

THE EFFECT OF APPLYING GREEN ACCOUNTING ON FIRM VALUE AND FINANCIAL PERFORMANCE AS AN INTERVENING VARIABLE

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Keywords :

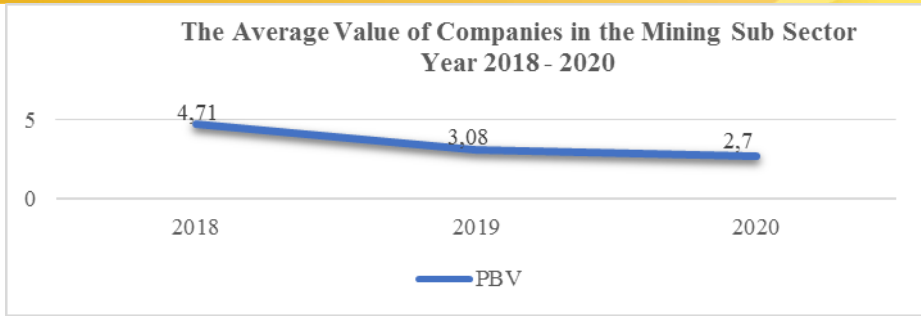
Green Accounting ,
Financial Performance,
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Abstract

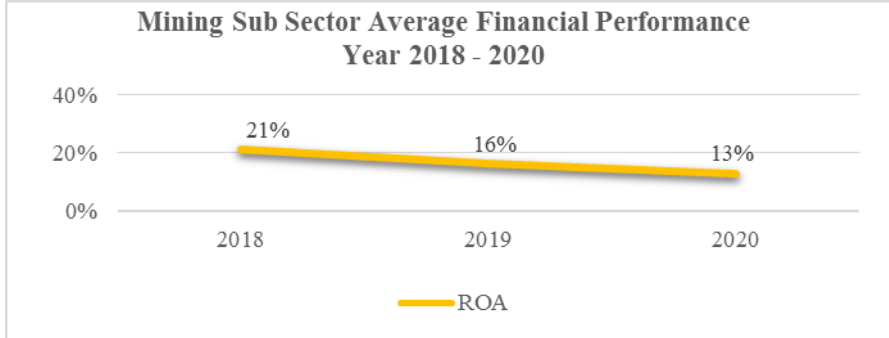
The condition of the value of the mining sub-sector companies in 2018 – 2020 decreased due to the decline in the financial performance of the mining sub-sector companies. This is indicated to occur because there are still many mining companies that have not implemented the concept of green accounting in their mining activities, thus affecting consumer perceptions when product sales occur. This study aims to analyze the effect of implementing green accounting on firm value with financial performance as an intervening variable. Data is obtained from 42 financial statements of companies in the mining sub-sector listed on the Indonesia Stock Exchange for the period 2018 - 2020. Green Accounting is measured using a Dummy Variable where the value is 0 for companies that do not have an environmental cost component and 1 for companies that have an environmental cost component. Finance is measured using Return on Assets and Firm Value is measured using Price to Book Value. Path analysis is used to analyze the effect of independent variables on the dependent variable, as well as the indirect effect of the intervening variable.

I. INTRODUCTION

In Indonesia, the value of manufacturing companies, especially the mining sub-sector, is in the spotlight. This is because the mining sub-sector manufacturing industry makes a large contribution to the Gross Domestic Product (GDP) . The measurement of company value using PBV is considered appropriate because PBV describes the comparison between the market price of shares and the book value of shares. Firm value is an investor's perception of the company's level of success which is closely related to stock prices (1). The researcher describes the average price to book value in mining sector manufacturing companies as follows:



The graph above shows that company value as measured using price to book value (PBV) in mining sub-sector manufacturing companies listed on the Indonesia Stock Exchange (IDX) has decreased in the 2018-2020 period. The factors that affect the value of the company is profitability. Profitability is an appropriate description for measuring the level of management effectiveness in a company through profit. Companies are required to continue to maintain their financial performance, by always trying to maintain a competitive advantage in the midst of increasingly fierce global competition. Companies are competing to increase competitiveness in various sectors. For companies, improving financial performance is a must so that these shares remain in demand by investors (2). Profitability is often used to measure performance through the profit generated. Return on assets is a comparison between net profit after interest and taxes with total assets. The higher the profit indicates that the company's performance is getting better. The following is a graph of the return on assets of the mining sub-sector listed on the IDX 2018 - 2020:



From the data above it can be seen that the value of return on assets (ROA) has decreased every year, a low return on assets indicates a company experiencing a decline in profits. The decline in profitability in 2018-2020 for manufacturing companies in the mining sub-sector is indicated because there are still many mining sub-sector companies that have defaulted on reclamation fund obligations, which is in accordance with what was stated by Nur Hidayati as Executive Director of the Indonesian Forum for the Environment. Until now the mining industry in Indonesia has not complied with environmental norms. When mining activities are completed, the problem does not mean the end. There are mining companies that just leave abandoned mine pits. Mine reclamation obligations are often not fulfilled properly. Data from the Ministry of Energy and Mineral Resources shows that 8 million hectares of ex-mining land have not been reclaimed by 2020. This will certainly have a negative impact on the community's environment from upstream to downstream (3). Allocation of environmental reclamation costs is a concept of green accounting . Green Accounting is the activity of

collecting, analyzing, estimating, and preparing reports on both environmental and financial data with the aim of reducing environmental impact (4). Green Accounting in its application in Indonesia is still not effective and many companies are established without regard to the environmental impact that will be caused. When green accounting has been implemented effectively, it can create a better relationship between performance and the environment through the information needed for decision making to minimize commercial risk . Without green accounting calculations , the accuracy in decision making will be doubted, especially for the future (5). (4) conducting research based on field practice, literature review, as well as empirical and academic showing that green accounting has a positive impact on financial performance which is one of the factors influencing firm value. This can be shown from consumer perceptions when product sales occur. Based on the description of the problem above, the researcher is interested in conducting research with the aim of analyzing whether there is an effect of implementing green accounting on firm value with financial performance as an intervening variable. This research is expected to be an input for mining sub-sector companies so they can pay attention to post-mining reclamation obligations. This is of course done for the common good of the company in order to improve performance that has an impact on values and the wider community.

II. LITERATURE REVIEW

Stakeholder and Legitimacy Theory

Stakeholder theory states that all stakeholders have the right to be provided with information about how the company's organizational activities play a role in the surrounding environment (4). Diverse stakeholder groups have different opinions about how the company should be managed. There is an absolute right regarding information obtained by company stakeholders on the company's responsibility to the environment. Information about green companies is not a simple phenomenon that can be explained in detail from a single theoretical framework (6). The next theory that underlies this is legitimacy theory.

Legitimacy theory states that organizations continuously try to ensure that activities are in accordance with societal norms (4). Legitimacy theory focuses on the organization's dependence on the environment, various societal expectations, and the way companies rationalize their presence in society through the legitimacy of activities. Legitimacy theory believes that support from society is very important for sustainability, survival, growth and corporate image (6).

Application of *Green Accounting*

Green Accounting is the activity of collecting, analyzing, estimating, and preparing reports on both environmental and financial data with the aim of reducing environmental impact. Green Accounting is an effort to protect the environment (5).

Green Accounting is divided into 3 main costs in implementation, these costs include,

1. Business Operational Costs
2. Recycling Fees
3. Research and Development Costs

Indicators in the application of *green accounting* in this study were measured using a *Dummy Variable* with the following criteria (7):

1 = Perusahaan yang memiliki komponen biaya lingkungan

0 = Perusahaan yang tidak memiliki komponen biaya lingkungan

The value of the company

Firm value is a benchmark for investors when making investment decisions. The method used is *price book to value* describing how much the market appreciates the book value of a company's shares (8).

$$\text{Price to book value} = \frac{\text{Harga pasar saham perlembar}}{\text{Harga buku saham perlembar}}$$

Financial performance

Financial performance is the ability of a company to manage and control existing resources in order to increase company value by looking at the effectiveness and efficiency in implementing all existing policies within a company (9). *Return on assets* (ROA) Is the company's ability to generate profits with all the assets owned by the company.

$$\text{Return on asset} = \frac{\text{Laba bersih}}{\text{Total aset}} \times 100$$

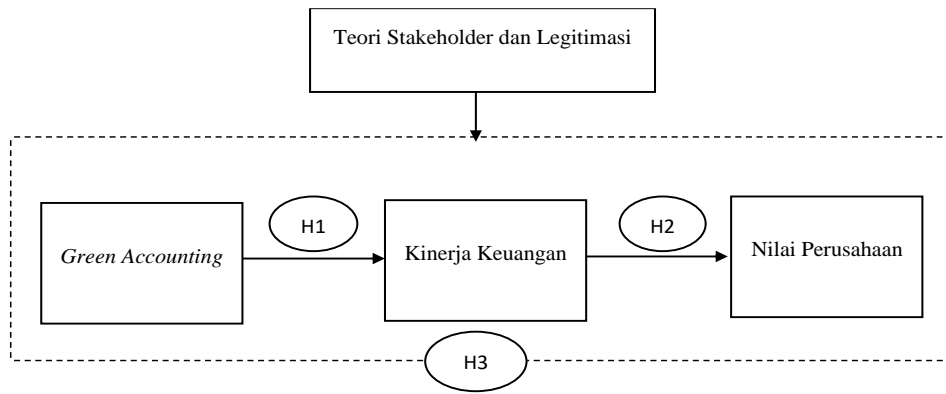
State of the Art

Researcher Name and Research Title	Year	Research result	Differences with researchers
Alfredo Mahendra, <i>et all</i> Effect of Financial Performance on Firm Value (1)	2012	<ul style="list-style-type: none"> Liquidity has no significant positive effect on firm value <i>Leverage</i> has no significant negative effect on firm value Profitability has a significant positive effect on firm value. 	The existence of <i>green accounting</i> as an independent variable.
Rina Tjandrakirana, <i>et all</i> Effect of Financial Performance on Company Value (2)	2016	<ul style="list-style-type: none"> <i>Return On Assets</i> has no effect on firm value <i>Return On Equity</i> which affects the value of the company. 	The existence of <i>green accounting</i> as an independent variable.
Haruna Maama, <i>et all</i> <i>Green Accounting Practices : Lesson from an Emerging Economy</i>	2018	<ul style="list-style-type: none"> GSE listed company express environmental sustainability information. Information 	There is a more specific research object, namely, companies that are included in the national mining sector



(6)		regarding the disclosure of environmental sustainability in their annual report is not representative.	group
hamidi <i>Analysis of the Implementation of Green Accounting on Financial Performance (4)</i>	2019	In implementing <i>Green Accounting</i> , the company carries out various efforts to manage and preserve the environment to achieve green and good environmental performance.	The existence of firm value as the dependent variable, which is influenced by <i>green accounting</i> through financial performance as an intervening variable.
Mohamad Mahdi Rounaghi <i>Economic analysis of using green accounting and environmental accounting to identify environmental costs and sustainability indicators (5)</i>	2019	<ul style="list-style-type: none"> • Green accounting improves long-term financial performance which has an impact on the ability to increase shareholder wealth. 	There is a research sector that has a wider scale.
Verlita Dewi Rosaline, <i>et all</i> <i>Green Accounting and Environmental Performance Implementation on Economic Performance (7)</i>	2020	<ul style="list-style-type: none"> • This study proves that <i>green accounting</i> has no effect on <i>economic performance</i> • This research proves that <i>environmental performance</i> influences <i>economic performance</i> . 	There are differences in the companies studied, where the previous researcher researched in the Basic and Chemical Sector, while this research was in the Mining Sector.
Chris Brooks, <i>et all</i> <i>Green accounting and finance: Advancing research on environmental disclosure, value impacts and management control systems (10)</i>	2021	<ul style="list-style-type: none"> • <i>Stakeholders</i> support the banking sector in dealing with environmental and social issues and are proactive in handling them, because they have an impact on performance. 	There are differences in the sectors studied, which in this study focuses on mining which is closely related to natural resources and the environment.

Framework



Green Accounting Implementation on Financial Performance

The application of *green accounting* will improve financial performance, because companies can explain the business ethics that are carried out thereby increasing social trust from *stakeholders* . Environmental factors as one of the important things in determining the development of performance and decisions in business (10).

Effect of Financial Performance on Firm Value

Improved financial performance conditions will also be in line with an increase in company value. The higher the profit generated, the better the company's reputation from the investor side.

The Effect of Applying Green Accounting on Firm Value and Financial Performance as an Intervening Variable

The application of *green accounting* has a positive impact on financial performance which is one of the factors influencing firm value (11). This can be shown from consumer perceptions when product sales occur. The higher the profit generated, the better the company's reputation from the investor side. When a company is affected by environmental changes that occur, this can disrupt the stability of financial performance and cause the company's value to drop sharply (10).

III. DISCUSSION

Descriptive Analysis

- **Application of Green Accounting**

Name	Green Accounting			Average
	2018	2019	2020	
Adaro Energy	0	0	0	0
Atlas Resources	0	0	0	0
Borneo Sports Facilities	1	1	1	1
Dian Swastatika Sentosa	1	1	1	1
Alpha Energi Investama	0	0	0	0
Golden Energy Mines	1	1	1	1
Prime Work Mighty	1	1	1	1
Tamarind Hill	0	0	0	0

Medco Energy International	1	1	1	1
Investindo partners	0	0	0	0
Interinsco Main Radiant	0	0	0	0
Merdeka Cooper Gold	0	0	0	0
Main SMR	1	1	1	1
Tin	0	0	0	0

green accounting data from 2018 – 2020, there are 6 companies that get an average score of 1 (companies with an environmental cost component) , namely Borneo Olah Sarana, Dian Swastatika Sentosa, Golden Energy Mines, Perdana Karya Perkasa, Medco Energy Internasional, and Main SMR. While those who got an average score of 0 (the company does not yet have an environmental cost component) there are 8 companies namely Adaro Energy, Atlas Resources, Alfa Energi Investama, Bukit Asam, Mitra Investindo, Radiant Utama Interinsco, Merdeka Cooper Gold, and Timah.

- **Financial performance**

Name	Return On Assets			Average	St. Deviasi
	2018	2019	2020		
Adaro Energy	0.07	0.05	0.02	0.05	0.03
Atlas Resources	0.02	0.08	0.05	0.05	0.03
Borneo Sports Facilities	0.04	0.00	0.15	0.07	0.08
Dian Swastatika Sentosa	0.02	0.04	0.04	0.03	0.01
Alpha Energi Investama	0.00	0.02	0.03	0.02	0.01
Golden Energy Mines	0.09	0.00	0.12	0.07	0.06
Prime Work Mighty	0.03	0.58	0.38	0.33	0.28
Tamarind Hill	0.24	0.15	0.09	0.16	0.08
Medco Energy International	3.73	4.28	0.04	2.68	2.31
Investindo partners	0.05	1.54	0.15	0.58	0.83
Interinsco Main Radiant	0.06	0.05	0.02	0.04	0.02
Merdeka Cooper Gold	0.11	0.06	0.04	0.07	0.03
Main SMR	0.03	0.11	0.25	0.13	0.11
Tin	0.02	0.08	0.02	0.04	0.03

Based on the table above, it can be seen the analysis of financial performance of the 14 companies studied. Based on return on asset data from 2018-2019, the three companies that get the highest average score are Medco Energy Internasional with an average value of 2.68 ± 2.31 , then Mitra Investindo with an average value of 0.58 ± 0.83 , and then Perdana Karya Perkasa with an average value of 0.33 ± 0.28 .

- **The value of the company**

Name	Price to Book Value			Average	St. Deviasi
	2018	2019	2020		
Adaro Energy	2.60	3.04	7.44	4.36	2.68
Atlas Resources	2.08	4.37	3.11	3.19	1.15
Borneo Sports Facilities	4.63	0.41	4.87	3.31	2.51

Dian Swastatika Sentosa	2.33	4.79	3.76	3.63	1.24
Alpha Energi Investama	0.90	3.47	5.43	3.27	2.27
Golden Energy Mines	2.02	1.18	1.73	1.64	0.43
Prime Work Mighty	8.95	2.57	7.50	6.34	3.34
Tamarind Hill	2.72	3.60	1.51	2.61	1.05
Medco Energy International	3.46	1.93	2.24	2.54	0.81
Investindo partners	6.63	6.56	2.05	5.08	2.62
Interinsco Main Radiant	4.69	6.27	4.56	5.18	0.95
Merdeka Cooper Gold	5.64	3.27	2.90	3.94	1.49
Main SMR	8.47	2.97	9.10	6.85	3.37
Tin	3.73	1.26	4.14	3.04	1.56

Based on the table above, it can be seen the analysis of company value of the 14 companies studied. Based on *price to book value* data from 2018-2019, the three companies that got the highest average score were SMR Utama with an average score of 6.85 ± 3.37 , then Perdana Karya Perkasa with an average score of 6.34 ± 3.34 , and then Radiant Utama Interinsco with an average value of 5.18 ± 0.95 .

Classic assumption test

- **Normality test**

To detect a normally distributed regression model or not, the Kolmogorov-Smirnov test is used, provided that the data is normally distributed if the sig value is above 0.05.

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residuals
N		42
Normal Parameters ^{a,b}	Means	.0000000
	std. Deviation	1.68345212
Most Extreme Differences	absolute	.111
	Positive	.111
	Negative	-.077
Test Statistics		.111
asymp. Sig. (2-tailed)		.200 ^{c,d}

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. This is a lower bound of the true significance.

Based on the table above, it can be seen that the sig value is above 0.05, namely 0.200. So that it can be said that the regression model is normally distributed.

- **Multicollinearity Test**

This multicollinearity test uses the *Variance Inflation Factors (VIF)* values . If the *VIF value* is less than or equal to 10, then there is no multicollinearity among the independent variables.

Coefficients^a

Model		Collinearity Statistics	
		tolerance	VIF
1	Green Accounting	.863	1.158
	Return On Assets	.863	1.158

a. Dependent Variable: Price to Book Value

Based on the calculations, it shows that the regression model does not have a multicollinearity problem. This can be seen from the *tolerance value* which is above 0.1 and the *VIF value* which is below 10.

- **Heteroscedasticity Test**

One way to detect the presence or absence of heteroscedasticity is by using the Glesjer test.

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	std. Error	Betas		
1	(Constant)	1,100	.241		4,569	.000
	Green Accounting	.277	.395	.120	.700	.488
	Return On Assets	-.033	.226	-.025	-.144	.886

a. Dependent Variable: Abs_Res

Based on the results of the heteroscedasticity test using the Glesjer test, it can be seen that the significance value of the two variables is greater than 0.05. So it can be concluded that there is no heteroscedasticity problem in the regression model.

- **Autocorrelation Test**

The autocorrelation test was carried out using the Durbin Watson statistical test, namely by comparing the calculated Durbin-Watson number (DW) with its critical value (dL and dU).

Summary Model^b

Model	Durbin-Watson
1	2,277

b. Dependent Variable: Price to Book Value

Based on the table above, the Durbin-Watson value is 2.277 . Because the DW value is between dU (1.6061) < DW (1.277) < 4 – dU (2.399) , it can be concluded that there is no autocorrelation .

Path Analysis

The inferential analysis method used in this research is path *analysis* . Testing will be carried out in two stages of testing, where in the first stage the effect of *green accounting* on financial performance will be tested. Then in the second stage will be tested the influence of *green accounting* and financial performance on firm value. The form of the structural equation is as follows:

First Sub-Structure Path Equation

$$Z = \rho_z X + \epsilon_1$$

Equation of the Second Sub Structure Path

$$Y = \rho_y X + \rho_{yz} Z + \epsilon_2$$

Information :

- Y = Firm Value
- Z = Financial Performance
- X = *Green Accounting*
- ϵ = Influence of other factors

Coefficient of Determination

Sub Structure 1: The Effect of *Green Accounting* Implementation on Financial Performance

Based on the results of data processing, the coefficient of determination of the independent variables is obtained, namely *Green Accounting* on financial performance as shown in the table below:

Variable	Path Coefficient	t _{count}	t _{table}	P-values	R ²
<i>Green Accounting</i>	0.370	2,516	2,021	0.016	0.137

From the table above, it is obtained that the total effect of the *Green Accounting variable* on Financial Performance is 0.137 or 13.7%. While the remaining 86.3% is the influence of other factors outside the *Green Accounting variable* .

Sub Structure 2: Effect of *Green Accounting* Implementation and Financial Performance on Firm Value

Based on the results of data processing, the coefficient of determination of each independent variable is obtained, namely *Green Accounting* and Financial Performance on Company Value shown in the table below:

Variable	Path Coefficient	t _{count}	t _{table}	P-values	R ²
<i>Green Accounting</i>	0.399	3,057	2.023	0.004	0.426
Financial performance	0.389	2,980		0.005	

From the table above, it is obtained that the total effect of the *Green Accounting variable* and financial performance on firm value is 0.426 or 42.6%. While the remaining 57.4% is the influence of other factors outside the two variables.

Hypothesis Test T

Green Accounting Implementation on Financial Performance

Based on the results of data processing, the path coefficient of the independent variable is obtained, namely the Application of *Green Accounting* to Financial Performance as shown in the table below:

Variable	Path Coefficient	t _{count}	t _{table}	P-values	R ²
<i>Green Accounting</i>	0.370	2,516	2,021	0.016 _	0.137 _

The path coefficient value for the Application of *Green Accounting* is 0.370 with a positive relationship direction which means that when the Application of *Green Accounting* high, it will cause financial performance to increase. After the path coefficient is calculated, then to prove whether the application of *Green Accounting* has a significant effect on financial performance, hypothesis testing is carried out. Based on the results of the calculations in the table above, the t count value is 2.516 and this value is greater than the t table 2.021 (obtained from the t table value in the statistical table). Based on the provisions previously stated, where a p-value of 0.016 was obtained so that the p-value < $\alpha = 0.05$. This means that H₀₁ is rejected and H_{a1} is accepted, then there is an influence between the application of *green accounting* on financial performance.

Effect of Financial Performance on Firm Value

Financial Performance variable on firm value is obtained based on the results of calculations with SPSS software as follows:

		ρ	tcount	p-values	Label	
Financial performance	→	The value of the company	0.389	2,980	0.005	Significant

Based on the table above, it can be seen that the direction of the relationship between Financial Performance and Firm Value is positive (pay attention to the value in column ρ), where it is written 0.389 meaning that when there is an increase in Financial Performance, ideally it will increase Company Value. Then the researcher tested the hypothesis using the t test where the t value was 2.980 the results of these calculations have a value that is greater than t table 2,023 (obtained from the t table value in the statistical table). Based on the provisions previously stated, a p-value of 0.005 was obtained, so that the p-value < $\alpha = 0.05$. This means that H₀₂ is rejected and H_{a2} is accepted, then there is an influence between Financial Performance to Company Value.

The Effect of Applying *Green Accounting* on Firm Value

Analysis of the effect of the Adoption variable *Green Accounting* on Company Value _ the results obtained based on the results of calculations with SPSS software are as follows:

		ρ	tcount	p-values	Label	
<i>Green Accounting</i>	→	The value of the company	0.399	3,057	0.004	Significant

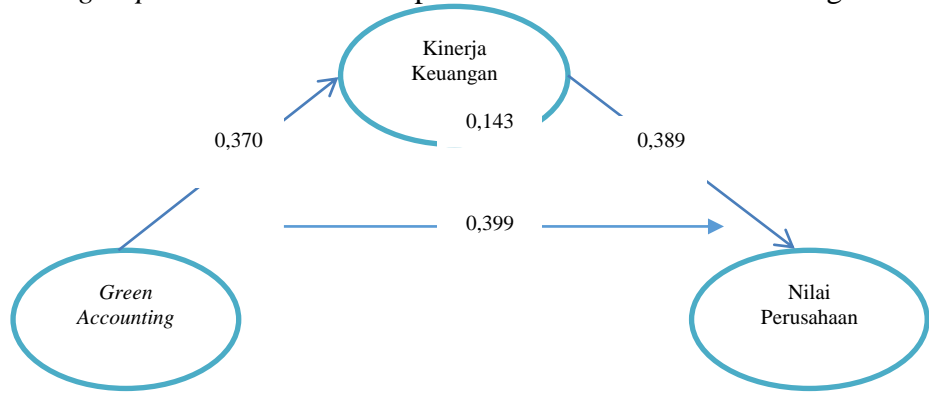
Based on the table above, it can be seen that the direction of the relationship between the application of *green accounting* and company value is positive (the value in column ρ), written 0.399 means that when there is an increase in the application of *green accounting*, it will increase company value. Then the researcher tested the hypothesis using the t test where the t value was 3.057 the results of these calculations have a value that is greater than t table 2, 023 (obtained from the t table value in the statistical table). Based on the provisions previously stated, where a p-value of 0.004 was obtained so that the p-value < $\alpha = 0.05$. Then there is a significant influence between the application of *Green Accounting* on firm value.

The Effect of Applying *Green Accounting* on Firm Value by Mediating Financial Performance

To test the significance of Financial Performance as a mediating variable in the model, it can be examined from the Sobel test results, as follows:

Input:	Test statistic:	p-value:
t_a 2.516	Sobel test: 1.92244059	0.05455034
t_b 2.980	Aroian test: 1.86220122	0.06257473
	Goodman test: 1.98893155	0.04670876
Reset all		Calculate

Based on the calculation results, it is obtained that the calculated t value for testing the influence of mediation on this hypothesis is 1.922. If $\alpha = 0.05$ then t table = 2.023. From the calculation above it can be concluded that t count 1.922 is smaller than t table 2.023 with a significance level of 0.05, it can be concluded that H_{a3} is rejected and H_{03} is accepted, namely Financial Performance is unable to mediate the relationship between the Application of *Green Accounting* and The value of the company. The inability of Financial Performance to mediate the relationship between *Green Accounting Implementation* and Corporate Value is shown in the diagram below:



In the diagram above, it can be seen that the direct relationship between the application of *green accounting* and firm value has a higher value of 0.399, while the

indirect relationship only has a value of 0.143. This proves that the application of *green accounting* to firm value should be directly influenced without the mediating variable of financial performance intermediary between the implementation of *green accounting* and firm value.

IV. CONCLUSION

Based on the results of data analysis and discussion that has been done, the conclusions are drawn:

1. The application of *Green Accounting* has an effect on Financial Performance.
2. Implementation of Financial Performance has an effect on Firm Value.
3. Financial Performance is not able to mediate the relationship between the Application of *Green Accounting* and Company Value.

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