

Carbon Emission Disclosure as a Moderating Variable and the Impact of Liquidity, Profitability, and Company Age on Firm Value (Empirical Study of Mining Sector Companies Listed on the Indonesia Stock Exchange in 2018-2020)

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Abstract: Using carbon emission declaration as a moderating variable, this research seeks to investigate how liquidity, profitability, and company age affect firm value in mining sector firms traded on the Indonesia Stock Exchange for the years 2018 to 2020. This study used supplementary data, which includes 65 business records were chosen as study samples using the purposive sampling method, which was based on a set of sample criteria. Multiple linear regression analysis and modified regression analysis (MRA) were used in the data analysis with SPSS version 26. The findings revealed that while profitability had a substantial impact on firm value, liquidity and company age did not. Additionally, the impact of firm age on firm value can be partly mitigated by disclosure of carbon emissions. However, the impact of liquidity and profitability on firm value cannot be mitigated by carbon emission disclosure.

Keywords: Firm Value, Liquidity, Profitability, Company Age, and Carbon Emission Disclosure.

1. Introduction

The world is currently facing accelerated global warming and protracted climate change, which has forced all governmental and non-governmental organizations to collaborate in order to develop relevant policies to address these issues. People in some areas of the main industrialized nations are very worried about climate change and are looking for methods to reduce greenhouse gases [1]; [2]. According to the 2014 World Resource Institute (WRI), China has the highest emitter position with 10.26 billion tons of carbon emissions, while Indonesia has generated roughly 2.05 billion tons, placing it in the sixth largest number of polluters in the world. Carbon pollution in Indonesia will reach 3 terabytes in 2020 [3].

It is stated that corporate players are expected to participate in efforts to decrease greenhouse gas pollution based on Presidential Decree No. 61 of 2011, Article 4. The existence of carbon emission disclosures can be used to evaluate efforts made by businesses to reduce greenhouse gas emissions in their capacity as business actors. (Carbon Emission Disclosure). Basically, publication of carbon emissions is optional in a number of nations (including Indonesia), but for businesses that have revealed them, it adds value from both the perspectives of foreign and local investors [4]. Companies that disclose their carbon emissions benefit in a number of ways, including: winning over stakeholders; avoiding threats, particularly those faced by businesses that produce greenhouse gases (greenhouse gas), such as rising operating costs, declining demand, reputational risk, legal proceedings, as well as fines or penalties [5].

Liquidity was found to have a positive impact on firm value in earlier studies by Hapsoro, D., Falih, Z.N. (2020), and Soleman, M. R., et al. (2022), whereas Hadi, I.S., & Sugiyono's study (2019) found that liquidity had a negative and substantial impact on firm value. According to research by Hadi, I.S., & Sugiyono (2019), and Haryono, A.A.L., & Lestari, H.S. (2022), profitability has a positive and significant effect on firm value. This is in contrast to research by Hapsoro, D., & Falih, Z.N. (2020), which claims that profitability has a positive but not significant effect on firm value. Additionally, studies by Yumiasih, L., & Isbanah (2017), Haryono, A.A.L., & Lestari, H.S. (2022), and others demonstrated that business age has a favorable impact on firm value. In contrast, study by Putri, K.A., & Anwar, S. (2022) found no relationship between business age and firm value. Based on study showing that carbon emission disclosure has a substantial beneficial impact on firm value by Cahyani, P.N. (2022) and Rusmana, O. & Purnaman, S. M. N (2020), according to Rizki, D., & Taufiq, E. (2019), it had little to no impact on firm value.

According to earlier research that has been done, carbon emission reports are typically treated as either independent or dependent factors. Disclosure of carbon emissions is used as a dependent variable to assess these variables' capacity as outcomes, while disclosure of carbon emissions is used as an independent variable to assess these variables' capacity as causes. In this study, the researcher included the revelation of carbon emissions as a moderating variable based on the description of the problem's context provided above. The decision to position the variables was made with the goal of enhancing the impact of carbon emission disclosure

variables, whose presence and function are crucial in reducing the impact of liquidity, profitability, and company age on company value. Where the sharing of carbon pollution is anticipated to have a beneficial impact on business value and give buyers a good impression of the company's dedication to environmental problems. It is anticipated that the favorable impact on firm value will grow as carbon emission disclosure is followed by data on liquidity, profitability, and company age.

2. Literature Review and Hypothesis

2.1 Legitimacy Theory

According to legitimacy theory, there is a "social contract" between a business and the neighborhood in which it works and spends money [15]. The sustainability of a company is therefore contained in the organization's vision in allocating economic resources in society by taking into account the existence of social inequality and overcoming the effects of environmental damage caused by the company's operational activities. As a result, it can be interpreted that all of this is related to the continuity of legitimacy that is carried out in accordance with the norms that exist in society.

2.2 Signal Theory

Signal theory explains that when a company's executives have better information about their company, they will be motivated to report this information to potential investors with the aim that the price of the company's shares can increase, and good company financial reports are interpreted as a signal that the company has been running very well [16]. A signal or announcement is an action taken by a company with the intention of providing direction to investors regarding how management sees the company's perspective [17]. What companies do by disclosing has a positive signal with the aim of attracting investors to invest, developing a positive company reputation, and at the same time increasing company value.

2.3 Carbon Emission Disclosure.

The effects of global warming on the planet include ecosystem changes, glacier melting at the north and south poles, changes in sea level waves, and, in some areas of the world, the most severe climate change. Human actions, whether direct or indirect, have the potential to alter both the structure of the earth's atmosphere and the variability of the natural climate over time, resulting in climate change [18]. As a result, businesses are anticipated to be able to voluntarily disclose information about carbon emission reports to the public, particularly for investors, understanding that the business behaved in good faith to demonstrate its concern for the climate.

2.4 Firm Value

Investors' perceptions of the company's successes in running the business in relation to its earnings are referred to as firm value. A high market price for a business's stock can result in a high corporate value. Companies with high firm values are able to affect market behavior, which leads investors to believe that these companies' high firm values are an assurance of their future success [19].

2.5 The Effect of Liquidity on Firm Value

A measure called liquidity describes the company's capacity to settle short-term debt [20]. A company's worth in the views of investors may rise in direct proportion to how liquid it is, as debtors are more likely to trust it to provide lending funds.

H1 = Liquidity has a significant role on firm value

2.6 The Effect Profitability on Firm Value

Through the application of management principles, profitability is a method for a business to generate net profit from each of its working activities in the present year [21]. With the complete expectation that the company can produce returns in accordance with investors' expectations, investors will experience immediate positive radiation if there is a rise in company income, which shows that the actions and advancements of the company are good.

H2 = Profitability has a significant role on firm value

2.7 The Effect Firm Age on Firm Value

Company age is a measure of a company's capacity to surmount challenges that impact its ability to maintain its business and how it thinks about making choices to grow that business [22].

H3 = Firm Age has a significant role on firm value

2.8 The Effect of Liquidity on Firm Value with Carbon Emission Disclosure as a Moderating Variable

The liquidity ratio computation is helpful for evaluating a company's capacity to fulfill its immediate responsibilities [23]. Investors must consider additional evaluation criteria before choosing whether to engage in a business, one of which is non-financial information, specifically the disclosure of carbon emissions as a form of social obligation.

H4 = Carbon Emission Disclosure Moderates The Effect of Liquidity on Firm Value

2.9 The Effect of Profitability on Firm Value with Carbon Emission Disclosure as a Moderating Variable

High corporate profits signal the situation of large funds being available, which makes it simpler for businesses to reveal environmental reports like disclosure of carbon emissions. Corporate transparency regarding carbon emissions reports will increase a company's perceived worth in the eyes of the public and will give buyers more confidence in engaging in it. Indicators of improved business chances include higher financial success and rising dividend payments. As a result, investors will act favorably by purchasing shares, driving up stock prices and boosting the company's worth [24].

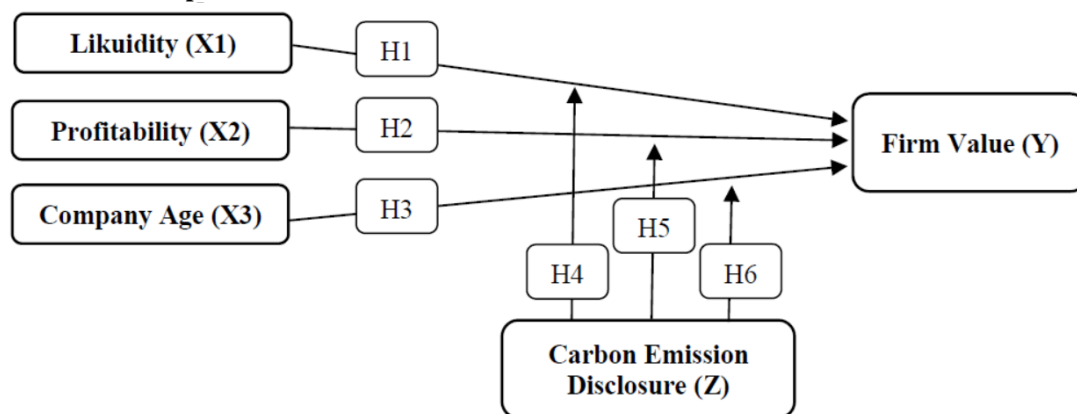
H5 = Carbon Emission Disclosure Moderates The Effect of Profitability on Firm Value

2.10 The Effect of Company Age on Firm Value with Carbon Emission Disclosure as a Moderating Variable

The company's age is an indication of its ability to successfully navigate a variety of challenges in the business world. Companies that are only recently founded are particularly prone to failure because they lack expertise [25].

H6 = Carbon Emission Disclosure Moderates The Effect of Company Age on Firm Value

2.11 Research Conceptual



Picture 1: Research Conceptual

3. Research Methodology

3.1 Types of Research

This kind of study employs quantitative methods to evaluate theories using secondary data. Numbers that can be measured and tallied were used to collect quantitative data for this research.

3.2 Population and Sample

Mining firms listed on the Indonesia Stock Exchange (IDX) were the populace in this research, with an observation span from 2018 to 2020. Purposive sampling was used as the selection method. Because not all of the study groups fulfilled the requirements that matched the symptoms to be investigated, the purposive selection method was chosen.

3.3 Method of Collecting Data

The documentation technique, which was used to gather the data for this study, was used. Data drawn from previously published papers is used to carry out the documentation technique. The sources for this study's financial report information and environmental reports come from the websites of a mining business and the Indonesian Stock Exchange.

3.4 Definisi Operasional dan Pengukuran Variabel

The aforementioned context will be used to evaluate the following variables:

3.4.1 Dependent Variable

Firm Value

By determining the stock price to book value of equity ratio, the worth of the company will be determined. The price to book value (PBV) calculation is as follows:

$$PBV = \frac{\text{Share Price}}{\text{Book Value}} \times 100\%$$

3.4.2 Independent Variable

a. Liquidity

The current ratio, or the percentage of current assets to short-term obligations, will be used to calculate liquidity. The following is the calculation for the present ratio:

$$\text{Current Ratio} = \frac{\text{current assets}}{\text{Short-term liabilities}}$$

b. Profitability

The computation of return on assets (ROA), specifically the percentage of income after tax to total assets, will be used to assess profitability. The following is the yield on asset calculation formula:

$$ROA = \frac{\text{income after taxes}}{\text{Total Assets}}$$

c. Company Age

The age of the business will be calculated by subtracting the year it was established from the age calculation in the year of the study annual report era. The following equation determines the company's age:

Umur Perusahaan = Research Year Annual Report Period - Established Company Year

3.4.3 Moderating Variable

Carbon Emission Disclosure

There are five groups and 18 elements that are in accordance with the disclosure of carbon emissions in the research by Choi et al. (2013). Each transparency item is given a score of 1, with a lowest score of 0 and a maximum score of 18, to determine this variable's value. The Carbon Emissions Disclosure (CED) algorithm is as follows:

$$CED = \frac{\text{Disclosed Items}}{\text{Total Item by CDP}} \times 100\%$$

3.5 Multiple Linear Regression Analysis

Multiple linear regression was used in this study's research in order to determine how the independent factors affected the dependent variable. Consequently, the following solution can be used to verify the theory:

Equation 1 (Without Moderating Variable),

$$PBV = \alpha + \beta_1 CR + \beta_2 ROA + \beta_3 UP + \epsilon$$

Equation 2 (With Moderating Variable),

$$PBV = \alpha + \beta_1 CR + \beta_2 ROA + \beta_3 UP + \beta_4 CED + \beta_5 CR * CED + \beta_6 ROA * CED + \beta_7 UP * CED + \epsilon$$

Keterangan:

PBV = Price to Book Value (Firm Value)

CR = Current Ratio (Likuidity)

ROA = Return on Assets (Profitability)

UP = Company Age

CED = Carbon Emission Disclosure

CR * CED = Carbon Emission Disclosure and Current Ratio (Liquidity) Interaction

ROA * CED = Carbon Emission Disclosure and Return On Assets (Profitability) Interaction

UP * CED = Carbon Emission Disclosure and Company Age Interaction

α = Constant

$\beta_1 - \beta_7$ = Regression Coefficient

ϵ = Error Term

4. Results and Discussion

4.1 Descriptive Statistical Analysis

Table 1: Results of The Descriptive Statistical Analysis

Variable	N	Minimum	Maximum	Mean	Std. Deviation
CR	65	0,103	10,074	1,98418	1,750676
ROA	65	0,003	0,290	0,076950	0,063526
UP	65	11	51	27,12	11,924
PBV	65	0,096	2,813	0,98326	0,660355
CED	65	0,111	0,944	0,43585	0,298120
CR*CED	65	0,011	2,804	0,78643	0,658658
ROA*CED	65	0,002	0,188	0,03322	0,039066
UP*CED	65	1	38	12,97	12,230
Valid N (listwise)	65				

Source: Results of analyzing SPSS data, 2023

Table 1's interpretation can be as follows:

1. The firm value variable measure determined by Price Book Value, has a range of values from 0,096 to 2,813, with an average value (mean) of 0,98326 and a standard deviation of 0,660355.
2. The liquidity variable measure determined by the Current Ratio, has a range of values from 0,103 to 10,074, with an average (mean) of 1,98418, and a standard deviation of 1,750676.
3. The profitability measure determined by Return on Assets, has a range of values from 0,003 to 0,290, with an average (mean) of 0,07695 and a standard deviation of 0,063526.
4. The company age variable, has a ranges of values from 11 to 51, with an average (mean) of 27,12 and a standard deviation of 11,924.
5. The carbon emission disclosure variable (CED), has a ranges of valus from 0,111 to 0,944, with an average (mean) of 0,43585 and a standard deviation of 0,298120.
6. The liquidity variable measure determined by the Current Ratio, with carbon emission disclosure moderation, has a range of values from 0,011 to 2,804, with an average (mean) of 0,78643, and a standard deviation of 0,658658.
7. The profitability measure determined by Return on Assets, with carbon emission disclosure moderation, has a range of values from 0,002 to 0,188, with an average (mean) of 0,03322, and a standard deviation of 0,039066.
8. The company age variable, with carbon emission disclosure moderation, has a range of values from 1 to 38, with an average (mean) of 12,97, and a standard deviation of 12,230.

4.2 Classic Assumption Test 4.2.1 Normality Test

Table 2: Results of The Normality Test

Variable	Equation 1		Equation 2	
	Kolmogoros-Smirnov Z Monte Carlo Sig. (2-tailed)	Description	Kolmogoros-Smirnov Z Monte Carlo Sig. (2-tailed)	Description
Unstandardized Residual	0,055	Normal Distributed	0,693	Normal Distributed

Source: Results of analyzing SPSS data, 2023

According to the findings of the normality test in table 2, equations 1 and 2 both yield values for the Kolmogorov-Smirnov Monte Carlo Sig (2-tailed) that are greater than = 0 or 5%, 0,055 and 0,693, respectively. The statistics are therefore presumed to be normally distributed.

4.2.2 Multicollinearity Test

Table 3: Results of The Multicollinearity Test

Model	Collinearity Statistics		Description
	Tolerance	VIF	
(Constan)			
CR	0,903	1,107	No multicollinearity exists.
ROA	0,931	1,074	No multicollinearity exists.

UP	0,884	1,131	No multicollinearity exists.
CED	0,865	1,156	No multicollinearity exists.

Source: Results of analyzing SPSS data, 2023

According to the findings of the multicollinearity test in table 3, demonstrates that there is no multicollinearity in the regression model between the independent variables because the independent variable has a tolerance value (TV) higher than 0,10 and a variance inflation factor (VIF) value less than 10.

4.2.3 Heteroscedasticity Test

Table 4: Results of The Heteroscedasticity Test

Variable	Equation 1	Equation 2	Description
	P-Value	P-Value	
CR	0,554	0,658	Passed the test for heteroscedasticity
ROA	0,848	0,469	Passed the test for heteroscedasticity
UP	0,534	0,457	Passed the test for heteroscedasticity
CED		0,502	Passed the test for heteroscedasticity
CR*CED		0,574	Passed the test for heteroscedasticity
ROA*CED		0,807	Passed the test for heteroscedasticity
UP*CED		0,274	Passed the test for heteroscedasticity

Source: Results of analyzing SPSS data, 2023

According to the findings of the heteroscedasticity test in table 4, demonstrates that the regression model from equations 1 and 2 passes the heteroscedasticity test, with a significant value higher than 0,05 or 5% (P 0,05 or 5%) for each independent variable.

4.2.4 Autocorrelation Test

Table 5: Results of The Autocorrelation Test

Equation 1		Equation 2	
Durbin-Watson	1,945	Durbin-Watson	1,766

Source: Results of analyzing SPSS data, 2023

According to the findings of the autocorrelation test in table 5, demonstrates that equations 1 and 2 result in Durbin-Watsons of 1,945 and 1,766, respectively. As a result, it can be said that there is no autocorrelation because the regression model in use meets the requirement of a DW number between (-2) and (+2).

4.3 Hypothesis Test 4.3.1 Multiple Linear Regression Analysis

Table 6: Results of Analisis Regresi Linear Berganda

Variable	Equation 1			Equation 2		
	Coefficient	t count	Sig.	Coefficient	t count	Sig.
(Constan)	0,407	2,330	0,023	0,942	2,926	0,005
CR	-0,021	-0,586	0,560	0,022	0,319	0,751
ROA	7,391	7,503	0,000	6,050	3,616	0,001
UP	0,002	0,347	0,730	-0,025	-2,292	0,026
CED				-0,914	-1,350	0,182
CR*CED				-0,126	-0,443	0,660
ROA*CED				3,224	0,858	0,395
UP*CED				0,046	2,397	0,020
Adjusted R ²	0,463			0,519		
F count	19,422			10,871		
Sig.	0,000			0,000		

Source: Results of analyzing SPSS data, 2023

The regression equation can be expressed as follows in light of the findings of the regression test in table 6:
Equation 1 (Without Moderating Variable),

$$PBV = 0,407 - 0,021CR + 7,391ROA + 0,002UP$$

Equation 2 (With Moderating Variable),

$$PBV = 0,942 + 0,022CR + 6,050ROA - 0,025UP - 0,914CED - 0,126CR*CED + 3,224ROA*CED + 0,046UP*CED + \epsilon$$

It is possible to understand equation 1 in table 6 as follows:

1. The constant value (α) is 0,407, means that if the variables of liquidity (CR), profitability (ROA), and company age is considered constant, the firm value (PBV) dependent variable's level stays at 0,407.
2. The liquidity coefficient (CR) β_1 of -0,021 indicates that if the liquidity (CR) is increased by one unit, the firm value (PBV) will be affected and will fall by 0,021 times as a result.
3. The profitability coefficient (ROA) β_2 of 7,391 indicates that if the profitability (ROA) is increases by one unit, the firm value (PBV) will rise by 7,391 times as a result.
4. The company's age coefficient β_3 of 0,002 is increases by one unit, the firm value (PBV) will rise by 0,002 times as a result.
5. ϵ is an error word that indicates that other evaluation factors may also have an impact on firm value (PBV) in this research.

It is possible to understand equation 2 in table 6 as follows:

1. The constant value (α) is 0,942, means that if the variables of liquidity (CR), profitability (ROA), and company age with carbon emission disclosure as a moderating variable is considered constant, the firm value (PBV) dependent variable's level stays at 0,942.
2. The liquidity coefficient (CR) β_1 of 0,022 indicates that if the liquidity (CR) is increased by one unit, the firm value (PBV) will rise by 0,022 times as a result.
3. The profitability coefficient (ROA) β_2 of 6,050 indicates that if the profitability (ROA) is increases by one unit, the firm value (PBV) will rise by 6,050 times as a result.
4. The company's age coefficient β_3 of -0,025 is increases by one unit, the firm value (PBV) will be affected and will fall by 0,025 times as a result.
5. The carbon emission disclosure coefficient β_4 of -0,914 indicates that if the carbon emissions disclosure increases by one unit, the firm value (PBV) will be affected and will fall by 0,914 times as a result.
6. The liquidity coefficient (CR) β_5 moderated by disclosing carbon emissions of -0,126 demonstrates that if the carbon emission disclosure and the liquidity interaction variable (CR*CED) increases by one unit, the firm value (PBV) will be affected and will fall by 0,126 times as a result.
7. The profitability coefficient (ROA) β_6 moderated by disclosing carbon emissions of 3,224 demonstrates that if the carbon emission disclosure and the profitability interaction variable (ROA*CED) increases by one unit, the firm value (PBV) will rise by 3,224 times as a result.
8. The company's age coefficient β_7 moderated by disclosing carbon emissions of 0,046 demonstrates that if the carbon emission disclosure and the company's age interaction variable (UP*CED) increases by one unit, the firm value (PBV) will rise by 0,046 times as a result.
9. ϵ is an error word that indicates that other evaluation factors may also have an impact on firm value (PBV) in this research.

4.3.2 Determination Coefficient Test (R^2)

Table 7: Results of Determination Coefficient Test (R^2)

Equation 1		Equation 2	
<i>Adjusted R Square</i>	0,463	<i>Adjusted R Square</i>	0,519

Source: Results of analyzing SPSS data, 2023

According to the R^2 test results in table 7, equation 1's adjusted R^2 value is 0,463, which means that the independent variables (liquidity, profitability, and company age) can explain 46,3% of the dependent variable or firm value (PBV), while the remaining 53,7% is influenced by factors outside the research model. The adjusted R^2 value for equation 2 is 0,519, indicating that the independent variables (liquidity, profitability, and company age) and their moderating variable Carbon Emission Disclosure (CED), can explain 51,9% of the variation in firm value (PBV), with the remaining 48,1% being influenced by factors outside the scope of the research model.

4.3.3 Simultaneous Significance Test (F Test)

Table 8: Results of Simultaneous Significance Test (F Test)

Model	Equation 1		Equation 2	
	F	Sig.	F	Sig.
1 Regression	19,422	0,000b	10,871	0,000b

Source: Results of analyzing SPSS data, 2023

Based on the concurrent significance test (f test) results in table 8, it can be deduced that the independent variables are liquidity (CR), profitability (ROA), and company age, which can concurrent have a significant impact on firm value (PBV). The value of Fcount is 19,422 >Ftable is 2,755 with a probability value of 0,000 < 0,05 (p < 0,05), which supports this conclusion. While in equation 2, the value of Fcount is 10,871 >Ftable is 2,175 with a probability value of 0,000 < 0,05 (p < 0,05), it can be inferred that the independent variables are liquidity (CR), profitability (ROA), and company age, as well as other variables of moderation, namely carbon emission disclosure (CED), which can concurrent have a significant impact on firm value. (PBV).

4.3.4 Test of the Individual Parameter's Significance (T-test Statistics)

Table 9: Results of Individual Parameter Significance Test (T-test Statistics)

Model	Equation 1 Sig.	Equation 2 Sig.	
			1
	ROA	0,000	0,001
	UP	0,730	0,026
	CED		0,182
	CR*CED		0,660
	ROA*CED		0,395
	UP*CED		0,020

Source: Results of analyzing SPSS data, 2023

Table 8's individual parameter significance test (t test statistic) findings show the following:

1. The Effect of Liquidity on Firm Value

The liquidity variable has tcount -0,586 <ttable 1,99962 with a significance value of 0,560 ≥ 0,05, then H1 is rejected which can be concluded that partially liquidity (CR) has no significant effect on firm value. If there is an increase or decrease in the level of liquidity, it will not affect the increase or decrease in the value of the company and will not contribute too much to the investment decisions of investors in the company.

2. The Effect Profitability on Firm Value

The profitability variable has a tcount of 7,503 >ttable of 1,99962 with a significance value of 0,000 ≤ 0,05, then H2 is accepted which can be concluded that partially profitability (ROA) has a significant effect on firm value. If there is an increase or decrease in the level of profitability, it will affect the increase or decrease in company value and can affect investors' investment decisions in the company.

3. The Effect Company Age on Firm Value

The company age variable has tcount 0,347 <ttable 1,99962 with a significance value of 0,730 ≥ 0,05, then H3 is rejected which can be concluded that partially company age has no significant effect on firm value. If there is an increase in the age of the company, it will not affect the increase or decrease in the value of the company.

4. The Effect of Liquidity on Firm Value with Carbon Emission Disclosure as a Moderating Variable

The liquidity variable (CR) after being moderated by carbon emission disclosure has tcount -0,443 <ttable 2,00247 with a significance value of 0,660 ≥ 0,05, then H4 is rejected which can be concluded that partially carbon emission disclosure is not able to moderate liquidity (CR) to the value company. It can be concluded that investors only see in terms of financial performance that can contribute to company value, so that disclosure of social information in annual reports does not affect investors in investing.

5. The Effect of Profitability on Firm Value with Carbon Emission Disclosure as a Moderating Variable

The profitability variable (ROA) after being moderated by carbon emission disclosure has tcount 0,858 <ttable 2,00247 with a significance value of 0,395 ≥ 0,05, then H5 is rejected which can be concluded that

partially carbon emission disclosure is not able to moderate profitability (ROA) on company value. It can be concluded that investors only see in terms of financial performance that can contribute to company value, so that disclosure of social information in annual reports does not affect investors in investing.

6. The Effect of Company Age on Firm Value with Carbon Emission Disclosure as a Moderating Variable

The company age variable after being moderated by carbon emission disclosure has a tcount of 2,397 > ttable of 2,00247 with a significance value of $0,020 \leq 0,05$, then H6 is accepted which can be concluded that partially carbon emission disclosure is able to moderate the age of the company on firm value. It can be concluded that investors see the age of the company as a reflection of the company's success in facing all kinds of obstacles, problems and difficulties in the business world, as well as its contribution to preserving the environment from its operational activities.

5. Conclusion

The following conclusions can be taken from the findings of the earlier research and discussion: (1) Liquidity has no significant effect on firm value; (2) Profitability has a significant influence on firm value; (3) Firm age has no significant effect on firm value; (4) Carbon emission disclosure is not able to moderate liquidity on company value; (5) Carbon emission disclosure is not able to moderate profitability on firm value; and (6) Carbon emission disclosure is able to moderate the age of the company on the value of the company.

Carbon emission disclosure is typically regarded as an independent or dependent variable in the research that has so far been done. This research used carbon emission disclosure as a moderating variable, and the findings were successful in showing that this regulating ability of carbon emission disclosure. Whereas exposure of carbon emissions can only slightly offset the impact of a company's age on its worth, When viewed from this angle, the study offers a fresh viewpoint on the significance of carbon emission disclosure factors in future studies.

The findings of this research make a number of theoretical advances, one of which is that disclosing carbon emissions can mitigate the impact of firm age on firm value. In the meantime, it is hoped that the practical contribution of this research can encourage businesses to operate more sustainably, particularly in the environment affected by carbon emission disclosures, so that businesses can benefit from positive capital investment from investors and at the same time increase company value. This is due to the fact that investors are more interested in businesses that willingly reveal their carbon emissions than in businesses that do not. The political benefit that can be derived from the findings of this study is that they may persuade the government to impose stricter restrictions on businesses with the ability to emit carbon dioxide.

The study's constraints include the use of only mining sector firms published on IDX for the years 2018 to 2020 in the financial report research calculations, which are all generalized using the rupiah as the only currency. With these restrictions, it is anticipated that future research will broaden the application of the research using the business sector listed on the IDX, add a minimum year of observation of five years, and allow for the use of other foreign currencies when evaluating financial report data.

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