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ENVIRONMENTAL PERFORMANCE AS MODERATION OF THE EFFECT DISCLOSURE CARBON EMISSIONS ON COMPANY VALUE

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Abstract

Stakeholder responses to environmental issues received by three industrial businesses a few time ago prompted the three companies' valuations to fall. This is apparently because today's investors are concerned about the environmental effect of firms' operating activities. As a result, firms must acknowledge environmental responsibilities in their reports. The purpose of this study is to describe environmental performance indicators and their function in reducing the impact of carbon emissions disclosure on business value. A quantitative descriptive method with a causal associative approach is used in this investigation. The population is all non-financial firms registered on the Indonesia Stock Exchange from 2017 to 2021, and the sample strategy employed is purposive sampling, which yielded 12 companies. The analysis technique uses descriptive and moderation regression analysis. According to the study's findings, environmental performance cannot mitigate the effect of reporting carbon emissions on corporate value. Meanwhile, as suggested by PROPER, the effect of disclosure of carbon emissions and environmental performance has a large favorable influence on business value both partially and concurrently.

Keywords: Environmental Accounting, Disclosure of Carbon Emissions, Environmental Performance, Company Value, PROPER

INTRODUCTION

A firm is regarded to be successful if its management can effectively manage the company. Excellent corporate management may be shown in the firm's value, which tends to be steady and expanding. This is because the company's value indicates investors' perceptions about the company's management regarding the company's future prospects. The market value of the firm's stock reflects the company's worth; the higher the share value, the more the investor's faith in the company. A firm's value can be impacted by both external and internal corporate variables (Otoritas Jasa Keuangan, 2022). Additional elements that might effect a company's worth include green accounting, which discloses environmental consequences, and the ratio of the company's capacity to make profits (Dewi & Edward Narayana, 2020).

Regard to corporate social responsibility, PT Garudafood Putra Putri Jaya, Tbk., PT Indofood Sukses Makmur, Tbk., and PT Wings Surya on September 7 2020 were sued by representatives of the local community because they were considered to be damaging the environment (Financials, 2020). The company was sued on the legal basis of Article 91 paragraph 1 of Law 32 of 2009 concerning Environmental Protection and Management on the grounds that the company was considered to have polluted the Kali Surabaya River and a tributary of the Brantas river, which is a national strategic river. With this lawsuit, it resulted in a decrease in the market value of the company's shares.

Table 1. The Difference in Share Prices Before and After the Lawsuit

Company Name (Share Code)	Stock price	
	Prior to Lawsuit (31/08/2020)	After the Lawsuit (11/09/2020)
PT Garudafood Putra Putri Jaya, Tbk (GOOD)	IDR 258 per sheet	IDR 250 per share
PT Indofood Sukses Makmur, Tbk (INDF)	IDR 7,625 per share	IDR 7,575 per share

Source : Yahoo Finance, data processed (2022)

Based on table 1, it indicates that there is an influence between company value and environmental management. It can be seen in the table that the market value of the shares of the two companies decreased when there was a lawsuit due to environmental problems around the company. This indicates that in addition to seeking profit, a company needs to pay attention to the environmental impact arising from its industrial activities.

It is undeniable that along with the rapid development of industry, the environmental impacts such as floods and other disasters due to global warming are also increasing rapidly. This issue is in the spotlight of many parties around the world, and became the background for the Paris Agreement to be made on the commemoration of Earth Day, 22 April 2016. Increased industrial activity will increase energy burning and result in carbon emissions. The largest carbon emission in the world in 2021 will come from China, which will reach 11.94 gigatonnes of CO2 (Katadata media network, 2021). More than half of global carbon emissions come from ten countries in the world. Indonesia is in eighth position in the list of ten countries with the largest carbon emissions in 2018, which is 965.3MtCO2 which is equivalent to 2% of world emissions (Katadata media network, 2021).

Carbon accounting is a complement to environmental accounting which provides reports on carbon emissions produced by companies in the production process. Carbon accounting will help companies know the level of carbon emissions produced through measurement. Carbon accounting is the calculation of the amount of carbon produced from industrial processes, determining the manager's strategy for carbon reduction targets, establishing systems and programs to reduce carbon emissions, and reporting the results and progress of the carbon emission reduction program (Jago Akuntansi, 2016).

Carbon accounting has a role so that companies can be responsible for their environment. In practice, responsibility for the environment has been regulated in the Indonesian Institute of Accountants (IAI) in PSAK 01 (revised 2014) paragraph 14 (Ikatan Akuntan Indonesia, 2014). Reporting on carbon emissions can be integrated into Corporate Social Responsibility (CSR) reporting. Indonesia still applies voluntary carbon emission disclosures with reference to the World Business Council for Sustainable Development/World Resources Institute (WBCSD-WRI) and the United Nation Environment Program (UNEP) (Irwhantoko & Basuki, 2016). According to Anggraeni (2015) disclosure of carbon emissions is information that is quantitative and qualitative in the past and predictions regarding the level of corporate carbon, disclosure, explanation, and the financial implications of companies in dealing with climate change. Even though it is still voluntary, the government through the Ministry of Environment & Forestry made a decision in KepMenLH No. 127 of 2002 which became the legal basis for the Performance Improvement Assessment Program (PROPER) which aims to increase stakeholder commitment to strive for environmental preservation (Sekretariat PROPER, 2021).

This study aims to reveal that the information disclosed by companies relating to the disclosure of carbon emissions and the company's participation in PROPER will affect the reputation and viability of the business in the future. This is based on the logical consequences of investors' decisions in investing. Disclosure of carbon emissions provides investors with information regarding possible costs that will be borne by companies in the coming period related to their carbon emissions (Matsumura et al., 2014). In addition, investors' decisions will look at external factors, namely the increasingly massive environmental activist protests related to global warming that are occurring will affect the company's image and can result in risks for the company in the future.

This research was inspired by and refers to previous research conducted by Rahmanita (2020) which examined the effect of carbon emission disclosure on firm value with environmental performance as a moderating variable. Rahmanita (2020) used the research object of 19 non-financial companies listed on the IDX in 2016 – 2018 and showed indications of the effect of carbon emission disclosure on company value. According to the explanation above, the researcher is interested in exploring a similar issue, but with a five-year observation period and research objects of non-financial firms listed on the IDX and PROPER between 2017 and 2021. This was done in order to follow suggestions and address the limitations of earlier investigations.

LITERATURE REVIEW AND RESEARCH HYPOTHESIS

Legitimacy Theory

The focus of legitimacy theory is the interaction between the company and its surroundings. According to Mumtahanah and Septiani (2017) company management must ensure that the company's operational activities can be accepted by the surrounding community in relation to the norms that are believed and applicable in the community, this is intended so that all company activities can be legitimized (accepted and allowed) by the surrounding community. The company must be able to maintain its relationship with the community and the surrounding environment because the company's survival depends on this relationship. Voluntary disclosure of social and environmental responsibility reports is expected to maintain the company's relationship with the surrounding environment. In addition, according to Alfayerds and Setiawan (2021) voluntary disclosure of social and environmental responsibility reports has the aim of fulfilling the company's social contract in order to gain recognition from stakeholders for the company's activities and objectives. The contract involves the company with the community where the company operates to generate profits. Based on this foundation, disclosing carbon emissions and paying attention to the company's environment are several steps to gain legitimacy for the surrounding community. The firm's longevity may be ensured by acquiring legitimacy from the community since the company has paid attention to the established norms as well as the situation of the community and the surrounding environment.

Stakeholder Theory

Stakeholder theory states that all stakeholders have the right to obtain information about every company activity that can influence their decisions. This is based on the narrative of Astari et al., (2020) that companies do not operate for their own interests. Building relationships and creating value for stakeholders is the foundation of a business (De Gooyert et al., 2017). According to stakeholder theory that a company is not an individual entity that operates for its own purposes and interests, but must also provide benefits to its stakeholders. Stakeholders have their respective interests in the company. Companies must maintain relationships with stakeholders by fulfilling their needs and desires. Disclosing reports on an ongoing basis (sustainable) can be a company strategy in maintaining its relationship with stakeholders. This sustainable report can contain information regarding its performance, social and environment. Disclosure of carbon emissions into a part of the report on an ongoing basis aims to meet the information needs of stakeholders regarding the company's responsibility for the environment and is expected to receive support from stakeholders that affect the survival of the company.

Signal Theory

The relevance of information produced by corporations on the investing decisions of outsiders or investors and potential investors is emphasized by signal theory (Kelvin et al., 2017). Reports issued by companies that contain information will be used by investors to assess the company. Information issued by the company can also be used as a signal for investors to make investment decisions. One of the information that can be used as a signal for investors is an annual report (Rahmanita, 2020). Based on the signal theory, investors in making investment decisions will pay attention to signals in the form of information issued by the company. This information can be either positive or negative information.

Environmental Performance. Environmental performance is how the company's performance contributes to preserving the environment. Environmental performance is the measurement result of an environmental management system, which is related to the control of its environmental aspects, as well as environmental performance assessment based on environmental policies, environmental goals and environmental targets (Rusmana & Purnaman, 2020). PROPER is an environmental performance assessment system in the form of a rating made by the Ministry of Environment. PROPER or a corporate performance rating assessment program in environmental management has been implemented since 2002 and is a form of development of the previous program namely PROPER PROKASIH. This program is expected to motivate companies to better manage their environment, In addition, this program is expected to provide transparent information regarding environmental management activities. The PROPER rating results will be published, which may have an impact on the company's reputation. (Rahmanita, 2020).

Carbon Accounting

Carbon accounting is the process of measuring, calculating and reporting carbon emissions produced by companies. Carbon accounting is an accounting concept that incorporates carbon-related aspects into financial reports made by companies (Taurisianti, 2014). Companies can find out the level of carbon emissions produced through a measurement process through carbon accounting. Carbon accounting includes calculating the amount of carbon released, setting reduction targets, designing and implementing and implementing systems to reduce carbon emissions, and reporting progress to managers and to company stakeholders.

Disclosure of Carbon Emissions

Disclosure of carbon emissions is needed to measure and value the carbon produced by an industry and reduce it gradually. According to Cahya (2017). Disclosure of carbon emissions is disclosure to assess an organization's carbon emissions and set targets for reducing these emissions. Disclosure of carbon emissions in Indonesia has increased in recent years ansd this disclosure is still presented in a voluntary manner, the purpose of this disclosure is to provide additional information on decision making by internal and external parties of the company. Disclosure of carbon emissions can reveal additional information that can be used by both local and global investors in making decisions so that companies can reduce carbon emissions and protect the environment. Disclosure of carbon emissions can influence investors' decisions, this cannot be separated from signaling theory. The company will disclose voluntary disclosure if it can increase the company's value, and withhold voluntary disclosure if it risks lowering the company's reputation or value (Rahmanita, 2020). PSAK No. 1 (revised 2009) paragraph twelfth states that companies can disclose environmental information contained in additional reports, and carbon emission disclosure is an example of disclosing environmental information contained in additional reports.

The Value Of The Company

Firm value in general can be interpreted as a reasonable price and in accordance with the expectations of prospective company buyers. Firm value is divided into several concepts including nominal value, market value, intrinsic value, book value, and liquidation value (Rahmanita, 2020:55). According to Rusmana and Purnaman (2020) company value can be reflected in the company's stock price, a high stock price indicates that the company's value is also high. Increasing the value of the company in a stable manner can provide prosperity for shareholders. Based on the view of investors, the stock market price implicitly shows the value of a company and the whole complexity of the company's real world risks that reflect investment, financing and dividend decisions.

Effect of Carbon Emission Disclosure on Firm Value.

According to legitimacy theory and stakeholder theory, the increasing awareness of stakeholders about the importance environment for business continuity causes pressure on companies to be able to run their business but still maintain the environment and be in harmony with the norms that apply in society. By voluntarily disclosing carbon emissions, the company hopes to get support from the surrounding environment and stakeholders so that the company's value can increase. In addition, based on the signal theory, the disclosure of carbon emissions can be a signal received by investors. If the disclosure of carbon emissions can be considered a positive signal, the company will receive investment funds from investors and cause the company's value to increase. Research conducted by Anpratama and Ethika (2021) concludes that there is a significant positive influence in the relationship between disclosure of carbon emissions and company value. It thus indicates that investors prefer to invest in companies that provide carbon emission information. The research conducted by Alfayerds and Setiawan (2021) is in line with the research of Anpratama and Ethika (2021) and concludes companies that disclose carbon emissions more fully and comprehensively can increase company value to the perspective of investors because they are thought to be more capable of ensuring the company's long-term viability. Investors prefer to invest in companies that provide information about carbon emissions.

H1: Disclosure of carbon emissions has a positive effect on firm value.

Effect of Environmental Performance on Company Value

The Ministry of Environment and Forestry in Indonesia participates in protecting the environment by creating an Environmental Performance Rating Program (PROPER). Every company that participates in this program will help to protect the environment while also improving the company's image. The impact that might be obtained if the company follows PROPER is to attract investors and become a tool to gain the trust of stakeholders. In accordance with signal theory and stakeholder theory, a positive image will be a support and a positive signal for stakeholders because the company will be considered valueable or more valuable. This is in accordance with research that was previously conducted by Rusmana and Purnaman (2020) which stated that there is a significant positive influence on environmental performance on firm value, meaning that the announcement of PROPER ratings has information content that can affect company value. The higher a company's PROPER rating, the more appealing the company appears to investors.

H2: Environmental performance has a positive effect on firm value.

The Effect of Carbon Emission Disclosure on Firm Value with Environmental Performance as a Moderating Variable

One way for companies to be useful and responsible for their stakeholders is by providing information on each of its activities, which can be included in sustainable reports. Disclosure of carbon emissions can be a form of corporate accountability report to stakeholders and the environment. Apart from being a form of accountability, disclosure of carbon emissions can also attract stakeholder support for the company. The Environmental Performance Rating Program (PROPER) promoted by the Government of Indonesia through the Ministry of Environment and Forestry can be another form of corporate responsibility for the environment. With the company's participation in PROPER, The company is considered to be obedient in carrying out its activities and protecting the environment. The company's participation in PROPER can have an impact on its image, attracting stakeholders and making the company more valuable. Research that has been conducted by Rusmana and Purnaman (2020) concludes that disclosure of carbon emissions and environmental performance has a significant positive effect on company value both simultaneously and partially. The more carbon emission disclosures that are made, the firm value will be positively affected, and the higher the PROPER rating of the company, the higher the increase in firm value. However, it is contrast with the research by Anggita and Nugroho (2022) who concluded that increasing disclosure of carbon emissions would not increase company value because there were other factors that could affect company value, and research by Anpratama and Ethika (2021) concluded that every investor has needs information and their respective criteria for investing.

H3: The effect of disclosing carbon emissions on firm value can be moderated by environmental performance

RESEARCH METHODOLOGY

This study uses Carbon Emission Disclosure (CED), Firm Value, and Environmental Performance as objects and the subjects of this research are companies operating in non-financial sectors such as manufacturing, mining, and its kind. This study will accomplish its goals by using the quantitative descriptive research method with a causal associative approach, and the relationship of influence between the variables studied will be revealed.

Dependent Variable.

In this study, firm value acts as the affected variable or the dependent variable. There are several ways to measure the value of a company based on its market value, in this study using the Tobin's Q method. The Tobin's Q method is a measurement tool that is often used in measuring company value. This ratio is considered to be able to provide better information, because it includes all elements of the company's debt and share capital (Rusmana and Purnaman, 2020). The results of the Tobin's Q ratio level come from the sum of the market value of equity and the company's total debt (liabilities) divided by the company's total assets. Tobin's Q ratio can be seen through the following formula.

$$Tobin's\ Q = \frac{Total\ Market Value + Total\ Liabilities}{Total Aktiva}$$

Independent Variable.

This study uses disclosure of carbon emissions as an influencing variable. Disclosure of carbon emissions in this study is measured by indicators based on research by (Choi et al., 2013). There are five broad categories according to climate change and carbon emissions, namely: 1) Climate Change: Risks and Opportunities, 2) Greenhouse Gas Emissions, 3) Energy Consumption, 4) Greenhouse Gas Reduction and Costs, and 5) Emissions Accountability Carbon. Annual reports published by companies (sustainability reports and annual reports) can be used to see the extent to which companies disclose carbon emissions. This method is commonly referred to as the content analysis method. The area of carbon emission disclosure items uses the index that has been developed by Choi et al., (2013) which has been constructed from a request sheet developed by the CDP (Carbon Disclosure Project). Based on the explanation above, if the company discloses according to the points on the choi indicator, a score will be given. Meanwhile, if it is not disclosed, it is not given a score. Each point has a score of 1. Furthermore, all scores are summed up and divided by the maximum number of points that can be disclosed (18 points) and then multiplied by 100% or it can be formulated as follows.

$$CED = \frac{\Sigma di}{M}\ x\ 100\%$$

Moderation Variable

The moderating variable used to influence the independent variables on the dependent variable which is Environmental Performance as indicated by the PROPER rating. PROPER is a Company Performance Rating Assessment Program in environmental management. The results of the PROPER rating by the Ministry of Environment can be used as a proxy in researching environmental performance (Rusmana and Purnaman, 2020). The scores used are as follows.

Table 2. PROPER Rating and SCORE

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

Source: Processed data (2022)

Population

The population in this study uses non-financial companies that have been listed on the Indonesia Stock Exchange from 2017 to 2021. The fundamental basis that causes the use of non-financial companies in this research population is because these industries are types of industries that are very active in producing carbon emissions. .

Sample

Determination of the sample in this study using purposive sampling method. The sample criteria in this study can be described as follows:

Table 3. Sample selection using purposive sampling method

No.	Criteria	Company
1	Companies listed on the IDX during 2017-2021.	769
	Companies do not follow PROPER during 2017-2021.	(713)
2	The company follows PROPER during 2017-2021.	56
	The company did not issue a complete annual report and sustainability report during the 2017 – 2021 period.	(41)
3	The company publishes a complete annual and sustainability report for the 2017-2021 period which can be accessed through the website www.idx.co.id or the official website of each company concerned.	15
	The company does not disclose its carbon emissions	0
4	The company discloses its carbon emissions explicitly in its 2017-2021 financial reports	15
	Total Companies that meet the criteria	15
	Samples that have Outlier data	(3)
	Number of Samples After Eliminating Outlier Data	12
	Total Sample Data (x 5 Years of Observation)	60

Source: Processed data (2022)

Based on the company table, there are 12 companies that meet the criteria for research with an observation period of five years, namely 2017 – 2021, so the amount of data to be observed is 60 sample data.

Data Analysis Technique

Data analysis to be carried out in this study include: 1). Descriptive analysis to see the development of each variable, 2) Classical Assumption Test (Test of Normality, Multicollinearity, and Heteroscedasticity), 3) Simple Linear Regression Analysis to test the effect between variables, 4) Moderation Regression Analysis to test the effect of environmental performance as a moderating variable , and 5) Hypothesis Test (Test –t and Test –F). The regression equation model to be tested is as follows.

1. Simple linear regression analysis (Simple Regression Analysis)

$$Y = \alpha + \beta X + e$$

2. Moderation regression analysis (Moderated Regression Analysis)

$$Y = \alpha + \beta 1X + \beta 2Z + \beta 3X \times Z + e$$

Information:
α = Constant
β = Regression coefficient
Y = Firm Value
X = Carbon Emission Disclosure (CED)
Z= Environmental Performance (PROPER rating) e = error term, namely the error rate in the study

RESULTS AND DISCUSSION

Development of Disclosure of Carbon Emissions

The development of disclosure of carbon emissions in the twelve sampled companies can be seen in the following table.

Table 4. Development of Disclosure of Carbon Emissions during Observations

	2017	2018	2019	2020	2021	Every 5 Years
CED Top Rated	0.78	0.83	0.83	0.89	0.89	0.84
CED Lowest Value	0.17	0.17	0.44	0.33	0.39	0.30
Average	0.50	0.54	0.59	0.58	0.60	0.56
Median	0.50	0.50	0.56	0.61	0.61	0.56

Source: Processed data (2022)

Focusing on the average value per five years of observation, the average value of disclosing carbon emissions is 0.56 and is equal to the median value. It can be interpreted that the development of disclosure carbon emissions is good.

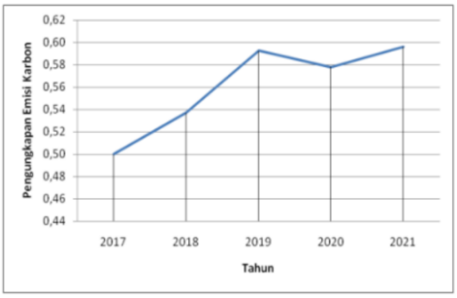

Figure 1. Graph of Carbon Emission Disclosure Development during Observation

Based on Figure 1, the trend of the average movement of disclosure of carbon emissions has increased from 2017 to 2019, then decreased in 2020, and then increased again in 2021. The development of disclosure of carbon emissions that occurs in the companies sampled in this study possibly influenced by several factors, such as changes in management policies, and other factors.

Development of Corporate Values

The development of firm value in the twelve companies sampled can be seen in the following table.

Table 5. Development of Company Value Observation Time

	2017	2018	2019	2020	2021	Every 5 Years
FV Top Rated	2.95	2.61	2.69	2,14	2.01	**2.48**
Lowest FV Value	0.86	0.97	1.03	0.98	0.82	**0.93**
Average	1.41	1.40	1.31	1.39	1.25	**1.35**
Median	1.15	1.22	1.17	1.39	1.19	**1.22**

Source: Processed data (2022)

The development of company value when viewed through the average value tends to experience a good trend. This can be seen from the average value which is above the median value, namely 1.35 for the average value and 1.22 for the median value. Therefore, the development of company value can be said to be quite good.

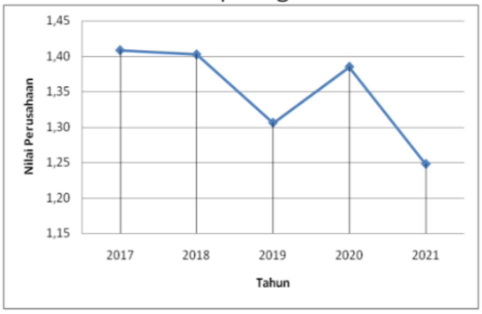

Figure 2. Graph of Company Value Development during Observation

However, based on the graph, the development of the company's value has fluctuated and tends to decrease. The cause of this downward trend is likely due to various factors, such as the company's profit level, the company's liquidation level, other considerations of investors, and other related factors that cause a decrease or increase in market capitalization, total assets and liabilities of the company.

Environmental Performance Development

The development of environmental performance in the twelve sampled companies can be seen in the following table.

Table 6. Development of Environmental Performance during Observation

Rating	Number of Companies				
Gold	1	2	1	1	3
Green	5	6	7	5	7
Blue	9	7	7	9	5

Source: Processed data (2022)

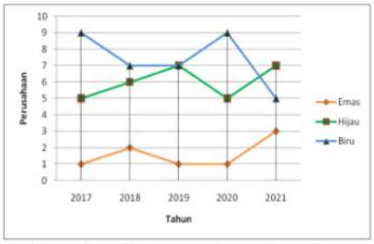

Figure 3. Graph of PROPER Rating Fluctuation Development during Observation

Based on table 6 and figure 3, environmental performance as indicated by proper can be concluded that the development of environmental performance continues to fluctuate. However, the rankings showed the gold and green ratings will increase in 2021, and the blue ratings will decrease. This can be interpreted that in 2020 to 2021 there will be an increase in environmental performance by the sample companies.

Classic Assumption Test

Table 7. Results of the Normality Test of the One-Sample Kolmogorov-Smirnov method

		Unstandardized Residuals
N		60
Normal Parameters, b	Means	,0000000
	std. Deviation	,17503586
Most Extreme Differences	absolute	,145
	Positive	,145
	Negative	-,104
Kolmogorov-Smirnov Z		1.127
asymp. Sig. (2-tailed)		,158

Source: Processed data (2022)

Based on the results of the normality test, the Asymp. Sig. (2-tailed) or commonly called the 2-tailed significance value is above 0.05 which is equal to 0.158, then the data can be classified as normally distributed data so that further classical tests and parametric tests can be carried out.

Table 8. Multicollinearity Free Test Results

Model		Unstandardized Coefficients		Standardized Coefficients	Q	Sig.	Collinearity Statistics	
		B	std. Error	Betas			tolerance	VIF
1	(Constant)	,505	,348		1,450	, 153		
	CED	,740	,409	,234	1,808	.076	,937	1,067
	PROPER	, 113	.086	, 171	1.322	, 191	,937	1,067

Source: Processed data (2022)

Based on table 8, it is known that the tolerance value of the two variables is more than 0.10, which is 0.937 (0.937> 0.10). And the VIF value of the two variables is 1.067 (1.067 <10). From these results, based on the multicollinearity test guidelines, it can be concluded that there is no multicollinearity between the independent variables in the regression model.

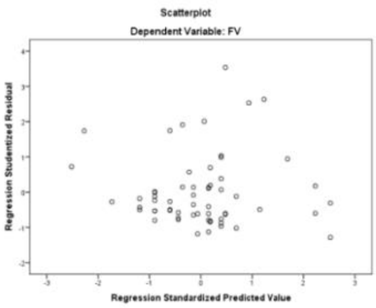

Figure 4. Results of the Scatter Plot Heteroscedasticity Test

Based on Figure 4, it can be seen that the dots spread and do not form a certain pattern. It can be concluded that the regression model is feasible for use in predicting firm value based on the input of the independent variable disclosure of carbon emissions and environmental performance.

Simple Linear Regression Analysis

Testing the Effect of Carbon Emission Disclosure on Firm Value. The first test uses a simple linear regression method with the aim of examining the effect of disclosure of carbon emissions (Independent Variable) on firm value (Dependent Variable). The results of the first test can be presented in the following table.

Table 9. Simple Linear Regression Effect of Disclosure of Carbon Emissions to Company Value

Model		Unstandardized Coefficients		Standardized Coefficients	Q	Sig.
		B	std. Error	Betas		
1	(Constant)	,841	,118		7,137	,000
	CED	,876	, 197	,277	4,451	,000

Source: Processed data (2022)

Based on table 9, the regression model for the effect of disclosure of carbon emissions on firm value can be obtained as follows.

$$Y = 0.841 + 0.876X + e$$

From this model it can be explained:

1) α = a constant of 0.841, meaning that if the independent variable disclosure of carbon emissions is considered constant or has a value of 0, then the dependent variable, namely the value of the company, will increase by 0.841.
2) The regression coefficient of the carbon emission disclosure variable is 0.876, meaning that if the carbon emission disclosure variable increases by one unit, then the dependent variable company value will increase by 0.876.

Testing the Effect of Environmental Performance on Company Value. The second test aims to examine the effect of environmental performance as indicated by PROPER (Moderator Variable) on firm value (Dependent Variable). The results of the second test can be presented in the following table.

Table 10. Simple Linear Regression Effect of Environmental Performance to Company Value

Model		Unstandardized Coefficients		Standardized Coefficients	Q	Sig.
		B	std. Error	Betas		
1	(Constant)	,792	, 156		5,078	,000
	PROPER	,152	.042	,230	3,647	,000

Source: Processed data (2022)

Based on table 10, a regression equation model can be made for the influence of environmental performance on firm value as follows.

$$Y = 0.792 + 0.152Z + e$$

From the equation model it can be explained that:

1) α = a constant of 0.792, meaning that if the independent variable environmental performance is considered constant or has a value of 0, then the dependent variable, namely the value of the company, will increase by 0.792.
2) The regression coefficient of the environmental performance variable is 0.152, meaning that if the environmental performance variable increases by one unit, then the dependent variable of firm value will increase by 0.152.

Moderation Regression Analysis

Moderation Regression Method is used because it has an element of interaction (multiplication of two or more independent variables) in the regression equation. According to Ghozali (2018), moderation regression analysis is a special application of multiple linear regression where in the regression equation there is an element of moderating interaction. The purpose of the third test is to find out whether the environmental performance moderating variable strengthens or weakens the relationship between the independent variables and the dependent variable. The results of the third test can be presented in the following table.

Table 11. Regression Results Moderating the Role of Environmental Performance in moderate the Effect of Disclosure of Carbon Emissions on Firm Value

Model		Unstandardized Coefficients		Standardized Coefficients	Q	Sig.
		B	std. Error	Betas		
1	(Constant)	-,217	,532		-,408	,684
	CED	1,927	,853	,610	2,259	.025
	PROPER	,307	,142	,464	2,166	.031
	Interaction	-,315	,220	-.539	-1,431	, 154

Source: Data processed

Based on the MRA test results in the table above, a regression equation can be obtained from environmental performance in moderating the effect of disclosing carbon emissions on firm value as follows.

$$Y = -0.217 + 1.927X + 0.307Z - 0.315XY + e$$

From the regression equation it can be concluded that:

1) If α = a constant of -0.217, it can be concluded that if the independent variables of disclosure of carbon emissions and environmental performance are considered constant (zero), then the value of the company as the dependent variable is -0.217.
2) If the regression coefficient of the carbon emission disclosure variable (CED) is 1.927, it is concluded that if the carbon emission disclosure variable increases by one unit, and the independent and other moderating variables are considered constant (zero), then the dependent variable, namely firm value, will increase by 1.927 .
3) If the regression coefficient of the environmental performance variable (PROPER) is 0.307, it can be concluded that if the environmental performance variable (PROPER) has increased by one unit, while the independent and other moderating variables are considered constant (zero value), then the firm value as the dependent variable will increase by 0.307 .
4) If the regression coefficient of the moderating variable is -0.315, it can be concluded that if environmental performance as the moderating variable increases by one unit, and the other independent variables are considered constant (zero), then the dependent variable, namely firm value, will decrease by 0.315.

Hypothesis Test Results

Partial Test Results (Test –t). The t-test is intended to determine the effect of each independent variable on the dependent variable. In this study the t-test was conducted to see the effect of carbon emission disclosure variables on firm value, and environmental performance variables on firm value. The results of the t-test in this study can be explained in the following table.

Table 12 Partial Test Results (Test –t)

Model		Unstandardized Coefficients		Standardized Coefficients	Q	Sig.
		B	std. Error	Betas		
1	(Constant)	-,217	,532		-,408	,684
	CED	1,927	,853	,610	2,259	.025
	PROPER	,307	,142	,464	2,166	.031
	Interaction	-,315	,220	-.539	-1,431	, 154

a. Dependent Variable: FV

Source: Processed data (2022)

Based on table 12 above, the following conclusions can be obtained.

1) For the CED variable, the unstandardized beta coefficient is 1.927 and the significance value for the CED variable or disclosure of carbon emissions is 0.025 or less than 0.05 (0.025 <0.05). In accordance with the t-test decision-making criteria, namely, if the significance value is more than 0.05 then H0 is accepted and H1 is rejected and vice versa. Because the value of unstandardized coefficients beta is positive and the significance value of the CED variable is less than 0.05, H0 is rejected, and Ha is accepted. This means that partially the independent variable Carbon Emission Disclosure has a significant positive effect on firm value.
2) For the environmental performance variable (PROPER), it has an unstandardized beta coefficient of 0.307 with a significance value of 0.031 or less than 0.05 (0.031 <0.05). In accordance with the t-test decision-making criteria, it can be concluded that H0 is rejected, and Ha is accepted. This means that partially the environmental performance variable (PROPER) has a significant positive effect on firm value.
3) For the CED interaction variable with Environmental Performance (Moderating variable), it has an unstandardized beta coefficient of -0.315 and a significance value of 0.154 or greater than 0.05 (0.154 > 0.05). In accordance with the t-test decision-making criteria, it can be concluded that H0 is accepted, and Ha is rejected. This means that partially the moderating variable, namely environmental performance, cannot moderate the influence relationship between disclosure of carbon emissions on firm value.

Simultaneous Test Results (Test –F). The simultaneous test or F test is intended to determine the effect of the independent variable, namely disclosure of carbon emissions, on the dependent variable, namely firm value with the influence of the moderating variable on environmental performance in moderating the relationship between the two variables. This test was performed using a significance level of 5%. The results of simultaneous testing in this study can be presented in the following table.

Table 13 Simultaneous Results (Test – F)

Model		Sum of Squares	Df	MeanSquare	F	Sig.
1	Regression	5,759	3	1,920	9,924	,000b
	Residual	45,652	57	, 193		
	Total	51,411	60			

a. Dependent Variable: FV

b. Predictors: (Constant), Interaction, PROPER, CED

Source: Processed data (2022)

Based on table 13, the significance value is 0.000 or less than 0.05 (0.000 <0.05). Then according to the F test decision making criteria, Ho is rejected and Ha is accepted. This means that the disclosure of carbon emissions with environmental performance simultaneously affects the value of the company.

DISCUSSION

Description of Disclosure of Carbon Emissions, Corporate Values, and Environmental

Performance of Companies Listed on the IDX for the 2017 – 2021 Period.

Based on research on disclosure of carbon emissions in non-financial companies that are used as research samples, the average disclosure of carbon emissions from 2017 to 2021 tends to increase. This can be proven in Figure 1 which shows the average development of carbon emission disclosure. For five years the chart tends to increase. The increase in the average annual value of disclosing carbon emissions is evidence that companies are increasingly concerned about the environment and carbon emissions resulting from their operational activities. This concern is proven through the disclosure of carbon emissions in sustainability reports published on the Indonesia Stock Exchange's website and the company's official website.

The results of research on firm value in the companies used as research samples can be classified into good groups, this is due to the average value of the company in the year of observation is greater than the median value. However, the company value in the year of observation tends to decrease, this picture can be presented in table 5 which illustrates the average development of company value. The average value of the company per year always decreases. This decrease in company value has the potential to be caused by the company value of one of the samples which tends to be larger, besides that the decline in company value has the potential to be caused by various other factors such as the company's liquidation level, factors that cause stakeholders to sell their shares, and other factors related to the causes of fluctuations in market capitalization, total assets and liabilities of the company.

The results of research on the environmental performance of the companies used as research samples by referring at the ranking indicators of the Corporate Performance Rating Program, abbreviated as PROPER, always fluctuate, but in 2021 they are likely to be better than the previous year because the gold and green ratings have increased. This can be proven in Figure 3 which shows fluctuations in the PROPER rating. The increase or decrease in the PROPER rating is caused by how the company's management complies with the assessment aspects contained in the Minister of Environment Regulation Number 3 of 2014. The company's intention to raise the PROPER rating is to gain stakeholder trust that the company really cares about its environment.

The Effect of Disclosure of Carbon Emissions on the Value of Companies Listed on the IDX for the 2017 – 2021 Period.

The results of the study show that H1 is accepted or disclosure of carbon emissions has a positive effect on firm value. These results reinforce the theory that disclosure of corporate carbon emissions in annual and sustainability reports can increase corporate value. The better the company discloses carbon emissions and how to handle them, the company's value will increase. On the other hand, if there are fewer companies disclosing carbon emissions and how to deal with them, then the value of the company will be different from those that disclose their carbon emissions better. This influence can be explained through three theories, namely legitimacy theory, stakeholder theory, and signaling theory.

The effect of disclosing carbon emissions on company value begins with legitimacy theory. Disclosure of carbon emissions as a form of corporate responsibility to the surrounding environment will lead to company interactions with the community and the surrounding environment. The interaction is expected to ensure that each operational activity of the company can be acknowledged and allowed by the community, ensuring the company's longevity. In order to ensure the company's survival, it must maintain excellent ties with its stakeholders in addition to keeping good relations with the surrounding community.

Based on the stakeholder theory, the positive effect of disclosing carbon emissions on company value is due to the increasing awareness of stakeholders of the importance of protecting the environment so that business continuity can be maintained, stakeholder's pressure companies to protect the environment and stay in harmony with the norms that apply in society. Due to the pressure caused by stakeholders, the company discloses carbon emissions voluntarily to get support from the surrounding environment and stakeholders so that the company's value can also increase.

The increase in the value of the company cannot be separated from the shareholder's decision to invest. The investor's decision cannot be separated from signal theory. Based on the signal theory, voluntary disclosure of carbon emissions, certainty of company survival, as well as support from the surrounding environment and its stakeholders will give a positive signal to investors. These things will strengthen investors' confidence to invest in companies that investors believe can continue to grow and provide benefits for them.

The results of this study are in line with the results of Anpratama and Ethika (2021) that disclosure of carbon emissions has a significant positive effect on company value. In addition, the results of this study are supported by the research of (Alfayerds & Setiawan, 2021; Rahmanita, 2020; Rusmana & Purnaman, 2020) who conclude that disclosure of carbon emissions has a significant positive effect on company value. However, the results of this study are not in line with Ulum, et al., (2020) who concluded that disclosure of carbon emissions had a significant negative effect on company value, and research by Anggita and Nugroho (2022) who concluded that there was no effect between disclosure of carbon emissions to company value.

The Effect of Environmental Performance on the Value of Companies Listed on the IDX for the 2017 – 2021 Period.

The results show that H2 is accepted which is mean that environmental performance has a positive effect on firm value. This reinforces the theory that company participation in the Environmental Performance Rating Program (PROPER) can improve the company's image because it has voluntarily protected its environment. In addition, the company's participation in this program can be made as proof of the company to the surrounding community. This proof in accordance with the theory of legitimacy, the company gains the trust of the surrounding community that the company has taken care of the surrounding environment, so that every operational activity of the company has been accepted and permitted by the surrounding community, and the survival of the company can be guaranteed.

The company's participation in the Environmental Performance Rating Program (PROPER) organized by the Ministry of Environment, apart from being proof of the company's seriousness in participating in protecting the environment, can also be an opportunity to gain more trust and satisfaction from managers and stakeholders. With the company's participation in this program, it is expected that the company can maintain relationships with its stakeholders.

Signal theory also contributes to the positive influence of environmental performance on firm value, it is caused the company's participation in PROPER can be a positive signal for potential investors. The higher the PROPER rating, the more valuable the company in addition to maintaining product quality and product safety, the company also has social responsibility towards the community so that investors will be more interested in investing and increasing company value (Homan, 2019).

It interpreted a company that wants to increase the value can take part in the Environmental Performance Rating Program and strive to achieve the highest rating in the program, namely a gold rating. The results of this study are in line with the results of research by (Rahmanita, 2020; Rusmana & Purnaman, 2020), who conclude that environmental performance has a significant positive influence on company value. The better the environmental performance, the better the company's value. However, the results of this study are not in line with the research of Mareta & Fitriyah (2017), and Anpratama and Ethika (2021) who conclude that there is no significant effect between environmental performance and company value.

The Role of Environmental Performance in Moderating the Effect of Disclosure of Carbon Emissions on the Value of Companies Listed on the IDX for the 2017 – 2021 Period.

The results of the study show that H3 is rejected, meaning that environmental performance cannot moderate the effect of disclosing carbon emissions on firm value. This proves that the company's participation in the Environmental Performance Rating Program (PROPER) as proof that the company has tried to preserve the environment cannot fully influence the assessment given by stakeholders from information regarding disclosure of carbon emissions by companies.

The results of this study also prove that a PROPER rating cannot fully guarantee an increase in company value. This could happen because the environmental performance indicated by the PROPER rating cannot describe the company's environmental performance as a whole resulting in the environmental performance indicated by PROPER not being able to influence the positive relationship that arises between disclosure of carbon emissions and company value, so other indicators are needed. It can define the performance of this environment. Defining the role of environmental performance in moderating the effect of disclosing carbon emissions on corporate value requires broader environmental performance indicators such as environmental costs, and its kind.

The results of this study are in line with research by Anggraeni (2015) who concluded that environmental performance as indicated by PROPER ratings cannot moderate the positive effect between disclosure of greenhouse gas emissions and company value. However, the results of this study are not in line with the results of Rahmanita (2020) which concludes that environmental performance can moderate the relationship between disclosure of carbon emissions and company value.

CONCLUSION

Based on the results of the research and discussion previously described regarding the effect of disclosing carbon emissions on company value with environmental performance as a moderating variable for non-financial companies that have been listed on the Indonesia Stock Exchange and participated in the Environmental Performance Rating Program (PROPER) for the 2017 – 2021 period, then it can be concluded as follows:

1. The description of disclosure of carbon emissions, corporate values, and environmental performance in the non-financial sample companies can be described as follows:
   a. In the observation year, namely 2017 – 2021, disclosure of carbon emissions in companies tends to continue to increase. The largest average disclosure of carbon

emissions is owned by PP London Sumatra Indonesia Tbk. (LSIP).

b. In the year of observation, the value of the company tends to decrease. This decrease has the potential to be caused by several companies that have a higher company value than others which continuously experience a decrease during the year of observation. In addition, there are other factors that have the potential to cause a decrease in company value, such as the level of liquidation, inflation rate, and other factors that cause fluctuations in the value of a company.

c. In the year of observation, environmental performance as indicated by PROPER has fluctuated developments. However, in the last three years of observation, environmental performance has increased. This increase was due to the company paying more attention to the environment and being more obedient in following the assessment aspects contained in the Regulation of the Minister of Environment Number 3 of 2014.

2. The results of statistical tests show that disclosure of carbon emissions has a significant positive effect on firm value. This is in accordance with signal theory, legitimacy theory and stakeholder theory, in the sense that the more a company cares about its environment and proves that by disclosing carbon emissions in its sustainability report, investors and parties involved in increasing company value will receive a positive signal that causes them to believe and can increase the value of the company.
3. Based on the results of statistical tests, environmental performance as indicated by PROPER has a significant positive effect on firm value. Similar to the influence of Disclosure of Carbon Emissions, Environmental Performance can affect company value based on signal theory, legitimacy theory, and stakeholder theory. Company participation in the Environmental Performance Rating Program (PROPER) held by the government can be evidence that companies care about the environment. The higher PROPER rating achieved, the party that can increase the value of the company will receive a positive signal that causes them to give trust and increase the value of the company.
4. Based on the results of the study, environmental performance cannot moderate the effect of disclosing carbon emissions on firm value. This is due to the wide coverage of environmental performance variables, so that environmental performance as indicated by PROPER alone is not enough to moderate the effect that arises between disclosure of carbon emissions on company value.

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