The effect of green accounting practices and carbon emission disclosure on environmental performance and firm value, moderated by firm size: study on mining companies listed on the Indonesia Stock Exchange

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ABSTRACT

The purpose of this study was to determine the effect of green accounting practices and carbon emission disclosure on environmental performance and firm value: moderated by firm size (study on mining companies listed on the Indonesia stock exchange). This research uses quantitative methods. The population in this study were 38 IDX mining companies for the period 2018-2022. Sample selection was used using purposive sampling method, so that the sample in this study was 29 IDX Mining sector companies for the period 2018-2022. The conclusion of this study is (i)Green Accounting Practices has a positive effect on Environmental Performance; (ii)Carbon Emission Disclosure has a positive effect on Environmental Performance; (iii)Green Accounting Practices has no effect on Firm Value; (iv)Carbon Emission Disclosure has no effect on Firm Value; (v)Environmental Performance has no effect on Firm Value; (vi)Firm Size strengthens the relationship between Environmental Performance and Firm Value.

Introduction

Mining companies are a type of company whose profit is influenced by the price of its commodities and disclosure to the environment, there is a phenomenon where the average Indonesian mining company has decreased profits due to the decline in mining commodity prices.

Mining stocks continue to experience pressure due to falling commodity prices and government policies that do not benefit mining companies. Market participants expect the pressure on mining stocks to continue until the end of 2022. In the last three weeks, a number of mining issuers' shares have been under pressure. Some of these stocks such as PT Adaro Energy Tbk (ADRO) fell 8.84%, PT Indo Tambangraya Megah Tbk (ITMG) fell 16.46%, PT Bumi Resources Tbk (BUMI) fell 42%, PT Bukit Asam (Persero) Tbk (PTBA) fell 9.17%, PT Aneka Tambang (Persero) Tbk (ANTM) fell 15.61%, and PT Vale Indonesia Tbk (INCO) fell 22.13%. In early 2022, mining stocks were widely traded by investors due to expectations of performance growth in 2021 and the first quarter of 2022. The majority of mining issuers' performance based on 2021 financial reports showed significant growth. The Mining Sector Index rose above 20% and was one of the sectors that supported the growth of the Composite Stock Price Index (CSPI). However, since the end of April mining stocks have started to correct. At the beginning of this week on a year-to-date basis, the mining sector share price fell 12.33% and became the sector that lagged behind the growth of the other eight sectors. (www.energitoday.com).

Around 70 percent of environmental damage in Indonesia is caused by mining operations. This extractive industry easily bumps into and circumvents various rules that conflict with its interests, including Law No. 32/2009 on Environmental Management and

Protection (PPLH). "In fact, Law No. 32/2009 is considered an obstacle to investment. Not surprisingly, this law continues to be ignored and slowly stripped of its power," said Priyo Pamungkas Kustiadi, Media Communication and Outreach of the Mining Advocacy Network (Jatam), in Jakarta, Friday (28/9/2012). Nearly 34 percent of Indonesia's land has been handed over to corporations through 10,235 mineral and coal mining licenses. This does not include large-scale plantation licenses, oil and gas working areas, geothermal, and C excavation mines. Coastal and marine areas are also not spared from exploitation, more than 16 reclamation points, sand mining, iron sand, and become a dumping ground for Newmont and Freeport tailings. Likewise our forests, at least 3.97 million hectares of protected areas are threatened by mining, not forgetting the biodiversity in it. Not only forests, but also our rivers are being sacrificed. The number of severely damaged watersheds (DAS) has increased in the last 10 years. Of the approximately 4,000 watersheds in Indonesia, 108 are severely damaged. ESDM is considered to have neglected this destruction and paid for it with the death of residents, land damage, and changes in the economic patterns of the community. Seeing this condition, Jatam firmly demands that Energy and Mineral Resources submit to Law No. 32/2009 and not intervene with the Ministry of Environment, immediately stop mining business licenses and evaluate companies that damage the environment, immediately close mines in forest areas to withstand the rate of mining destructive power. (https://regional.kompas.com/).

The implementation of company activities in addition to providing benefits to the community, it is also expected that the company provides social responsibility including environmental aspects where the company is located. This makes companies start to take into account a lot of corporate social responsibility. Disclosure of environmental performance as a form of corporate responsibility is expected to add value to the company and increase the sustainability of the company(Shen et al., 2022).

In recent years, many companies have realized the importance of implementing social responsibility as part of their business strategy. From an economic perspective, companies will disclose information if it can increase the value of the company. The company will gain social legitimacy and maximize its financial strength in the long run through the implementation of social responsibility. The implementation of corporate social responsibility is important, this is because there are many negative impacts caused by companies on society and the environment. These negative impacts include pollution, poisoning, noise, discrimination, coercion, arbitrariness and illicit food production which are increasingly difficult to control (Zhang, Geng, & Wei, 2022).

Given the increasing number of negative impacts caused by companies, the community demands that these negative impacts be controlled so that they do not become large. Based on this, the development of accounting science that studies the relationship between companies and their environment. The company's relationship with the environment is non-reciprocal, meaning that the transaction does not cause reciprocal achievements from the related parties (Wang, Wang, & Chang, 2022).

The purpose of environmental accounting is to increase the amount of relevant information created for those who need or can use it. As an environmental management tool, environmental accounting is used to assess the effectiveness of conservation activities based on the summary and classification of environmental conservation costs. Environmental accounting data is also used to determine the cost of environmental management facilities, the overall cost of environmental conservation and also the investment required for environmental management activities. In addition, environmental accounting is also used to assess output levels and achievements each year to ensure continuous improvement of environmental performance. As a communication tool with the public, environmental accounting is used to convey negative environmental impacts, environmental conservation activities and results to the public. Responses and views on environmental accounting from various parties, customers and the public are used as feedback to change the company's approach to environmental conservation or management, as well as to see its environmental performance. Environmental performance is a mechanism for companies to voluntarily integrate environmental concerns into their operations and interactions with stakeholders, which exceeds the organization's legal responsibilities (Wu & Lin, 2022).

The government through the Ministry of Environment has even established a program called PROPER as a form of environmental compliance for companies in Indonesia. This is done in terms of assessing the company's environmental performance and spurring the company to be better in its efforts to care for the environment. The good response to the PROPER program as an assessment of the company's environmental performance continues to increase. This is indicated by the increase in the number of participants from year to year from 627 participants in 2006/2007 to 750 participants in 2008/2009.

Mining companies can enhance the environmental performance and firm value by implementing robust green accounting practices and transparently disclosing carbon emissions. These practices not only improve regulatory compliance and stakeholder relations but also attract environmentally conscious investors and customers, which can lead to a more favorable market valuation. By integrating these practices, companies can mitigate environmental risks, improve operational efficiencies, and foster long-term sustainability. The broader implications for the sector include setting higher standards for environmental responsibility, encouraging industry-wide adoption of sustainable practices, and contributing to the overall reduction of environmental degradation. This shift towards sustainability can help mitigate the negative impacts of mining operations on ecosystems and communities, leading to more resilient and sustainable business models in the industry.

Based on the description above, researchers are interested in conducting research with the title "The Effect of Green Accounting Practices and Carbon Emission Disclosure on Environmental Performance and Firm Value: Moderated By Firm Size (Study on Mining Companies Listed on the Indonesia stock exchange)".

Literature Review

Green Accounting Practices

Green accounting is part of environmental accounting that combines environmental benefits and costs into decision making. The application of green accounting is expected to preserve the environment, in an effort to preserve the environment. Green accounting includes the collection of production, inventory, and waste costs and performance for planning, development, evaluation, and control of business decisions (May, Zamzam, Syahdan, & Zainuddin, 2023). This green accounting measurement can be seen from the company's environmental performance (Hamidi, 2019).. Environmental performance is the company's performance in creating a good environment (green). In the company's environmental performance is measured based on the achievements achieved by the company, namely participating in the PROPER program. Through this program, the company's environmental performance is measured using color, giving color using the following scale:

Table 1: Company Performance Rating with PROPER

Color	Score
Gold	5
Green	4
Blue	3
Red	2
Black	1

Source: Authors

Carbon Emission Disclosure

Carbon disclosure is a type of environmental disclosure. The company's activities are one of the causes of increased carbon emissions. So in this case, the company will be required to disclose activity information transparently and accountably in the annual report. The disclosure of this information is carried out in accordance with the regulations made by the Indonesian Institute of Accountants (IAI) contained in PSAK 1 suggesting to disclose responsibility for corporate environmental and social issues. Currently, companies around the world are gradually starting to consider the material risks associated with climate change, whether the direct physical impact on their business or beyond climate change policies that change people's consumption patterns (Tan, Komal, Ezeani, Usman, & Salem, 2022).

Calculation of the carbon emission disclosure index is done with the following steps:

i. Score each disclosure item with a dichotomous scale.
ii. The maximum score is 18, while the minimum score is 0. Each item is worth 1 so that if the company discloses all items in the information in its report, the company's score is 18.
iii. The scores for each company are then summed and divided by the number of disclosure items.

Table 2: Determination of PROPER Score

Color	Description	Score
Gold	Very Very Good	5
Green	Very good	4
Blue	Good	3
Red	Bad	2
Black	Very bad	1

Source: Authors

Environmental Performance

Environmental performance is the company's performance in creating a good environment (Wu & Lin, 2022). Environmental performance is the company's performance in creating a good environment (green) (Guastella, Mazzarano, Pareglio, & Spani, 2022). This environmental performance is seen as a form of corporate social responsibility.

This study uses the PROPER rating launched by the Ministry of Environment. Assessment of environmental performance through the PROPER program by providing a score from a rating proxied by numbers 1 - 5. PROPER is grouped into 5 (five) color ratings, namely gold, green, blue, red, and black. With the following categories:

Table 3: Determination of PROPER Score

Color	Description	Score
Gold	Very Very Good	5
Green	Very good	4
Blue	Good	3
Red	Bad	2
Black	Very bad	1

Source: Authors

Firm Value

Firm value, also known as firm value, is an important concept for investors, because firm value is an indicator for the market to be able to assess a company as a whole (Mulyani, Uzliawati, & Indriana, 2024). In this study, firm value is measured by Tobin's Q. Tobin's Q ratio is often used as a measure of intangible assets or intellectual capital owned by the company, because of the presence of intellectual capital, the market often adds value to the company.

$$Tobin's\ Q = \frac{(ME + DEBT)}{TA}$$

Description:

Tobin's Q = Company Value

ME = Total Shares (Number of Shares x Price)

DEBT = Total Debt

TA = Total Assets

Firm Size

Firm size is the size of the company proxied by total assets, which is measured using the natural logarithm of total assets. With more funds, companies can create growth opportunities so that company performance is better (Bon & Hartoko, 2022).

The way to measure Firm Size is with the formula:

Size=Log Total Asset

Thinking Framework
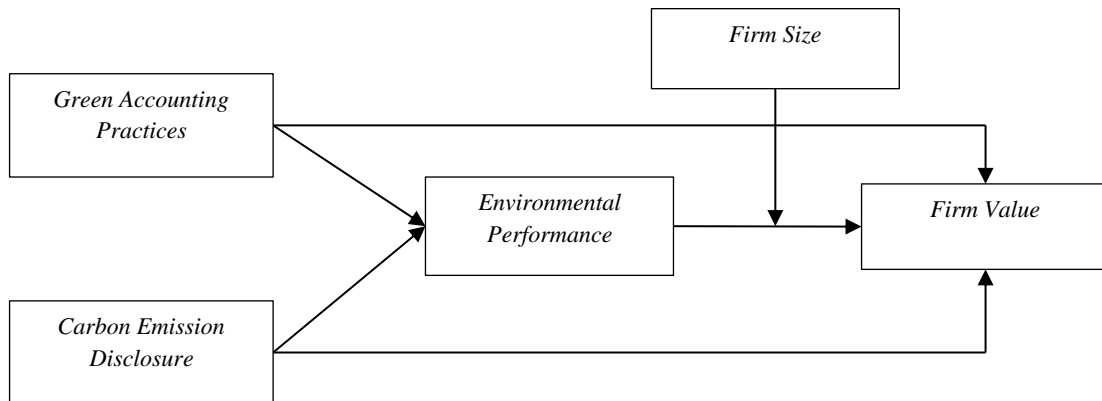
Source: Authors

Research Hypothesis

H1: There is an effect of green accounting practices on environmental performance
H2: There is an effect of carbon emission disclosure on environmental performance
H3: There is an effect of green accounting practices on firm value
H4: There is an effect of carbon emission disclosure on firm value
H5: There is an effect of environmental performance on carbon firm value
H6: There is an effect of environmental performance on carbon firm value moderated by firm size.

Research and Methodology

This research uses quantitative methods in the form of secondary data contained in the company's annual financial statements. Data collection in this study used literature study and documentation methods. Documentation is done by taking data related to research variables, namely green accounting practices, carbon emission disclosure, environmental performance, firm value and firm size.

The population in this study were 38 IDX mining companies for the period 2018-2022. Sample selection was used using purposive sampling method, so that the sample in this study was 29 IDX Mining sector companies for the 2018-2022 period.

This study uses secondary data in the form of annual financial reports of manufacturing industry companies obtained from annual reports for the 2018-2022 period. The companies were selected using purposive sampling, focusing on those that are representative of the industry and have consistent financial data available for the entire period. The analysis technique used is panel data regression analysis, conducted using Eviews 9.

Findings and Discussions

Panel Data Regression Model Selection

Lagrange Multiplier Test

Model 1

Table 4: Lagrange Multiplier Test

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	14.80361	1.643432	16.44704
	(0.0001)	(0.1999)	(0.0001)

Source: Eviews Output Results, 2024

If the probability value> 0.05, the model chosen is CEM, on the other hand, if the probability value is <0.05, the model used is REM. Based on the results of the table above, it can be concluded that the Lagrange Multipler test prefers the REM model.

Model 2

Table 5: Lagrange Multiplier Test

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	130.3559	1.234110	131.5900
	(0.0000)	(0.2666)	(0.0000)

Source: Eviews Output Results, 2024

If the probability value> 0.05, the model chosen is CEM, on the other hand, if the probability value is <0.05, the model used is REM. Based on the results of the table above, it can be concluded that the Lagrange Multipler test prefers the REM model.

Chow Test

Model 1

Table 6: Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.584944	(27,110)	0.0003
Cross-section Chi-square	68.786001	27	0.0000

Source: Eviews Output Results, 2024

If the probability value> 0.05, the model chosen is CEM, on the other hand, if the probability value is <0.05, the model used is FEM. Based on the results of the table above, it can be concluded that the chow test prefers the FEM model.

Model 2

Table 7: Chow Test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	25.253964	(27,108)	0.0000
Cross-section Chi-square	278.560901	27	0.0000

Source: Eviews Output Results, 2024

If the probability value> 0.05, the model chosen is CEM, on the other hand, if the probability value is <0.05, the model used is FEM. Based on the results of the table above, it can be concluded that the chow test prefers the FEM model.

Hausman Test

Model 1

Table 8: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.410381	2	0.4940

Source: Eviews Output Results, 2023

If the probability value> 0.05, the REM model is chosen, on the other hand, if the probability value is <0.05, the model used is FEM. Based on the results of the table above, it can be concluded that the Hausman test prefers the REM model.

Model 2

Table 9: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.886582	4	0.1007

Source: Eviews Output Results, 2023

If the probability value> 0.05, the REM model is chosen, on the other hand, if the probability value is <0.05, the model used is FEM. Based on the results of the table above, it can be concluded that the Hausman test prefers the REM model.

Common Effect Model (CEM)

Model 1

Table 10: Common Effect Model Test Results

Dependent Variable: Z_EP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_GAP	0.045751	0.060000	0.762512	0.4471
X2_CED	-0.009287	0.046075	-0.201559	0.8406
C	3.860533	0.359234	10.74658	0.0000
R-squared	0.004580	Mean dependent var		4.000000
Adjusted R-squared	-0.009952	S.D. dependent var		0.786578
S.E. of regression	0.790482	Akaike info criterion		2.388849
Sum squared resid	85.60613	Schwarz criterion		2.451884
Log likelihood	-164.2194	Hannan-Quinn criter.		2.414464
F-statistic	0.315163	Durbin-Watson stat		0.943128
Prob(F-statistic)	0.730197			

Source: Eviews Output Results, 2024

Based on the regression results with the Common Effect Model (CEM), it shows that there is a constant value of 3.860533 with a probability of 0.0000. The regression equation in adjusted R^2 of 0.004580 explains that the variance of Green Accounting Practices and Carbon Emission Disclosure on Environmental Performance is 0.4% and the remaining 99.6% is influenced by other factors not examined in the study.

Model 2

Table 11: Common Effect Model Test Results

Dependent Variable: Y_FIRM_VALUE

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_GAP	0.067632	0.072549	0.932231	0.3529
X2_CED	0.077599	0.055546	1.397021	0.1647
Z_EP	-0.119798	0.103980	-1.152123	0.2513
EP_FZ	2.75E-14	3.45E-15	7.959235	0.0000
C	9.250067	0.596541	15.50618	0.0000
R-squared	0.345249	Mean dependent var		9.575530
Adjusted R-squared	0.325849	S.D. dependent var		1.155018
S.E. of regression	0.948348	Akaike info criterion		2.766870
Sum squared resid	121.4141	Schwarz criterion		2.871929
Log likelihood	-188.6809	Hannan-Quinn criter.		2.809563
F-statistic	17.79628	Durbin-Watson stat		0.350376
Prob(F-statistic)	0.000000			

Source: Eviews Output Results, 2024

Based on the regression results with the Common Effect Model (CEM), it shows that there is a constant value of 9.250067 with a probability of 0.0000. The regression equation in adjusted R^2 of 0.345249 explains that the variance of Green Accounting Practices and Carbon Emission Disclosure and Environmental Performance on Firm Value is 34.5% and the remaining 65.5% is influenced by other factors not examined in the study.

Fixed Effect Model (FEM)

Model 1

Table 12: Fixed Effect Model Test Results

Dependent Variable: Z_EP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_GAP	-0.001957	0.067786	-0.028863	0.9770
X2_CED	0.010113	0.045489	0.222319	0.8245
C	3.954261	0.396124	9.982387	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.390989	Mean dependent var		4.000000
Adjusted R-squared	0.230432	S.D. dependent var		0.786578
S.E. of regression	0.690026	Akaike info criterion		2.283234
Sum squared resid	52.37495	Schwarz criterion		2.913586
Log likelihood	-129.8264	Hannan-Quinn criter.		2.539391
F-statistic	2.435197	Durbin-Watson stat		1.561234
Prob(F-statistic)	0.000486			

Source: Eviews Output Results, 2024

Based on the regression results, the fixed effect model shows that there is a constant value of 3.954261 with a probability of 0.0000. The regression equation in adjusted R^2 of 0.390989 explains that the variance of Green Accounting Practices and Carbon Emission Disclosure on Environmental Performance is 39% and the remaining 61% is influenced by other factors not examined in this study.

Model 2

Table 13: Fixed Effect Model Test Results

Dependent Variable: Y_FIRM_VALUE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_GAP	-0.061417	0.038747	-1.585085	0.1159
X2_CED	-0.016449	0.025858	-0.636109	0.5261
Z_EP	0.003477	0.054539	0.063757	0.9493
EP_FZ	3.64E-15	2.97E-15	1.224021	0.2236
C	9.887820	0.311940	31.69781	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.910473	Mean dependent var		9.575530
Adjusted R-squared	0.884776	S.D. dependent var		1.155018
S.E. of regression	0.392067	Akaike info criterion		1.162863
Sum squared resid	16.60138	Schwarz criterion		1.835239
Log likelihood	-49.40044	Hannan-Quinn criter.		1.436097
F-statistic	35.43053	Durbin-Watson stat		1.333716
Prob(F-statistic)	0.000000			

Source: Eviews Output Results, 2024

Based on the regression results, the fixed effect model shows that there is a constant value of 9.887820 with a probability of 0.0000. The regression equation in adjusted R^2 of 0.910473 explains that the variance of Green Accounting Practices and Carbon Emission Disclosure and Environmental Performance on Firm Value is 91% and the remaining 9% is influenced by other factors not examined in this study.

Random Effect Model (REM)

Model 1

Table 14: Random Effect Model Test Results

Dependent Variable: Z_EP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_GAP	0.021311	0.060492	2.352302	0.0072
X2_CED	0.002633	0.043217	2.600933	0.0051
C	3.898002	0.364970	10.68033	0.0000
	Effects Specification			
			S.D.	Rho
Cross-section random			0.398146	0.2498
Idiosyncratic random			0.690026	0.7502
	Weighted Statistics			
R-squared	0.000917	Mean dependent var		2.450415
Adjusted R-squared	-0.013668	S.D. dependent var		0.683882
S.E. of regression	0.688540	Sum squared resid		64.94988
F-statistic	4.062900	Durbin-Watson stat		1.247197
Prob(F-statistic)	0.003064			
	Unweighted Statistics			
R-squared	0.002848	Mean dependent var		4.000000
Sum squared resid	85.75510	Durbin-Watson stat		0.944612

Source: Eviews Output Results, 2024

Based on the regression results with the random effect model (REM), it shows that there is a constant value of 3.898002 with a probability of 0.0000. The regression equation at the adjusted R^2 value of 0.000917 explains that the variance of Green Accounting Practices and Carbon Emission Disclosure on Environmental Performance is 0.09% and the remaining 99.91% is influenced by other factors not examined in this study.

Model 2

Table 15: Random Effect Model Test Results

Dependent Variable: Y_FIRM_VALUE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_GAP	-0.053768	0.038181	-1.408234	0.1614
X2_CED	-0.008085	0.025689	-0.314726	0.7535
Z_EP	-0.005654	0.053817	-0.105064	0.9165
EP_FZ	7.74E-15	2.77E-15	2.791693	0.0060
C	9.831467	0.344703	28.52158	0.0000
R-squared	0.057191	Mean dependent var		1.996992
Adjusted R-squared	0.029256	S.D. dependent var		0.419996
S.E. of regression	0.413807	Sum squared resid		23.11690
F-statistic	2.047298	Durbin-Watson stat		0.968057
Prob(F-statistic)	0.091256			

Source: Eviews Output Results, 2024

Based on the regression results with the random effect model (REM), it shows that there is a constant value of 9.831467 with a probability of 0.0000. The regression equation at the adjusted R2 value of 0.057191 explains that the variance of Green Accounting Practices and Carbon Emission Disclosure and Environmental Performance on Firm Value is 5.7% and the remaining 94.3% is influenced by other factors not examined in this study.

Panel Data Regression Analysis

T test

Model 1

Table 16: Panel Data Regression Results

Dependent Variable: Z_EP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_GAP	0.021311	0.060492	2.352302	0.0072
X2_CED	0.002633	0.043217	2.600933	0.0051
C	3.898002	0.364970	10.68033	0.0000

Source: Eviews Output Results, 2024

Green Accounting Practices has a coefficient value of 0.021311 and a t-count value of 2.352302, namely 2.352302> 1.65648 so that the t-count> t-table with a probability of 0.0000 <0.05, which means that Green Accounting Practices has a significant effect on Environmental Performance. Thus the hypothesis which states that Green Accounting Practices have a positive effect on Environmental Performance can be accepted.

Carbon Emission Disclosure has a coefficient value of 0.002633 and a t-count value of 2.600933, namely 2.600933> 1.65648 so that the t-count> t-table with a probability of 0.0051 < 0.05, which means that Carbon Emission Disclosure has a significant effect on Environmental Performance. Thus the hypothesis stating that Carbon Emission Disclosure has a positive effect on Environmental Performance can be accepted.

Model 2

Table 17: T-test Results

Dependent Variable: Y_FIRM_VALUE				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_GAP	-0.053768	0.038181	-1.408234	0.1614
X2_CED	-0.008085	0.025689	-0.314726	0.7535
Z_EP	-0.005654	0.053817	-0.105064	0.9165
EP_FZ	7.74E-15	2.77E-15	2.791693	0.0060
C	9.831467	0.344703	28.52158	0.0000

Source: Eviews Output Results, 2024

Green Accounting Practices has a coefficient value of -0.053768 and a t-count value of -1.408234, namely -1.408234 < 1.65648 so that the t-count < t-table with a probability of 0.1614> 0.05, which means that Green Accounting Practices has no significant effect on Firm Value. Thus the hypothesis stating that Green Accounting Practices has no effect on Firm Value is rejected.

Carbon Emission Disclosure has a coefficient value of -0.008085 and a t-count value of -0.314726 which is -0.314726 < 1.65648 so that the t-count < t-table with a probability of 0.7535 > 0.05 which means that Carbon Emission Disclosure has no significant effect on Firm Value. Thus the hypothesis stating that Carbon Emission Disclosure has no effect on Firm Value is rejected.

Environmental Performance has a coefficient value of -0.005654 and a t-count value of -0.005654 which is -0.005654 < 1.65648 so that the t-count < t-table with a probability of 0.9165 > 0.05 which means that Environmental Performance has no significant effect on Firm Value. Thus the hypothesis stating that Environmental Performance has no effect on Firm Value is rejected.

F-test

Model 1

Table 18: F Test Results

R-squared	**0.000917**	Mean dependent var	**2.450415**
Adjusted R-squared	-0.013668	S.D. dependent var	0.683882
S.E. of regression	0.688540	Sum squared resid	64.94988
F-statistic	4.062900	Durbin-Watson stat	1.247197
Prob(F-statistic)	0.003064		

Source: Eviews Output Results, 2024

Based on the results in table 4.11, the Random Effect Model panel data regression results obtained an F-count of 4.062900 with an F-statistic p-value of 0.003064. Based on the F-table, the value is 2.28 with a degree of freedom $\alpha = 0.05$ ($\alpha = 5\%$). This means that F-count> F-table or equal to 4.062900> 2.28 with a p-value F-statistic ≤ 0.05 or equal to 0.003064 < 0.05, then Ha is rejected and Ho is accepted, which means that the independent variables, namely Green Accounting Practices and Carbon Emission Disclosure together affect the dependent variable, namely Environmental Performance.

Model 2

Table 19: F Test Results

R-squared	**0.057191**	Mean dependent var	**1.996992**
Adjusted R-squared	0.029256	S.D. dependent var	0.419996
S.E. of regression	0.413807	Sum squared resid	23.11690
F-statistic	2.047298	Durbin-Watson stat	0.968057
Prob(F-statistic)	0.091256		

Source: Eviews Output Results, 2024

Based on the results in table 4.11, the Random Effect Model panel data regression results obtained an F-count of 2.047298 with an F-statistic p-value of 0.091256. Based on the F-table, the value is 2.28 with a degree of freedom $\alpha = 0.05$ ($\alpha = 5\%$). This means that F-count> F-table or equal to 2.047298> 2.28 with a p-value F-statistic ≤ 0.05 or equal to 0.091256 < 0.05, then Ha is rejected and Ho is accepted, which means that the independent variables, namely Green Accounting Practices and Carbon Emission Disclosure and Environmental Performance together affect the dependent variable, namely Firm Value.

Test Coefficient of Determination (R2)

Model 1

Table 20: Test Results of the Coefficient of Determination (R2)

R-squared	**0.000917**	Mean dependent var	**2.450415**
Adjusted R-squared	-0.013668	S.D. dependent var	0.683882
S.E. of regression	0.688540	Sum squared resid	64.94988
F-statistic	4.062900	Durbin-Watson stat	1.247197
Prob(F-statistic)	0.003064		

Source: Eviews Output Results, 2024

Based on the results in table 4, the coefficient of determination R squared is 0.000917 or 0.09%, while the remaining 99.91% (100% - 0.09%) is explained by other factors not included in this research model.

Model 2

Table 21: Test Results of the Coefficient of Determination (R2)

R-squared	0.057191	Mean dependent var	1.996992
Adjusted R-squared	0.029256	S.D. dependent var	0.419996
S.E. of regression	0.413807	Sum squared resid	23.11690
F-statistic	2.047298	Durbin-Watson stat	0.968057
Prob(F-statistic)	0.091256		

Source: Eviews Output Results, 2024

Based on the results in table 4, the coefficient of determination Rsquared is 0.057191 or 5.7%, while the remaining 94.3% (100% - 5.7%) is explained by other factors not included in this research model.

Analysis of Moderated Regression Analysis (MRA)

Table 22: Moderated Regression Analysis (MRA)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1_GAP	-0.053768	0.038181	-1.408234	0.1614
X2_CED	-0.008085	0.025689	-0.314726	0.7535
Z_EP	-0.005654	0.053817	-0.105064	0.9165
EP_FZ	7.74E-15	2.77E-15	2.791693	0.0060
C	9.831467	0.344703	28.52158	0.0000

Source: Eviews Output Results, 2024

Based on the results in Table 9, the regression coefficient value of the Moderation variable (Environmental Performance on Firm Value moderated by Firm Size) of 7.74E-15 is positive, and the statistical t value is 2.791693, with a significance value of 0.0060, which is less than α (0.05). This indicates that the Firm Size variable strengthens the relationship between Environmental Performance and Firm Value.

Pure Moderation Variable (Pure Moderator) is a type of moderation variable that can be identified through the b2 and b3 coefficients in equation (3). Specifically, if the b2 coefficient is significant but the b3 coefficient is also statistically significant, as seen from the significance test results above 0.05, namely (b2) of 0.0147 and (b3) of 0.0060, it indicates that moderation is a variable that moderates the relationship between predictor variables and dependent variables. In this case, pure moderation variables interact with predictor variables without being predictor variables themselves.

Providing some context or theoretical rationale for why firm size might play a moderating role is essential. Larger firms often have more resources and capabilities to invest in environmental performance initiatives compared to smaller firms. They may also face greater scrutiny from stakeholders, including regulators, investors, and the public, leading to a stronger emphasis on sustainable practices. Consequently, larger firms might experience a more pronounced positive impact of environmental performance on firm value, as they can leverage their size and resources to implement effective environmental strategies, enhance their reputation, and achieve cost efficiencies. This context helps explain why Firm Size can strengthen the relationship between Environmental Performance and Firm Value.

Discussion

The Effect of Green Accounting Practices on Environmental Performance

The results showed that Green Accounting Practices has a coefficient value of 0.021311 and a t-count value of 2.352302, namely 2.352302> 1.65648 so that the t-count> t-table with a probability of 0.0000 <0.05 which means that Green Accounting Practices has a significant effect on Environmental Performance. Thus the hypothesis stating that Green Accounting Practices have a positive effect on Environmental Performance can be accepted. The results of this study are also in line with research (May et al., 2023); (Nianty, Rachma, Susanti, & Nurfaulia, 2023)and (Ulupui et al., 2020); which shows Green Accounting Practices has a positive effect on Environmental Performance.

Effect of Carbon Emission Disclosure on Environmental Performance

The results showed that Carbon Emission Disclosure has a coefficient value of 0.002633 and a t-count value of 2.600933, namely 2.600933> 1.65648 so that the t-count> t-table with a probability of 0.0051 < 0.05, which means that Carbon Emission Disclosure has a significant effect on Environmental Performance. Thus the hypothesis stating that Carbon Emission Disclosure has a positive effect on Environmental Performance can be accepted. The results of this study are also in line with research (Nisa, 2023); (Priliana

& Ermaya, 2023); and (Viulina, Utaminingtyas, & Ulupui, 2023); which shows Carbon Emission Disclosure has a positive effect on Environmental Performance.

The Effect of Green Accounting Practices on Firm Value

The results showed that Green Accounting Practices has a coefficient value of -0.053768 and a t-count value of -1.408234, namely -1.408234 < 1.65648 so that the t-count < t-table with a probability of 0.1614 > 0.05, which means that Green Accounting Practices has no significant effect on Firm Value. Thus the hypothesis stating that Green Accounting Practices has no effect on Firm Value is rejected. The results of this study are also in line with research (Hardianti & Mulyani, 2023); (Wenni Anggita, Ari Agung Nugroho, & Suhaidar, 2022) and (Rilla Gantino, Endang Ruswanti, & Agung Mulyo Widodo, 2023) which shows Green Accounting Practices has no effect on Firm Value.

Effect of Carbon Emission Disclosure on Firm Value

The results showed that Carbon Emission Disclosure has a coefficient value of -0.008085 and a t-count value of -0.314726 which is -0.314726 < 1.65648 so that the t-count < t-table with a probability of 0.7535 > 0.05 which means that Carbon Emission Disclosure has no significant effect on Firm Value. Thus the hypothesis stating that Carbon Emission Disclosure has no effect on Firm Value is rejected. The results of this study are also in line with research (Muhammad & Aryani, 2021); and (Damas, Maghviroh, & Meidiyah, 2021); which shows Carbon Emission Disclosure has no effect on Firm Value.

The Effect of Environmental Performance on Carbon Firm Value

The results showed that Environmental Performance has a coefficient value of -0.008085 and a t-count value of -0.005654, namely -0.005654 < 1.65648 so that the t-count < t-table with a probability of 0.9165 > 0.05, which means that Environmental Performance has no significant effect on Firm Value. Thus the hypothesis stating that Environmental Performance has no effect on Firm Value is rejected. The results of this study are also in line with research (Rinsman & Prasetyo, 2020); (Harahap, Juliana, & Lindayani, 2019); and (Pratama & Ainiyah, 2023) which shows Environmental Performance has no effect on Firm Value.

The Effect of Environmental Performance on Carbon Firm Value Moderated by Firm Size

The results showed that the regression coefficient value of the Moderation variable (Environmental Performance on Firm Value moderated by Firm Size) of 7.74E-15 is positive and the statistical t value is 2.791693 and the significance value is 0.0060 < α (0.05) so it can be said that the Firm Size variable strengthens the relationship between Environmental Performance and Firm Value. The results of this study are also in line with research (Fitiriawati, Wulandari, & Sari, 2021) which shows that the CSR variable strengthens the relationship between investment decisions and Firm Value.

Conclusions

The conclusion of this study is that Green Accounting Practices have a positive impact on Environmental Performance; Carbon Emission Disclosure has a positive impact on Environmental Performance; Green Accounting Practice does not affect Firm Value; Carbon Emission Disclosure does not affect Firm Value; Environmental Performance does not affect Firm Value; Firm Size strengthens the relationship between Environmental Performance and Firm Value.

i. Subsequent research is encouraged to include a broader range of industry sectors as samples, rather than being limited to just a few companies that are subject to sanctions or not. This will provide a more comprehensive understanding of the relationship between environmental practices and financial performance across different contexts.

ii. Future studies should aim to develop more diverse research proxies, as a single proxy may not adequately capture the complexities of Accounting Practices, Carbon Emission Disclosure, Environmental Performance, Firm Value, and Firm Size. It is recommended to develop research instruments by examining various proxy variables related to corporate values, ensuring a more nuanced and accurate representation of these constructs.

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