

Firm Value Dynamics: The Role of Capital Intensity and Environmental Costs with Profitability to Control



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ABSTRACT: This study aims to explore the effect of capital intensity and environmental costs on firm value, with profitability as a control variable. Utilizing panel data of companies from the energy, industry, and transportation sectors listed on the Indonesia Stock Exchange (IDX) for the 2021-2023 period, 186 observation data were obtained from 62 companies that had been determined using the purposive sampling method. The results of the analysis prove that capital intensity does not have a significant effect on firm value. Meanwhile, environmental costs show a significant positive effect, and profitability as a control variable also contributes significantly to strengthening this relationship. Overall, these findings emphasize the importance of the right environmental investment strategy to increase firm value, especially amidst global demands for sustainability. The implications of this study provide strategic insights for companies in creating balanced long-term value.

KEYWORDS: Firm Value, Capital Intensity, Environmental Cost, Profitability

I. INTRODUCTION

Economic growth and sustainable development cannot be separated from the role of the business sector which has a significant contribution to infrastructure development and the competitiveness of a country. In addition to supporting the quality of the country's economy, these activities also contribute to increasing emissions. Based on the Global Carbon Atlas 2023 report, Indonesia is recorded as contributing around 1.72% of total global emissions, and is one of the 10 largest emitting countries in the world, which is presented in the following table:

Table I. Volume of Greenhouse Gas Emissions in the World

No.	Country	Greenhouse Gas Emissions Volume (Mt CO ₂ e)
1.	China	11,903
2.	United States of America	4,911
3.	India	3,062
4.	Russian	1,816
5.	Japan	989
6.	Iran	818
7.	Saudi Arabia	736
8.	Indonesia	733
9.	Germany	596
10.	South Korea	577

Source: Global Carbon Atlas (2023)

At the Southeast Asian level, Indonesia is at the top in producing emissions. This shows that the use of fossil energy plays a significant role in increasing the country's emissions. In Southeast Asia, around 75% of energy supplies come from fossil fuels, making dependence on non-renewable energy very high (Zaky & Yogyakarta, 2024). Although Indonesia has abundant natural resource potential, the challenge of managing emissions remains a crucial issue. Based on data from the Ministry of Energy and

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Mineral Resources in 3 years, the business sector that contributes the most to emissions is the energy sector above 40%, followed by the transportation sector above 20%, and manufacturing above 10%.

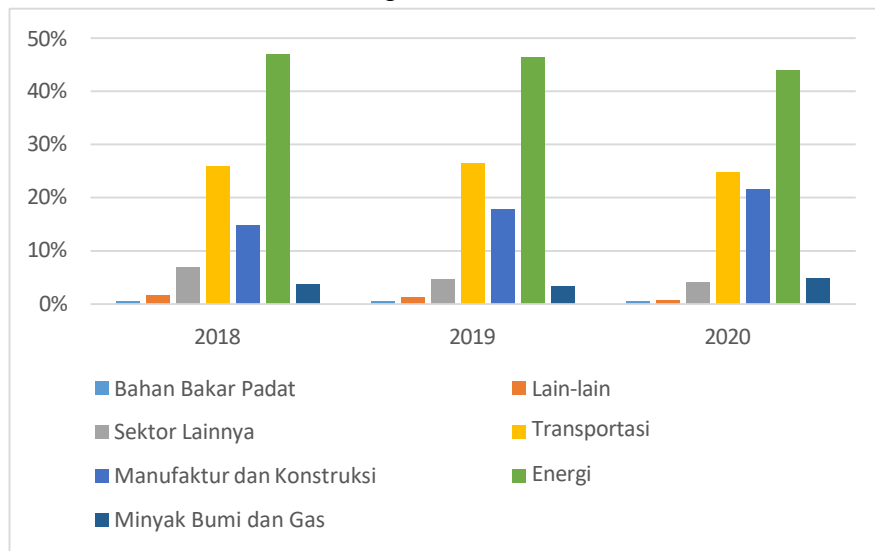


Figure 1. Contribution of Emissions by Each Sector

Source: Ministry of Energy and Mineral Resources

The increasing environmental impacts created great pressure for companies to maintain operational sustainability. Phenomena such as climate change and ecosystem degradation drive many initiatives to transition to renewable energy and control emissions (Liana et al., 2024). In this context, companies are faced with the challenge of adopting new technologies. However, this transition process requires a balanced strategy so that companies can continue to grow amidst the increasing demands of global change. An effective strategy is also needed so as not to sacrifice company value, so that companies continue to grow and innovate.

Company value is the main indicator of success, because it describes the existence and long-term attractiveness for investors and other stakeholders (Pujarini, 2020). This point is used as an important concept for investors in assessing the company as a whole (Ismiati et al., 2023). Wisesa (2022) stated that companies must be able to synergize with society and the environment through social responsibility and sustainability to achieve optimal value. The rise and fall of company value in business operations is certainly inevitable. According to Natali & Herawaty (2020), the important role of high company value will affect stakeholder satisfaction, so good synergy is needed between the company, employees, society, and investors. Ayem & Ginting (2020) added that if social responsibility is expressed by the company, there will be positive appreciation from stakeholders which will ultimately increase the company's value. In this context, factors such as capital intensity, environmental costs, and profitability play an important role. Good management of these factors has an impact on the company's reputation, market trust, and the value given to stakeholders. The energy, industrial and transportation sectors, which are highly dependent on capital, costs and profits, face a dilemma in maintaining the balance between infrastructure investment and the transition to more environmentally friendly practices.

Capital intensity refers to the amount of assets or capital needed to generate income (Dewi et al., 2024). The high level in the energy, industry, and transportation sectors is due to the large investment in exploration, production, and distribution. This dependence creates a dilemma between maintaining infrastructure investment to maintain production capacity or increasing capital for more environmentally friendly innovations. Capital intensity reflects the amount of investment and the strategy for managing sources of funds to increase the value of the company (Santaria et al., 2025). Such as investment in energy efficient technology, not only reduces operational costs but also strengthens the company's position in facing the pressures of the global energy transition. The importance of a policy to utilize fixed assets efficiently while considering potential and risk.

On the other hand, environmental costs include expenditures to comply with regulations, such as waste management, emission control, and various other environmental initiatives (Salazar et al., 2024). Although often viewed as a burden that does not provide immediate benefits, proper management can provide long-term benefits, such as improving the company's reputation, reducing legal risks, and support from environmentally conscious investors. According to Rahayudi & Apriwandi (2023), ignoring environmental costs can lead to a loss of public trust. Subaida & Pramitasari (2023) added that companies that do not appreciate environmental protection activities will have an impact on the costs incurred by the company in the future. Therefore, proper allocation of environmental costs can increase investor confidence and provide a competitive advantage that is also useful for the company.

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Profitability measurement through ROA (Return on Assets) is the basis for investors in evaluating efficient company management (Asila et al., 2024). According to Damayanti (2024), profitability plays an important role in company value because it is a measure of the company's operational success. This is in line with Brigham & Houston's signal theory in Gustiyani (2024) that high profitability of a company will provide a positive signal to investors and the market. Due to the company's ability to generate profits, profitability is used as a control for other variables that affect company value.

There is a big challenge for companies to balance capital intensity and environmental costs to increase company value. The purpose of this study is to understand the impact of capital intensity and environmental costs on company value with profitability as a control variable to ensure the accuracy of the relationship analysis. The results are expected to provide a basis for companies in making strategic decisions that not only increase company value but also ensure operational sustainability amidst increasingly complex environmental demands.

II. LITERATURE REVIEW

A. Stakeholder Theory

Edward Freeman (1984) stated that stakeholder theory emphasizes the importance of companies to pay attention to the interests of various parties that affect the company's operations, both directly and indirectly (Freeman & McVea, 2001). According to this theory, decision making involving stakeholders is very important in achieving the company's long-term value (Danielson et al., 2024). Stakeholder management is used to manage relationships with groups and individuals who influence and are influenced by company decisions. Gutterman (2023) argues that the survival and success of an organization is highly dependent on the organization's ability to manage stakeholders.

Stakeholders in the corporate context include investors, government, local communities, consumers, and environmental institutions (Berliandaldo, 2021). Business sectors, especially those that impact the environment, face challenges related to environmental impacts, such as carbon emissions and exploitation of natural resources. Therefore, attention to stakeholder interests is very crucial. Good stakeholder management not only focuses on short-term profits, but also prioritizes long-term sustainability (Ardiansyah et al., 2024). Companies that allocate environmental costs appropriately to minimize the negative impacts of their operations demonstrate a commitment to stakeholder expectations (Nurhidayat et al., 2020). This not only creates a positive reputation, but also increases consumer loyalty, reduces the risk of conflict with the community, which ultimately has an impact on increasing the value of the company.

B. Signal Theory

Developed by Michael Spence in 1973, this theory discusses how companies give signals to external parties to reduce information asymmetry (Mahendra, 2023). In the context of a company, these signals can be in the form of financial reports, environmental performance, and management policies. A positive signal is a description of the company's ability to manage the company, so that this signal will be a marker for investors in deciding on investments which will then have an impact on the company's value (Putri Vica Sari & Mahroji, 2023). This shows the company's commitment to sustainability, because it reflects a positive signal that is innovative, responsible, and has long-term prospects.

Environmental costs are one of the important signals that play a role in spending on waste management technology or environmental certification that shows compliance with regulatory standards or environmental risk mitigation (Irawan, 2019). This signal provides confidence to investors that the company is able to manage environmental and social challenges effectively, thus impacting market confidence in the company. Hapsari (2023) said that the role of financial reports and sustainability disclosures that are consistently disclosed can be a signal that can strengthen the company's position and increase the company's value.

C. Capital Intensity

Capital intensity refers to the amount of investment in fixed assets to run operations and generate revenue (Dewi et al., 2024). The energy, transportation, and industrial sectors have high capital intensity because they require large investments in equipment, infrastructure, and technology to support production (Pertamina Energy Institute, 2022). In the context of company value, high capital intensity can be a positive indicator for investors, as it reflects solid investment in infrastructure development and the application of renewable technologies.

Fauzy et al. (2023) stated that capital intensity shows the amount of investment allocated to fixed assets then divided by sales. This makes it possible to measure the efficiency of capital allocation and determine its effect on company value. Capital intensity is also mentioned by Syafrizal & Sugiyanto (2022), that good capital intensity management can contribute to increasing company value through higher efficiency and reducing operational risk. Previous research (Septian et al., 2024) shows that capital intensity contributes to increasing company value through increasing efficiency and reducing operational risk. Good capital

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intensity management reflects management's ability to allocate resources effectively which ultimately increases market confidence. In the long term, this can strengthen the company's competitiveness in the increasingly competitive global energy market.

D. Environmental Costs

Cost is something that is sacrificed or incurred with the aim of getting benefits (Almunawwaroh et al., 2022) . So that environmental costs are used to minimize negative impacts on the environment in the form of prevention costs, detection, internal failures, and external failures (Hansen & Mowen, 2008) . In line with the opinion of Aliamutu et al. (2023) that environmental costs are needed to restore the environment to a better condition. In many business sectors, especially those that are in contact with the environment, environmental cost management is very relevant given the high pressure from regulators and the public to reduce the impact of operations (Eku & Hasnawati, 2024) .

Although environmental costs are considered a burden, on the other hand, it can be a signal that the company has a mature sustainability strategy towards sustainability (Wicaksono, 2024) . Companies that are able to allocate environmental costs effectively show that they have good risk management and can improve their reputation in the eyes of investors. A study by Nuzula (2019) found that companies that allocate environmental costs well tend to have higher company values because they are considered to have better risk management and a positive reputation among stakeholders.

E. Profitability

Measuring the ability to generate a company's profit can be shown by profitability. This point not only describes financial performance but is also the key to the health and success of the company according to Hinton (2021) . Profitability functions to show the ability of capital invested by investors to make a profit or gain (Setiawan, 2022) . Investors and other stakeholders use profitability as an assessment of the company in fulfilling obligations. The ROA (Return on Assets) ratio is used to measure financial performance capabilities by utilizing assets as a measure of profit (Didar, 2019) . Increasing financial performance on an ongoing basis will guarantee the growth of the company's value. Earnings power from assets will determine the increasing value of the company (Vilantika & Santoso, 2022) .

F. Company Values

Company value as an important indicator that reflects market perception of the company's success in achieving financial and non-financial goals (Yuliandhari & Nurramadhani, 2024) . Optimal company value will affect investor follow-up in making investment decisions. This point is the main focus for investors. The potential success of a management in managing a company is seen from the company's value (Nainggolan, 2024) . Company value is influenced by the company's ability to manage environmental and social challenges amidst changing regulations and stakeholder expectations (Rachman et al., 2024) .

Investment in appropriate capital intensity and effective environmental cost management can create a positive perception (Zhafira et al., 2024) . For example, companies that demonstrate efficient use of capital and compliance with environmental standards will be viewed as entities that have long-term prospects. Sulbahri's research (2021) shows that company value can increase if the company succeeds in building a reputation as a socially responsible and sustainable entity. This is crucial in the energy sector, given the high level of attention to the environmental impact of the company's operational activities.

III. RESEARCH METHODS

This study focuses on companies in the energy, industry, and transportation sectors listed on the Indonesia Stock Exchange. These sectors were selected based on their significant contribution to national economic growth, as well as their significant environmental impact. This study aims to analyze the relationship between capital intensity and environmental costs on firm value. In addition, it provides a deeper understanding for decision makers in companies, investors, and policy makers in formulating sustainable business strategies.

The panel data used in this study covers the last three years, allowing observation of the dynamics of the relationship between research variables over time. The selection of these sectors as the focus of the study is based on the variation in company characteristics in each sector, as well as the diversity in the application of environmental regulations. With this approach, the research findings are expected to provide deeper and more relevant insights in the context of business and environmental policy in Indonesia.

A. Types of research

This study uses a quantitative method with a panel data design. The panel data approach was chosen because it is able to analyze the relationship between capital intensity and environmental costs on firm value based on time (time series) and cross section (between firms) according to Howles (1950) in Alamsyah et al. (2022) . The combination of time series and cross section

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elements allows for a more comprehensive analysis of the dynamics of the relationship between variables (Nur et al., 2022). This analysis aims to provide an in-depth picture of the internal and external influences on firm value.

B. Data source

The data sources in this study were obtained secondary from the Indonesia Stock Exchange (IDX) and official publications of each company. The primary data includes financial statements (balance sheet, income statement, and cash flow statement) used to calculate the research variables of capital intensity and company value. In addition, sustainability reports are used to obtain information related to environmental costs incurred by the company. As a complement, additional data in the form of stock prices and market capitalization are also used to provide further context regarding the dynamics of company value in the capital market. All data selected are based on appropriate validity and accuracy, according to research needs. Data sources are verified to ensure compliance with research objectives.

C. Research Variables and Measurement

1. Capital Intensity

In the context of a company, capital intensity reflects the investment needs used to support infrastructure and business operations. This variable measures how far a company allocates capital to generate revenue (Rafida & Pratami, 2023). The concept of capital intensity is used to measure a company in producing an output. The higher the capital intensity, the more capital will be generated to produce the output (Cahyo & Napisah, 2023). In this study, capital intensity as an independent variable is analyzed to understand its effect on company value in the energy, industry, and transportation sectors. Company value is a reflection of creating market confidence. Capital intensity measurement uses CIR (Capital Intensity Ratio) with the following formula:

$$CIR = \frac{\text{Total Aset}}{\text{Total Penjualan}}$$

Avivi (2021) stated the interpretation of the CIR calculation, if the higher it indicates that the company uses assets to generate sales, and vice versa. The data collected is taken from financial reports. Thus, the analysis of this variable is to identify the dynamics of capital use that impact the company's value.

2. Environmental Costs

Environmental costs reflect a company's responsibility for sustainability. These costs can be an investment that builds a company's reputation or be considered a burden that reduces profitability. Companies use environmental costs as expenses to address the negative impacts of their business activities on the environment (Rahayudi & Apriwandi, 2023). It is one of the important factors that companies need to consider. Although it affects expenses, in the long term it will benefit the company and the environment (Putri et al., 2024). In line with the statement of Adyaksana & Pronosokodewo (2020), environmental costs are a form of participation in preserving the environment but must still pay attention to the company's profits. Subaida & Pramitasari (2023) stated that environmental costs are measured by the ratio:

$$\text{Biaya Lingkungan} = \frac{\text{Biaya}}{\text{Laba Bersih}}$$

3. Profitability

Profitability as financial performance according to Spence's signal theory (1973) in Mahendra (2023), provides a positive signal to investors regarding financial stability that will contribute to increasing the company's value. Measuring the company's ability using the ROA (Return on Assets) ratio by utilizing existing asset sources (Sofiani & Siregar, 2022). Investors use ROA to assess the company's ability to manage assets into profits and make it the main indicator for assessing the company's effectiveness in the future. ROA reflects the company's efficiency in managing assets, the higher the ROA, the better the company's performance. The ROA calculation formula is as follows:

$$ROA = \frac{\text{Laba Bersih}}{\text{Total Aset}}$$

4. Company Values

The size of the company's value reflects the market's perception of the company's future prospects. A form of public trust in the company's success in managing. High company value is the desire of company owners because it can guarantee the prosperity of shareholders (Annisa et al., 2023). Measuring company value using Tobin's Q calculations with the consideration that the indicator refers to the stock price in the year in question, indicates company management, long-term performance options that

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take into account long-term prospects, and describes investment opportunities in the company (Nainggolan, 2024) . Measuring company value using Tobin's Q as follows:

$$\text{Tobin's Q} = \frac{\text{Nilai Pasar Ekuitas} + \text{Nilai Buku Utang}}{\text{Total Aset}}$$

Interpretation of the calculation, if the value of Tobin's Q > 1 then the market values the company higher than its book value, indicating that the company has good prospects. Then if the value of Tobin's Q < 1 then the company is considered less efficient in using its assets to create value.

D. Method of Collecting Data

The data collection technique uses secondary data, sourced from the Indonesia Stock Exchange (IDX) and the official website of each company. The study covers an observation period of 3 consecutive years, namely the period 2021-2023. Based on the data collected, a population of 285 data consisting of 95 companies was obtained. Furthermore, the sample was determined using the purposive sampling method according to the criteria of the research objectives that had been formulated (Sugiyono, 2020) . The sample criteria include companies engaged in the energy, industry, and transportation sectors. Then companies that carry out financial reporting related to the variables studied. A sample of 62 companies was obtained so that there were 186 data to be processed.

E. Data Analysis Techniques

1. Descriptive analysis

The descriptive analysis function is used to find out the general picture of each variable studied (Hikmawati, 2020) . Sugiyono (2020) explains that the analysis describes the collected data as it is by looking at the descriptive statistics table.

2. Classical Assumption Test

a. Normality Test

Conducting a normality test as a procedure that the research data meets the criteria for normal distribution (Gusnadi & Nurhadi, 2023) . The normality test is used to ensure that assumptions are met so that the results of the analysis can be relied on. Detecting normal data can use Kolmogorov-Smirnov (KS) with the test results showing a significance value (p-value) > 0.05 meaning the data is normally distributed, and a significance value (p-value) < 0.05 means the data is not normally distributed (Quraisy, 2022)

b. Multicollinearity Test

The multicollinearity test aims to ensure that there is no correlation between independent variables (Indri & Putra, 2022) . If there is a relationship between variables, it is called multicollinearity, and the regression model is said to be bad (Ghozali, 2009:95). Determining whether or not there is multicollinearity is done by decision making, if the tolerance value (α) > 0.10 and the VIF value < 10 then it is free from multicollinearity. Conversely, if the tolerance value (α) < 0.10 and the VIF value > 10 then multicollinearity occurs.

c. Autocorrelation Test

Autocorrelation test is conducted to ensure that there is no relationship between residuals in the regression model. If the regression model is free from autocorrelation, it can be said to be good (Ghozali, 2009:100). The Durbin Watson Test (DW Test) is one way to test autocorrelation with the conclusion that if the DW value is between -2 and 2, there is no autocorrelation (Lesmana, 2021) .

d. Heteroscedasticity Test

It is done to assess whether or not there is a similarity of variance between observations (Ghozali, 2009:125). The regression model is said to be good if there is no heteroscedasticity or homoscedasticity, namely the level of significance value > 0.05. Glejser's test is needed to regress the residual value against the independent variable (Indri & Putra, 2022) .

3. Hypothesis Testing

a. t-Test (Partial)

This test shows the effect of each independent variable on the dependent variable (Ghozali, 2009:88). Consisting of independent samples t-test to compare the average of two different conditions, and paired samples t-test on the same two conditions (Akbar et al., 2023) . The test results are decided based on the significant value of the p-value if < 0.05 then the variable has a significant effect, while if > 0.05 then there is no significant effect. Then based on the comparison of the calculated t value with the t table.

b. F Test (Simultaneous)

Testing independent variables collectively has a significant effect on the dependent variable. The decision-making criteria according to Ghozali (2009:88) is with a level of 5% in the f test is said to have an effect if the significant value F < 0.05 then H_0 is

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rejected and H_1 is accepted. Likewise, if the significant value $F > 0.05$ then H_0 is accepted and H_1 is rejected.

c. Coefficient of Determination (R^2)

The use of the coefficient value of determinant $0 < R^2 < 1$ to measure the influence of the dependent variable on the independent variable. The value of R^2 ranges from 0 to 1. The ability of the independent variable is said to be limited if the value of R^2 approaches 0, and vice versa.

4. Multiple Linear Regression Analysis

Statistical method used to predict the value of an independent variable based on two or more independent variables. Reveals a panel regression model based on the use of time series and cross section (Indri & Putra, 2022). This multiple regression model can be formulated as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Information:

Y	= dependent variable
α	= constant
β	= regression coefficient
X	= independent variable
ε	= error term Interpretation of coefficients

IV. RESULTS AND DISCUSSION

A. Research result

1. Descriptive Statistical Analysis

Table II. Test Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Capital Intensity	186	,000001	1,000000	,33521469	,258024460
Environmental Costs	186	,000000	,572082	,01460151	,068248814
Profitability	186	,000136	,874599	,12562948	,143936988
Company Values	186	,007612	7.299933	1.33299314	1.285473064
Valid N (listwise)	186				

Source: Data processed using SPSS 21, 2024

Of the four variables, the company value as the dependent variable shows the largest range of values (0.0076 to 7.299), and environmental costs as the independent variable show the smallest range of values (0.0000 to 0.5720) indicating that most companies in the sample have a low proportion of environmental costs. And the largest average value of 1.333 reflects a significant variation in company values in the analyzed sample.

2. Classical Assumption Test

a. Normality Test

Table III. Kolmogorov-Smirnov Test Results

Unstandardized Residual		
N		186
Normal Parameters ^{a,b}	Mean	,0000000
	Std. Deviation	,88733986
Most Extreme Differences	Absolute	,098
	Positive	,073
	Negative	-,098
Kolmogorov-Smirnov Z		1,302
Asymp. Sig. (2-tailed)		,067
a. Test distribution is Normal.		
b. Calculated from data.		

Source: Data processed using SPSS 21, 2024

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The use of normality test as a statistical method is used to measure the normality or otherwise of the distribution of the sample data obtained. The regression model can be said to be good if the regression model is normally distributed or close to normal. Based on table 3, the results of data processing using the Kolmogorov-Smirnov test, the Asymp. Sig. (2-tailed) value obtained is 0.067, which is greater than 0.05, which means that the data is normally distributed. So it can be concluded that the data can be continued for data processing.

b. Multicollinearity Test

This analysis is to determine the relationship between independent variables, or to detect the level of correlation between two or more independent variables. Multicollinearity testing is expressed by the tolerance value (α) and Variance Inflation Factor (VIF). The test result table can be seen as follows:

Table IV. Multicollinearity Test Results

Coefficient		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	Capital Intensity	,882	1,134
	Environmental Costs	,909	1,100
	Profitability	,963	1,038

a. Dependent Variable: Company Value

Source: Data processed using SPSS 21, 2024

The results of the multicollinearity test in table 4 show tolerance values (α) of 0.882; 0.909; 0.963. All three tolerance values are greater than 0.10. Meanwhile, the Variance Inflation Factor (VIF) shows values of 1.134; 1.100; 1.038. All three VIF values are less than 10.00. It is concluded from the tolerance and VIF values that there are no symptoms of multicollinearity, so that the relationship between independent variables does not interfere with each other.

c. Autocorrelation Test

Autocorrelation is used to detect whether or not there is a correlation between residual values, or can be interpreted as independent. Correlation occurs when the residuals in one observation are correlated. This test can be done using the Durbin-Watson method, the results of which can be seen in the table below:

Table V. Autocorrelation Test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,352	,124	,109	,89496	,950

a

a. Predictors: (Constant), LN21, LN22, LN23

b. Dependent Variable: Company Value

Source: Data processed using SPSS 21, 2024

The conclusion of the test results, the Durbin-Watson value is known to be 0.950. This value is in the interval - 2 to 2, so it can be ascertained that the linear regression model does not have autocorrelation symptoms.

d. Heteroscedasticity Test

The use of heteroscedasticity test aims to detect inconsistencies in variability at various levels of variables. If heteroscedasticity occurs, then the residual variance is not uniform, causing the results to be biased and less reliable.

Table VI. Heteroscedasticity Test

Coefficients

Model	Sig.	Collinearity Statistics	
		Tolerance	VIF
1	(Constant)	,202	
	Capital Intensity	,643	,882
	Environmental Costs	,060	,909
	Profitability	,837	,963

a. Dependent Variable: Company Value

Source: Data processed using SPSS 21, 2024

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Table 6 significant value coefficients show 0.643; 0.060; 0.837 greater than 0.05. So there is no symptom of heteroscedasticity, so the regression model meets the assumption of homoscedasticity.

3. Hypothesis Testing

a. t-Test (Partial)

The use of the t test is carried out to determine the effect of each independent variable on the dependent variable. Comparing the calculated t with the t table, and using a statistical table at a significant 5%. At the degree of freedom $df = (nk-1)$ or in this study, namely $df = (186-4-1) = 181$. So that the t table is 1.973. Then the calculated t is also analyzed in the following table:

Table VII. t-test

Model	t	Sig.	Collinearity Statistics	
			Tolerance	VIF
(Constant)	3,889	,000		
1 Capital Intensity	1,272	,205	,882	1,134
Environmental Costs	2,764	,006	,909	1,100
Profitability	4,036	,000	,963	1,038

a. Dependent Variable: Company Value

Source: Data processed using SPSS 21, 2024

Based on table 7 above, it can be analyzed that capital intensity has a value of $t = 1.272 < 1.973$ with a significance of $0.205 > 0.05$, meaning that capital intensity does not affect the value of the company. Environmental costs have a value of $t = 2.764 > 1.973$ with a significance of $0.006 < 0.05$, meaning that environmental costs affect the value of the company. Profitability has a value of $t = 4.036 > 1.973$ with a significance of $0.000 < 0.05$, meaning that profitability affects the value of the company.

b. f-test (Simultaneous)

The results of the f test provide an overview of the relationship between independent variables together with the dependent variable. Decision making is based on comparing the calculated f with the table f, and using a statistical table at a significance of 5%. At the degree of freedom $df = (nk-1)$ or in this study, namely $df = (186-4-1) = 181$. So that the f table is 2.65. Then the calculated f is also analyzed in the following table:

Table VIII. f test

ANOVA						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1 Regression	19,703	3	6,568	8,200	,000 ^b	
Residual	139,365	174	,801			
Total	159,068	177				

a. Dependent Variable: Company Value

b. Predictors: (Constant), LNZ1, LNX2, LNX1

Source: Data processed using SPSS 21, 2024

In the table above, it is known that the calculated f value is $8.200 > f$ table 2.65 with a significant value of $0.000 < 0.05$. So it can be concluded that the variables of capital intensity, environmental costs, and profitability simultaneously have a significant effect on company value.

c. Determinant Coefficient Test (R^2)

The determinant coefficient test functions to measure the ability of the model formed in explaining the variation of the independent variable. Measured by the proportion or percentage of variation in the dependent variable explained by the independent variable.

Table IX. Determinant Coefficient Test

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	,352 ^a	,124	,109	,89496	,950

a. Predictors: (Constant), LNZ1, LNX2, LNX1

b. Dependent Variable: Company Value

Source: Data processed using SPSS 21, 2024

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Based on the results of the tests that have been carried out, R² was obtained as much as 0.109, meaning that 0.109 can be interpreted that the independent variable is able to explain the dependent variation of 10.9%. While the remaining 89.1% is explained by other variables that are not included in this research model.

d. Multiple Linear Regression Analysis

The results of this analysis are used to assess the validity and reliability of the model, as well as draw conclusions based on the analyzed data. The following are the results of data processing from the linear regression model:

Table X. Multiple Linear Regression Analysis

Model	Unstandardized		Standardized	t	Sig.	Collinearity	
	Coefficients					Beta	Statistics
	B	Std. Error	Tolerance	VIF			
(Const)	1,065	,274		3,889	,000		
1 LNX1	,042	,033	,096	1,272	,205	,882	1,134
LNX2	,081	,029	,206	2,764	,006	,909	1,100
LNZ1	,169	,042	,292	4,036	,000	,963	1,038

a. Dependent Variable: Company Value

Source: Data processed using SPSS 21, 2024

In table 10, the test results can be analyzed, which show the following:

$$Y = 1.065 + 0.042 X_1 + 0.081 X_2 + 0.169 X_3 + \epsilon$$

The analysis that can be obtained from the data processing results, at a constant value of 1.065 shows that if all independent variables have a value of 0, then the dependent variable has a value of 1.065. The influence of the profitability variable (0.169) is greater than capital intensity (0.042) and environmental costs (0.081), meaning that profitability makes a more significant contribution to increasing company value than other variables.

B. Discussion

1. Relationship between Capital Intensity and Firm Value

Based on the results of the t-test with t count 1.272 > t table 1.973, with a significant value of 0.205 > 0.05. This shows that capital intensity has no effect on company value. Capital intensity, which represents how much investment the company allocates for capital, does not have a significant impact on company value. This insignificance may indicate that companies in the studied sector have not effectively utilized their capital to drive increased company value. Indicates that the management or use of capital by companies in the research sample has not been directed effectively. Lack of strategies oriented towards capital productivity or direct links between invested capital and factors considered important by investors. Investors may not view capital intensity as a determinant of company value. There needs to be an evaluation of capital management so that it can be used more strategically, such as increasing operational efficiency. The results of this study are in line with the research results of Naibaho & Widiyati (2024) and Supia et al. (2021). However, these results differ from the research of Ismiati et al. (2023) that capital intensity has an effect on company value.

2. Relationship between Environmental Costs and Company Value

The t-test value with t count 2.764 > t table 1.973 and a significant value of 0.006 < 0.05 indicates that environmental costs have a significant effect on company value. Investment in environmental management can provide economic benefits. Environmental costs illustrate the company's commitment to managing environmental impacts, such as investing in environmentally friendly technology or costs to comply with environmental regulations. This supports the theory that environmental costs can strengthen a company's image, attract consumers, or reduce risk. Commitment to the environment can also reduce risks such as sanctions due to regulatory violations which indirectly improve the company's financial performance. The need for companies to increase investment in environmentally friendly technology is a way to support sustainability. Allocation of costs to the environment can make investors or other stakeholders believe so that it has an impact on increasing the company's value. In line with the research of Renaldi & Anis (2023) by presenting relevant environmental costs, the company can improve its image so that it has an effect on the company's value. However, research by Ahmad et al. (2024) obtained different results, that environmental costs have no effect on company value because investors prioritize factors rather than environmental costs to invest.

3. Relationship between Profitability and Company Value

The results of the t-test with t count 4.036 > t table 1.973, and a significant value of 0.000 > 0.05 explain that profitability has a significant influence on company value. Profitability reflects the company's ability to generate profits which should be an

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important indicator for investors in assessing the company's performance and prospects. Profitability reflects the company's operational efficiency, ability to manage costs, and the success of the business strategy implemented. It is a significant factor because it is the main indicator in influencing company value. The need for companies to maintain their profitability by increasing operational efficiency, managing costs effectively, and exploring growth opportunities that can provide added value for shareholders. Kusumaningrum & Iswara (2022) obtained the same results that profitability affects company value because this indicator will describe the condition of a company so as to increase investor confidence in investing their capital. This is different from Sari's opinion (2021) that shareholders view the company's performance as less effective in running its assets so that they pay less attention to this indicator in making investments.

4. Simultaneous Relationship to Firm Value

Based on the results of the f test, it shows that f count is 8.200 > f table 2.65 with a significant value of 0.000 < 0.05. This shows that the combination of the three variables simultaneously has a significant effect on the value of the company. Although capital intensity is not partially significant, its existence together with other variables still contributes to increasing the value of the company. Companies need to integrate various aspects in business strategy, especially profitability and environmental sustainability to increase competitiveness. Although the contribution in this model is relatively small (10.9%), it is also necessary to consider in further research on other variables that can affect the value of the company.

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