's financial performance, and mining operations often contribute to environmental damage, based on this phenomenon, the decline in environmental quality results from waste or pollution caused by mining companies. Human factors originating from company operational activities also contribute to pollution apart from natural factors. Environmental accounting is a way for companies to take responsibility for the damage and pollution that occurs (Kuraesin et al., 2022). One of the cases of mining sector companies in 2023 is carried out by PT Medco, where companies pollute the environment for a long time. In fact, 250 residents of Gamping Pantokan Rayeuk in Banda Alam District were forced to flee to the sub-district office on April 9 2021, due to the stench of environmental pollution. www.detik.com.

Environmental accounting is one way for companies to take responsibility for the damage and pollution that occurs (Kuraesin et al., 2022) . Accounting plays a role in disclosing financial reports related to environmental costs. An accounting system in which there are accounts related to environmental costs is called green accounting or environmental accounting. On the other hand, companies that try to increase return on assets (Ansorimal et al., 2022; Anton et al., 2023; Lumbantoruan et al., 2021) have the effect of continuously using natural resources, despite the fact that resources are scarce and slow to be replenished due to human needs. The majority of modern industries are fully aware that, in addition to efforts to achieve business goals, environmental and social care is also an important component of companies to achieve profits (Syahputra, 2020) . So environmental accounting exists as a way to break the deadlock between business and affected communities. Therefore, businesses cannot handle resources arbitrarily without considering how their actions will affect the affected community and environment (Wijayanto et al., 2021).

As a financial ratio of profitability, return on assets is useful for assessing and measuring the performance of a company to generate profit from the utilization of the company's assets. Return on assets is also a financial ratio that can be seen by stakeholders, because return on assets is a ratio that has a very large influence on the effectiveness of a company's performance. Stakeholders' trust in the company can increase sales and income of a company (Cahya & Riwoe, 2018) . The existence of this trust can increase the company's profit or profit and can also affect the amount of costs or the amount that the company contributes to the environment and corporate social responsibility as a form of corporate social responsibility towards the environment. When the events of this cycle are repeated, sustainability development will be achieved (Meiyana & Aisha, 2019) . Sustainability development emerged as an answer to concerns regarding the impact of human resources on the environment. In the system of sustainability development, environmental issues are a very important dimension to pay attention to, where the environment, nature and everything in it is an obstacle, so that all social and economic development goals must not endanger environmental sustainability to support life in the future (Seianingtias et al., 2019). The concept of corporate sustainability development is required to consider the company's performance from three perspectives: financial, environmental and social (Abdulrahman, 2021). Globally, sustainable development is of great public concern. In this modern era, the depletion of natural resources has contributed to environmental damage and many natural disasters. Therefore, integrating sustainable development into economic growth, environmental protection and social security has become an urgent need for the world. Disclosure of the sustainability report has a positive impact on the company's operations, with this disclosure it will be able to improve the company's financial performance. The company's efforts to achieve sustainability development that can be measured, disclosed and accounted for through the publication of a sustainability report. Sustainability development consists of three aspects, namely economic, environmental and social aspects. The concept of sustainability development is a concept that aims to achieve human needs for the present without sacrificing demands for the future. (Dhar et al., 2022) .

Some research regarding green accounting or environmental accounting, one of which is research conducted (Dhar et al., 2022) which examines Impact of social responsibility disclosure between implementation of green accounting and sustainable development: A study on heavily polluting companies in Bangladesh which states that the effective implementation of green accounting has significantly increased the sustainable development capabilities of highly polluting companies; and there is a significant positive correlation between the quality of social responsibility information and the sustainable development capabilities of highly polluting companies; The quality of information disclosure on responsibility and social responsibility can be adjusted positively to the relationship between the implementation of green accounting and the sustainable development capabilities of highly polluting companies. However, the results of research conducted by Nabila & Arinta, (2021) are different , which has tested the effect of implementing green accounting and material flow cost accounting on sustainable development. The results show that (1) Green Accounting has no influence on sustainable development, (2) Production Costs in the Material Flow Cost Accounting element have a positive influence on sustainable development (3) Area Size in the Material Flow Cost Accounting element has no influence on sustainable development, (4) Production results in the Material Flow Cost Accounting element have a positive effect on sustainable development.

LITERATURE REVIEW

Legitimacy Theory

Legitimacy theory functions as the basis for a social contract between business and society. This theory underlies the ability of an organization to succeed in the future depending on its ability to benefit society and the environment. In this theory, which is based on a phenomenon where there is social interaction between companies or businesses and society (Fashikhah et al., 2018) . Legitimacy is important for any business or organization because there are boundaries imposed by social norms and values, and responses to those boundaries can promote the importance of analyzing an organization's environmental performance. All research results show that, the greater the tendency for companies to disclose their social responsibility (Permatasari et al., 2019) .

Stakeholder Theory

Stakeholder theory is a theory which explains that the management of a company is managed or occupied by the company based on the expectations of stakeholders. Stakeholder theory states that a company is not an entity that functions for its own sake, but must provide benefits for organizations far beyond financial achievements (Alfaiz & Aryati, 2019). Stakeholder theory also states that every stakeholder or stakeholder has the same right to receive information about operations. company as a basis for decision making (Ulil Albab Al Umar et al., 2020)

In stahko*lder theory*, it explains that company activities not only serve their own interests but also bring benefits to other stakeholders such as (creditors, consumers, suppliers, government, society and other parties). *Stahlkolder* theory is related to the concept of corporate social responsibility, where the survival of a company is influenced by its stakeholders. A company's responsibility is not only limited to maximizing shareholder profits, but must also be able to consider the community, customers and suppliers as part of its own business operations (Azizah, 2022) .

The influence of environmental accounting on *sustainable development*

Environmental Accounting can increase the effectiveness of environmental performance, reduce costs, invest in green technology and support environmentally friendly product processes. Apart from that, environmental accounting can also create opportunities to reduce the risk of energy use, save resources, improve health, environmental safety and provide a competitive advantage for commercial companies. The continuity of a company's business can be described by how much profit the company uses to measure its ability to survive in business. Companies that generate more profits have a better chance of continuing to develop in the future (Selpiyanti & Fakhroni, 2020) . Environmental accounting has a very important influence on sustainability development, because environmental accounting provides information related to environmental conditions in its company's activities. In environmental accounting, sustainable development is expressed in SR reports describes the condition of the company both from an economic, social and environmental perspective (Dhar et al., 2022) . When viewed from an economic perspective, companies are expected to gain high profits. However, seen from the social aspect, companies are expected to make a contribution to society and the environment. Environmental accounting can also be able to give a good image in the community towards the company's sustainable development, because with environmental accounting companies can be socially and environmentally responsible. And this form of responsibility is presented in the sustainability report. Companies implementing environmental accounting for sustainability development by incurring costs for environmental preservation are expected to contribute to increasing sustainability development (Selpiyanti, 2020) .

H_1 : Environmental accounting has an effect on sustainability development

Return On Assets moderates the relationship between environmental accounting and Sustainability Development

ROA (Returns On assets) is profit clean on period the shared with average total assets of a company on period the (Eastern et al., 2018). ROA is the ability of a business unit to earn profits or returns on a number of assets owned by the business unit. This ratio measures the level of return on investment that a company has made using the assets it owns. Investors will be increasingly interested in the value of company shares that have a profit after tax ratio, where the greater the ROA, the higher the company's ability to earn profits, and the higher the resulting ability. ROA is not the main goal, but is the impact of good and responsible company performance. When a company is responsible for the environment, socially, profit or profit will come by itself, whether the profit is enjoyed by the management as the agent managing the entity or the investor as the owner of the economic entity (Huda, 2022) . The company's ROA can be categorized as a moderating variable. Because the company's ROA is able to provide a good measure of profitability in increasing the effectiveness of the company's performance in managing revenue. when the company's profits are large, the costs incurred by the company to the environment as a form of responsibility will be large and environmental sustainability will be maintained so that sustainability development is achieved (Kurniawati, 2019) .

H_2 : Return on Assets moderates the relationship between environmental accounting and sustainability development

Stakeholder problems that arise in organizations can be overcome by implementing Environmental Accounting. Organizations have a very important role in the principles of Environmental Accounting. One of the factors in the emergence of Environmental Accounting is stakeholder issues. Organizations are trusted by stakeholders to manage their environment well. Based on the various discussions above, as a basis for formulating hypotheses, the variables in this study are described in the thinking framework model as follows:

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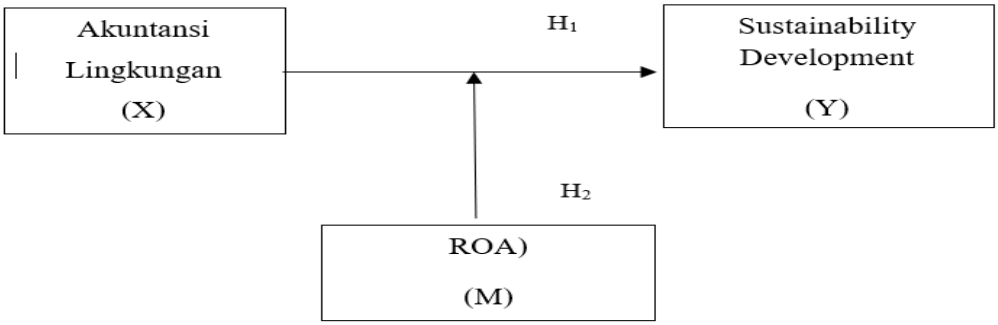

Figure 1. Thinking Framework

DATA ANALYSIS AND RESEARCH TECHNIQUES

The population in this study are all mining companies listed on the Indonesia Stock Exchange in 2021 - 2022 with a total of 57 companies. The sampling technique in this study was using *purposive sampling*, by determining the criteria, while the sampling criteria in this study were:

1. Presenting *a Sustainability Report* in 2021 – 2022
2. Participate in PROPER activities in 2021 – 2022

The only companies that meet these criteria are 25 mining companies that have won the PROPER award and published a *Sustainability Report*, as well as companies that have won the PROPER award in 2021-2022. The data source used in this research was obtained from the capital market reference center, namely the Indonesia Stock Exchange via the website www.idx.co.id. As for data on mining companies that won PROPER from the Ministry of the Environment, it can be accessed via the website https://proper.menlhk.go.id The dependent or bound variable in this research is, *sustainability development* which is proxied by SDRI based on GRI, totaling 9 disclosure items. carried out with *content analysis* and providing a score (Vinella, 2022):

- Score 0 : No information disclosed
- Score 1: there is information disclosed 1 sentence
- Score 2: there is information disclosed in 1 paragraph
- Score 3: there is information disclosed in 2-3 paragraphs
- Score 4: there is information disclosed in 4-5 paragraphs

Formulated as follows:

$$\text{SRDI} = \frac{\text{V}}{\text{M}}$$

Information:

SRDI = Sustainability Report Disclosure Company Index

V = Number of items disclosed by the company

M = Expected number of items (9 items) of the company

The independent variable in this research is Environmental Accounting which is measured or proxied by PROPER, namely through the assessment of the Ministry of the Environment of the Republic of Indonesia, where the value is through the quality of *Environmental Performance* in Indonesia, which includes 5 colors for company ranking, namely:

Gold : Truly Orderly Score = 5

Green : Really Orderly Score = 4

Blue : Orderly Score = 3

Red : Worst Score = 2

Black : Very Bad Score = 1

The moderating variable in this research is *Return on Assets* as measured by ROA. Profitability (ROA) shows that the company's profitability has promising possibilities in the future and is also very important for companies to get profits in the long term. ROA is also used to measure and assess the overall efficiency of a company in generating income from the utilization of available assets (Cahya & Riwoe, 2018) , while the ROA formula is as follows:

$$ROA = \frac{Earning\ After\ Interest\ \&\ Tax}{Total\ Asset}\ x\ 100\%$$

The data analysis technique for this study uses the *Microsoft Excel* and *Eviews* 9 applications. The data analysis steps for this study are as follows:

Descriptive Analysis

Descriptive analysis aims to describe what is observed in the research results and provide information based on the findings in the research. The data analysis technique in this study was to interpret the average value, maximum value, minimum value and standard deviation of each of these variables.

Classic assumption test

Before testing the regression data, the classical assumptions are tested first to find out whether the data used meets the requirements of the regression model. This test includes: Normality Test and Heteroscedasticity Test.

Selection of Panel Data Regression Model

Panel data is regressed using three models, *common effect model, fixed effect model,* and *random effect model.* And each model has its own advantages and disadvantages. The choice of model depends on the assumptions made by the researcher and which meet the requirements for statistical data processing. In selecting the most suitable model for processing panel data using three methods, namely: Chow test, *Hausman* test, *Lagrange Multiplier* test.

Moderated Regression Analysis (MRA)

The use of the MRA model is because in this study it uses a moderator variable, so the panel data regression model equation for the moderator variable is to use the MRA equation. The MRA equation can be formulated as follows:

$$Y_{it} = a + \beta_1 X_{it} + \beta_2 X_{it} M_{it} + e$$

Where:

Y_{it} = Variable sustainability development

A = Constant (Intercept)

$\beta_1 - \beta_2$ = Regression Coefficient

X = Environmental Accounting Variable

M = Variable return on assets

B_2 = Regression coefficient from the interaction of X with M

X*M = Interaction between environmental accounting variables and return on assets

e = Error term

i = company data

t = time period data

Pearson Correlation Test

Correlation is used to measure the strength and direction of the linear relationship between variables. The correlation technique used is Pearson Product Moment correlation. Namely to determine the degree or direction of the strength of the reciprocal relationship between variables.

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Hypothesis testing

Testing this hypothesis is used to measure the accuracy of the sample regression in statistically estimating the actual data. It can be measured from the coefficient of determination (R-Squared), Probability Test, Linear Analysis of multiple regression and simple regression analysis. Statistical calculations are said to be statistically significant if the statistical test values are in the critical area (areas where Ho $_{is}$ rejected), and vice versa are said to be insignificant if the statistical test values are in areas where Ho $_{is}$ accepted.

RESULTS AND DISCUSSION

Descriptive Analysis of Environmental Accounting Variables

Table 1. Descriptive Analysis of Environmental Accounting Variables

	AKUNTANSI LINGKUNGAN
Mean	0.764000
Median	0.800000
Maximum	1.000000
Minimum	0.600000
Std. Dev.	0.149503
Observations	50

Sumber: Hasil Output Eviews 9

Based on the results of table 1, it can be seen that environmental accounting as measured by PROPER with a total sample of 50 companies obtained an average value (mean) of 0.764000 with the value of each company being grouped because it has a standard deviation of 0.149503 below the average value (mean) and for a sample of companies that received the PROPER award from the Ministry of Environment and Forestry for the 2021-2022 period, on average they won the green and blue color images for environmental performance assessment. For the median value of 0.800000. The minimum value is 0.600000, while the maximum value is 1.000000.

Figure 2. PROPER chart

Source: Data processed by researchers using Microsoft Excel

Based on the results of the PROPER 2 graphic image above, various company PROPER (Job Rating Assessment Program) scores were obtained. It can be seen from the highest (maximum) PROPER that occurred during 2021 and 2022, namely the companies Adaro Energi Tbk, Aneka Tambang Tbk, Bukit Asam Tbk, Medco Energy International Tbk, Pertamina Gheothermal Energy Tbk, and Timah Tbk in 2021 and Adaro Energy Tbk, Bukit Asam Tbk, Pertamina Gheothermal Tbk and Timah Tbk in 2022 of 1.0 where the company is already good in its environmental performance, because it managed to get a value of 1.0 which means that the company gets a golden image. While the lowest (minimum) PROPER in 2021 is for the companies Akr Corporindo Tbk, Archi Indonesia Tbk, Dana Brata Mulia Tbk, Gunawan Dianjaya Steel Tbk, Gunung Raja Praksi Tbk, Harum Enery Tbk

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and Indal Aluminum Industry Tbk with an acquisition value of 0.6. While the lowest (minimum) PROPER in 2022 is for the companies Akr Corporindo Tbk, Archi Indonesia Tbk, Dana Brata Mulia Tbk, Gunawan Dianjaya Steel Tbk, Gunung Raja Praksi Tbk, Harum Enery Tbk and Indal Aluminum Industry Tbk, State Gas Company Tbk, Petrosea Tbk and FFB Energi Utama by obtaining the same value in 2021 of 0.6 which is marked with a blue image where the company meets and exceeds the criteria required in regulations and is efficient in environmental management and carries out social and environmental responsibilities properly.

Sustainability Development Descriptive Analysis

Table 2. Sustainability Development Descriptive Analysis

	SUSTAINABILITY DEVELOPMENT
Mean	0.827222
Median	0.833333
Maximum	0.972222
Minimum	0.638889
Std. Dev.	0.090714
Observations	50

Sumber: Hasil Output Eviews 9

Based on the results of the analysis from table 3, it can be seen that the sustainability development of companies with a total sample of 50 obtained an average value (mean) of 0.827222. The minimum value for the dependent variable is 0.638889 in 2022. As for the maximum value in 2021, it is 0.972222 and the standard deviation value is 0.090714 which is below the mean.

Figure 3. Sustainability Development Graphic

Source: Data processed by researchers using Microsoft Excel

Based on the results of Graph 3 Sustainability Development above, it can be seen that the sustainability development value for each company varies. This can be seen from the highest (maximum) sustainability development occurring in 2021 which was obtained by the companies Gunung Raja Praksi Tbk and Medco Energy International Tbk at 0.97. As well as the highest or maximum value for 2022 obtained by Indotambang Raya Megah and Timah Tbk with a value of 0.86. Which means that the company has properly disclosed its sustainability report and provided evidence that the company's operations do not only think about prof, but also think about the environment and social issues. And the company can increase the effectiveness of the company's performance well so that interested parties trust and invest in the company. This is in line with research from (Suaidah, 2020) which states that by publishing a company sustainability report, it is hoped that stakeholders will be interested in investing in the company, so that the company's production can develop so that profits can increase and with a standard sustainability report can be able to reflects the overall level of effectiveness of the company and allows the company to grow and develop quickly.

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Descriptive Analysis of ROA Variables

Table 5. Descriptive Analysis of ROA Variables

	ROA
Mean	0.151015
Median	0.079628
Maximum	0.616346
Minimum	0.002799
Std. Dev.	0.154490
Observations	50

Sumber: Hasil Output Eviews 9

Based on the results of table 5, it can be seen that the average value (mean) is 0.151015 indicating that the average sample company is 0.151015 for Rp. 1 company's assets. The minimum value for the variable return on assets is 0.002799 or 0.27%, while the maximum value is 0.616346 or 0.62% and the standard deviation value is 0.154490, which means that the tendency of ROA data for one company to another during the year is 0.154490.

Figure 4. ROA graph

Source: Data processed by researchers using Microsoft Excel

Based on figure 4 return on assets above, it can be seen that the value of company return on assets varies greatly. Judging from the highest (maximum) return on assets that occurred in 2022 for the company Golden Energi Mines Tbk. of 0.62 or 0.62%. The company has a high number of assets, in which the higher the return on assets shows the efficiency of the company in managing assets to generate profits. This is in line with the opinion (Suaidah, 2020) which states that return on assets is useful for assessing and measuring the effectiveness of a company in generating profits using its assets, by using assets that have been adjusted to company costs to finance the company.

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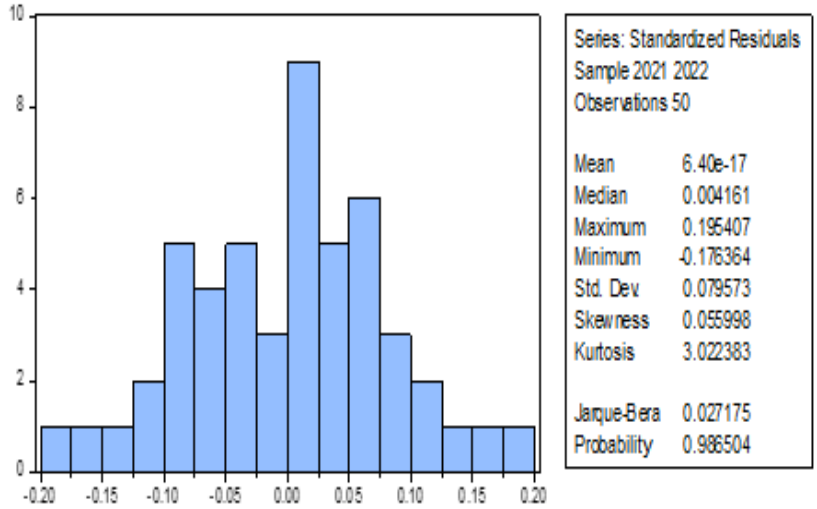
Classic assumption test

Normality test

Figure 5. Jarque-Bera chart



Source: Secondary data processed using EViews 9

From jarque-bera value, it can be seen that the data is normally distributed because the probability value is greater than 0.05, which is 0.986504, so the data is normally distributed.

Heteroscedasticity Test

Figure 6. Glesjer test

Dependent Variable: RESABS
Method: Panel Least Squares
Date: 07/16/23 Time: 12:33
Sample: 2021 2022
Periods included: 2
Cross-sections included: 25
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.086020	0.037287	2.306993	0.0255
AKUNTANSILINGKUNGAN	-0.019142	0.048079	-0.398130	0.6923
ROA	-0.068229	0.046527	-1.466457	0.1492

Source: Secondary data processed using EViews 9

Glejser test above in table 2, it is known that the environmental accounting variable with a coefficient value of -0.019142 and a *probability value* of 0.06923 > 0.05 means there is no heteroscedasticity problem and the data is normal. For the ROA variable, it has a coefficient with a value of -0.068229 and a *probability* value of 0.1492 > 0.05, so the data does not have heteroscedasticity problems and the data is homogeneous.

Data Interpretation and Hypothesis Testing

Selection of Regression and Panel Models

The analysis in this study is using *Moderated Regression Analysis* (MRA) with the dependent variable *Sustainability Development* proxied by SRDI and for the independent variables Environmental Accounting and Company ROA as moderating variables. Data processing in this study used the *Eviews* 9 program. The results of *the Moderated Regression Analysis* (MRA) analysis can be seen as follows:

Table 6. Common Effects Model

Dependent Variable: SUSTAINABILITYDEVELOPME
Method: Panel Least Squares
Date: 06/26/23 Time: 09:30
Sample: 2021 2022
Periods included: 2
Cross-sections included: 25
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.613289	0.060539	10.13052	0.0000
AKUNTANSILINGKUNGAN	0.268054	0.080041	3.348977	0.0016
AKUNTANSILINGKUNGAN_ROA	0.077501	0.093626	0.827769	0.4120

R-squared	0.230549	Mean dependent var	0.827222
Adjusted R-squared	0.197806	S.D. dependent var	0.090714
S.E. of regression	0.081249	Akaike info criterion	-2.124483
Sum squared resid	0.310262	Schwarz criterion	-2.009762
Log likelihood	56.11208	Hannan-Quinn criter.	-2.080797
F-statistic	7.041241	Durbin-Watson stat	2.219253
Prob(F-statistic)	0.002115		

Sumber : Output Eviews 9

Based on table 6 above, the moderation regression equation is obtained as follows:

SD = 0.613289 + 0.268054 AL+ 0.077501 AL_ROA + e

The results of the common effect model test equation in table 5.6 above can be seen that the constant coefficient value is 0.613289 with a probability of 0.0000 < 0.05. The environmental accounting regression coefficient is 0.268054 with a probability of 0.0016 < 0.05, where environmental accounting has an effect on sustainable development. The coefficient of the interaction variable between environmental accounting and ROA is 0.077501 with a probability of 0.4120 > 0.05, meaning that the interaction between environmental accounting and ROA has no effect on sustainable development. The environmental accounting variable looks significant because the value has a probability value of 0.0016 <0.05 and an Adjusted R-squared value of 0.197806, as well as a probability f-statistic value of 0.002115, which means the model is significant. And the Durbin-Watson stat value is 2.219253 which already exceeds the range of number 2 which means that there is no autocorrelation. The R-squared value is 0.230549, which shows that the contribution of the independent variable to the dependent is 23.05%, meaning that the environmental accounting variable and the environmental accounting interaction variable with ROA can explain 23.05% and the remaining 76.95% is explained by other variables. who were not included in the study.

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Table 7. Fixed Effect Model

Dependent Variable: SUSTAINABILITYDEVELOPME
Method: Panel Least Squares
Date: 07/16/23 Time: 14:38
Sample: 2021 2022
Periods included: 2
Cross-sections included: 25
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.737936	0.209328	3.525265	0.0018
AKUNTANSILINGKUNGAN	0.124651	0.276378	0.451015	0.6562
AKUNTANSILINGKUNGAN_ROA	-0.050429	0.163032	-0.309318	0.7599

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.575229	Mean dependent var	0.827222
Adjusted R-squared	0.095054	S.D. dependent var	0.090714
S.E. of regression	0.086295	Akaike info criterion	-1.758612
Sum squared resid	0.171278	Schwarz criterion	-0.726119
Log likelihood	70.96530	Hannan-Quinn criter.	-1.365433
F-statistic	1.197957	Durbin-Watson stat	3.846154
Prob(F-statistic)	0.332791		

Sumber : Output Eviews 9

Based on the results of table 7 above, the common effect model regression equation can be obtained as follows: SD = 0.737936 + 0.124651AL - 0.050429 AL_ROA + e The results of the common effect model test equation in table 5.7 above can be seen that the constant coefficient value is 0.737936 with a probability of 0.0018 < 0.05. The environmental accounting regression is 0.124651 with a probability of 0.6562 > 0.05 where environmental accounting has no effect on sustainability development. The regression coefficient of the interaction variable between environmental accounting and ROA is -0.050429 with a probability of 0.7599 > 0.05, meaning that the interaction between environmental accounting and ROA has no effect on sustainability development. The Adjusted Rsquared value is 0.575229, and the probability f-statistic value is 0.332791, which means that the model is not significant. And the Durbin-Watson stat value is 3.846154 which already exceeds the range number 2. The R-squared value is 0.575229 which shows that the contribution of the independent variable to the dependent is 57.52%, meaning that environmental accounting variables and environmental accounting interaction variables deang ROA can explain amounted to 57.52% and the remaining 42.48% was explained by other variables that were not studied.

Next, the results of the common effect and fixed effect models were then carried out with a chow test. This test was carried out to select the most appropriate model between the common effect and fixed effect models. The results of the chow test can be seen in table 8

Table 8. Test Chow

Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.777641	(24,23)	0.7276
Cross-section Chi-square	29.706430	24	0.1947

Sumber : Hasil Output Eviews 9

The results of the Chow test above in table 5.8 show that the value of the probability of the Chi-square

cross section is 0.1947 > 0.05 and the cross section-f is 0.7276 > 0.05, so H0 is accepted. So, the appropriate model is common effect compared to fixed effect. To find out which model is right with the hypothesis:

H0: Common Effect Model

H1: Fixed Effect Model

Next, a regression with a random effect model is performed. Regression results using the random effect model can be seen in table 9.

Table 9. Random Effects Model

Dependent Variable: SUSTAINABILITYDEVELOPME
Method: Panel EGLS (Cross-section random effects)
Date: 06/26/23 Time: 09:44
Sample: 2021 2022
Periods included: 2
Cross-sections included: 25
Total panel (balanced) observations: 50
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.613289	0.064299	9.538057	0.0000
AKUNTANSILINGKUNGAN	0.268054	0.085012	3.153120	0.0028
AKUNTANSILINGKUNGAN_ROA	0.077501	0.099442	0.779359	0.4397

Effects Specification	S.D.	Rho
Cross-section random	0.000000	0.0000
Idiosyncratic random	0.086295	1.0000

Weighted Statistics			
R-squared	0.230549	Mean dependent var	0.827222
Adjusted R-squared	0.197806	S.D. dependent var	0.090714
S.E. of regression	0.081249	Sum squared resid	0.310262
F-statistic	7.041241	Durbin-Watson stat	2.219253
Prob(F-statistic)	0.002115		

Unweighted Statistics			
R-squared	0.230549	Mean dependent var	0.827222
Sum squared resid	0.310262	Durbin-Watson stat	2.219253

Sumber : Hasil Output Eviews

Based on the results from table 9, the random effect model regression equation can be obtained as follows:

$$SD = 0.61389 + 0.268054\ AL + 0.077501\ AL\_ROA + e$$

The results of the random effect model test in table 9 above can be seen that the constant coefficient value is 0.61389 with a probability of 0.000. The regression coefficient for environmental accounting is 0.268054 with a probability of 0.0028 <0.05 where environmental accounting influences sustainability development. The coefficient of interaction between environmental accounting and ROA is 0.077501 with a probability of 0.4397 > 0.05, meaning that the interaction between environmental accounting and sustainability development has no effect. For environmental accounting variables it looks significant because the probability value is 0.0028 <0.05 and the Adjusted R-squared value is 0.197806, and for the probability f-statistic value is 0.002115 which means the model is significant. And the Durbin- Watson stat value is 2.219253 which already exceeds the range of number 2 which means that there is no autocorrelation. The R -squared value is 0.230549 which indicates that the contribution of the independent variable to the dependent is 23.05%, meaning that environmental accounting variables and the interaction variable of environmental accountants with ROA can explain 23.05% and the remaining 76.95% is explained by other variables which were not investigated. Furthermore, the results of the

random effect model and the resulting common effect are then carried out by the Hausman test. This test was carried out to select the most appropriate model between the common effect and random effect models. The results of the Hausman test can be seen in table 10.

Table 10. Hausman test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.472293	2	0.4790

Sumber : Hasil Output Eviews 9

The results of the Hausman test in table 5.10, it can be seen that the value of the random cross-section probability of 0.4790 is greater than 0.05 so it can be concluded that the random effect model is more appropriate than the fixed effect model. The random effect model is a model used to predict panel data to determine the effect of environmental accounting on sustainability development with ROA as a moderating variable. Then the decision taken on the Hausman test H0 is accepted with the hypothesis:

H0: Random Effect Model

H1: Fixed Effect Model

Next, the lagrange multiplier test is carried out, this test is carried out to determine the most appropriate random effect or common effect model used in estimating panel data. To carry out the LM test, the data was regressed using the random effect and common effect models, then fixed/random effect testing was carried out using the ommited Radom effect–lagrange multiplier. The LM test calculation method used in the research is the Breusch-Pagan method.

Table 11. Lagrange Multiplier Test

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	0.592989 (0.4413)	0.070792 (0.7902)	0.663781 (0.4152)

Sumber : Hasil Output Eviews 9

Based on table 11, it can be seen that the value of the Breusch-Pagan probability cross-section in both column is 0.4152 > 0.05 where the common effect model is selected. The decisions taken in the Lagrange multiplier test are as follows:

H0: Common Effect Model > 0.05

H1: Random Effect Model < 0.05

The analysis in this study is using Moderated Regression Analysis (MRA) with the dependent variable Sustainability Development proxied by SRDI and for the independent variables Environmental Accounting and Company ROA as moderating variables. Data processing in this study used the Eviews 9 program. The results of the Moderated Regression Analysis (MRA) analysis can be seen as follows:

Table 12. Results of Moderated Regression Analysis (MRA)

Dependent Variable: SUSTAINABILITYDEVELOPME
Method: Panel Least Squares
Date: 06/26/23 Time: 09:30
Sample: 2021 2022
Periods included: 2
Cross-sections included: 25
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.613289	0.060539	10.13052	0.0000
AKUNTANSILINGKUNGAN	0.268054	0.080041	3.348977	0.0016
AKUNTANSILINGKUNGAN_ROA	0.077501	0.093626	0.827769	0.4120

R-squared	0.230549	Mean dependent var	0.827222
Adjusted R-squared	0.197806	S.D. dependent var	0.090714
S.E. of regression	0.081249	Akaike info criterion	-2.124483
Sum squared resid	0.310262	Schwarz criterion	-2.009762
Log likelihood	56.11208	Hannan-Quinn criter.	-2.080797
F-statistic	7.041241	Durbin-Watson stat	2.219253
Prob(F-statistic)	0.002115		

Sumber : Hasil Output Eviews

Based on table 12 above, the moderation regression equation is obtained as follows:

SD = 0.613289 + 0.268054 AL+ 0.077501 AL_ROA + e

From the moderation regression equation above, the following conclusions are obtained:

a. There is a positive relationship between Environmental Accounting and Sustainability Development.

b. There is a positive relationship between the interaction variable Environmental Accounting_ROA Company and Sustainability Development.

From the equation, it can be interpreted as follows:

a) The constant value obtained is 0.613289, meaning that if the independent variable is considered constant, then the Sustainability Development value will be 0.613289

b) The Environmental Accounting regression coefficient of 0.268054 has a positive value, indicating that every 1 unit increase in Environmental Accounting will increase Sustainability Development by 0.268054.

c) The regression coefficient for Environmental Accounting_ROA, which is the interaction between Environmental Accounting and the company's ROA, is positive, so it can be said that every increase in Environmental Accounting_ROA by 1 unit will reduce Sustainability Development by 0.07750.

Pearson Correlation Test

Table 13. Pearson Correlation

Covariance Analysis: Ordinary
Date: 07/12/23 Time: 06:12
Sample: 2021 2022
Included observations: 50

Correlation Probability	AL	ROA	SD
AL	1.000000 -----		
ROA	0.112939 0.4349	1.000000 -----	
SD	0.468328 0.0006	0.166286 0.2484	1.000000 -----

Sumber : Hasil Output Eviews

Based on table 5.13 above, it can be seen that the environmental accounting variable has a p-value of 0.0006 <0.05. It can be concluded that it has a significant relationship to sustainability development. The

correlation value obtained is positive by 0.468328, so it can be interpreted that the direction of the relationship between the two variables is in the same direction as the moderate/sufficient level of closeness of the relationship. Whereas the ROA variable has a pvalue of 0.4284 > 0.05, it can be concluded that it has an insignificant relationship to sustainability development. The correlation value is 0.166286, so it can be interpreted that the relationship between the two variables is in the same direction as the level of closeness of the relationship is very weak.

Coefficient of Determination (R- Squared)

Table 15. Coefficient of Determination (R-Squared)

R-squared	0.230549	Mean dependent var	0.827222
Adjusted R-squared	0.197806	S.D. dependent var	0.090714
S.E. of regression	0.081249	Akaike info criterion	-2.124483
Sum squared resid	0.310262	Schwarz criterion	-2.009762
Log likelihood	56.11208	Hannan-Quinn criter.	-2.080797
F-statistic	7.041241	Durbin-Watson stat	2.219253
Prob(F-statistic)	0.002115		

Sumber : Hasil Output Eviews

Based on table 5.15 R-Squared has a value of 0.230549 which shows that the percentage of the contribution of the independent variable to the dependent variable is 23.05%. Which means that the independent variable, namely Environmental Accounting and the interaction variable of Environmental Accounting with company ROA, can explain 23.05% of the dependent variable, namely Sustainability Development. And the remaining 76.95% is explained by other variables that were not studied.

Hypothesis test

In this probability test is used to test the effect of Environmental Accounting on Sustainability Development and to determine whether there is influence of company ROA on moderating the relationship between Environmental Accounting on Sustainability Development and to see the value of Sustainability Development interaction between Environmental Accounting and company ROA. The t test results can be seen in table 16 below.

Table 16. Probability Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.613289	0.060539	10.13052	0.0000
AKUNTANSILINGKUNGAN	0.268054	0.080041	3.348977	0.0016
AKUNTANSILINGKUNGAN_ROA	0.077501	0.093626	0.827769	0.4120

Sumber : Hasil Output Eviews

Based on table 16 above, it can be explained as follows:

1. Environmental Accounting has an effect on Sustainability Development Based on the calculation results in table 16 it can be seen that the regression coefficient value is 0.268054 with a probability of 0.0016 below α = 0.05 this shows that the Environmental Accounting variable has a significant effect on Sustainability Development. So, the first hypothesis

   (H1) states that Environmental Accounting has an influence on Sustainability Development and is accepted.

2. The company's ROA moderates the relationship between Environmental Accounting and Sustainability Development. Based on the calculation results in table 16, the results of this probability test show that Environmental Accounting as an independent variable has a probability of 0.0016 < 0.05 (significant), and the interaction variable between Environmental Accounting and the company's ROA has a coefficient regression is 0.077501 with a probability of 0.4120. A probability value > 0.05 indicates that the interaction variable between Environmental Accounting and the company's ROA does not have a significant effect on Sustainability Development. Thus, the second hypothesis

(H2) is rejected, because it can weaken the influence of Environmental Accounting on *Sustainability Development*.

Table 17. Summary of Hypothesis Testing Results

Kode	Hipotesis	Hasil
H_1	Akuntansi Lingkungan berpengaruh terhadap *Sustainability Development,* Dilihat dari *probability* sebesar 0.0016 < 0.05	Diterima
H_2	ROA perusahaan memoderasi hubungan antara akuntansi lingkungan dan *sustainability development,* Dilihat dari *probability* sebesar 0.4120 > 0.05	Ditolak

Sumber : Data diolah peneliti

CONCLUSION

In this research basically to find out the effect of Environmental Accounting on sustainability Development with Company ROA as a Moderating Variable in Mining Companies listed on the Indonesia Stock Exchange (IDX) in 2021-2022. Based on the results of the research and testing of the proposed hypothesis, it can be concluded that:

1. Environmental Accounting has a significant effect on Sustainability Development in Mining Companies listed on the BEI in 2021-2022 because the regression coefficient value obtained is 0.268054 with a probability of 0.0016 below α = 0.05. Where each company's environmental accounting disclosure is very good because it can achieve the company's sustainable development, so that the company gets a good image in the eyes of stakeholders. Because environmental disclosure is good, stakeholder trust increases and stakeholders will invest in the company.
2. The interaction variable between Environmental Accounting and Company ROA has no significant effect on the sustainability development of Mining Companies listed on the IDX for 2021-2022. Because the regression coefficient value obtained is 0.077501 with a probability of 0.4120. The probability value is above the value of α = 0.05 where the company's ROA has no effect because it is suspected that there are other profitability variables that can influence it, and the profit generated from its assets may not be intended for environmental accounting.

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