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Influence of Carbon Emission Disclosure, Green Innovation, and Media Exposure on Firm Value

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ABSTRACT

The objective of this research is to investigate how publicizing carbon emissions, implementing eco-friendly innovations, and gaining media coverage can impact the overall worth of a company. The study involved an examination of yearly reports, sustainability reports, and company websites belonging to energy sector businesses trading on the Indonesia Stock Exchange from 2019 to 2023. This research examined 16 energy sector companies listed on the Indonesia Stock Exchange between 2019 and 2023, using a purposive sampling method. The study relied on secondary data, including annual reports, sustainability reports, and the official websites of the selected companies. This study utilizes several variables, including Carbon Emissions Disclosure (X1) as the first independent variable, Green Innovation (X2) as the second independent variable, and Media Exposure (X3) as the third independent variable. Meanwhile, Firm Value (Y) serves as the dependent variable. In this study, the research methodology involves utilizing panel data regression. EViews 12 Student Version Lite software is employed to analyze the research findings. It was determined that the Common Effect Model (CEM) performed the best among all the models evaluated. The findings of this study reveal that Carbon Emissions Disclosure, when considered individually, does not influence Firm Value. Green Innovation, on the other hand, has a partial effect on Firm Value, while Media Exposure shows no partial impact. However, when analyzed simultaneously, Carbon Emissions Disclosure, Green Innovation, and Media Exposure collectively influence Firm Value.

Keywords: Carbon Emissions Disclosure, Green Innovation, Media Exposure, Firm Value

1. Introduction

Global warming is a phenomenon in which the Earth's temperature increases above average. Most people argue that human activity is the main factor causing the increase in global temperatures. The release of these greenhouse gases causes the earth's temperature to rise (*Efek Pemanasan Global*, 2024). The lack of awareness about the importance of environmental sustainability that is often seen in industrial practices is one of the main factors leading to GHG emissions, which in turn will have a major impact on global warming. These greenhouse gas emissions are caused by human activities related to various industrial and business activities (Damas et al., 2021). A firm's dedication to environmental protection is closely tied to the sustainability of its operations. To align with the Triple Bottom Line approach, which considers Planet, People, and Profit, businesses must disclose potential risks related to their activities. One of the most effective ways for businesses to provide relevant information is through transparency in annual reports and sustainability reports. Through these reports, companies can provide stakeholders with better insight into the efforts that have been made both in financial information and in maintaining environmental and social sustainability (Anggraeni, 2015).

Companies can reduce environmental and social impacts by implementing an environmentally friendly approach. Companies that implement sustainability consistently can increase long-term corporate value.

Firm value is determined by the price a potential buyer is willing to pay for it in the event of a sale or change in ownership. A company's worth can be observed by looking at its stock value, which is influenced by the dynamic relationship between supply and demand in the financial market (Alabdullah & Kanaan-Jebna, 2023). Additionally, it reflects public opinion regarding the company's overall achievements. The perception of the company by its stakeholders plays a significant role in shaping its reputation and long-term viability. Maintaining a positive image in front of stakeholders, especially investors, is one of the key strategies in facing the challenges of a competitive business world. Because a company with a good reputation will be more trusted by investors, which in turn can strengthen its position in the market. If the firm is able to maintain a harmonious relationship with stakeholders and create a positive image, the impact will be directly seen in improving company performance, strengthening share value, and better operational sustainability in the market (Anggraeni, 2015)

One of the key determinants of a company's worth is the transparency in reporting carbon emissions. Transparency in reporting carbon emissions plays a crucial role in promoting the long-term viability of a business. It reflects the company's dedication to transparency and environmental responsibility. This disclosure also helps businesses identify risks associated with regulatory changes, energy price fluctuations, and increasing customer demand for environmentally friendly operations. Well-done disclosures can also help businesses comply with increasingly stringent carbon emissions standards and increase customer and investor confidence (Rizqillah et al., 2022).

According to the Department of Energy and Mineral Resources, reducing greenhouse gas (GHG) emissions is a key goal for Indonesia. Energy sector emissions should be reduced by 123.22 million tons of CO2 by 2023, surpassing the previous target of 116.45 million tons. The goal is 358 million tons of CO2 by 2030 (Adi, 2024).

One company that strives to reduce carbon emissions is PT Adaro Energy Indonesia Tbk. From the Liputan 6.com website, the company managed to reduce emissions by 126,915 tons of CO_2, reduce energy consumption by 1,143,399 joules, and achieve water efficiency of 803,646 m^3 by June 2023. In addition, Adaro developed the Menanti Laburan Tourism Park in Tabalong as part of its post-mining program that focuses on the environment and community empowerment. For these efforts, for the sixth time, Adaro received the Gold PROPER award from the Ministry of Environment and Forestry (Deny, 2023).

The second factor that affects firm value is green innovation. In addition to disclosing carbon emissions, one of the tactics that businesses can use to expand their operations in the face of increasing competition in a sustainable and healthy way is green innovation. This innovation, which is closely related to environmental preservation, focuses on implementing environmentally friendly solutions in every aspect of the company's operations. Creating this type of innovation necessitates a substantial financial and time commitment, but the rewards over time are notable. Companies can enhance their image and market position by implementing green innovation, which not only increases efficiency and minimizes environmental harm but also attracts investors and customers, leading to new prospects for growth. This type of creativity positively influences not just the continuity of businesses, but also on environmental sustainability, which is becoming increasingly important in this modern era (Dewi & Rahmianingsih, 2020).

The third factor affecting firm value is media exposure. In addition to the scope of the environment, what supports the increase in companies today is the media. Media exposure acts as a channel that can accommodate a wide variety of information. Through media exposure, outsiders can get a clear picture of the state and development of a company. In addition to providing transparency to the public, this also provides an opportunity for the business world to attract potential investors. With information spread through the media, companies can be more easily found by potential investors, who in turn can provide financial and strategic support to support the growth and progress of the company (Puspita Sari, 2022).

This research is a replication of research by Damas et al. (2021). The difference lies in the independent variable where the researcher does not use the eco-efficiency variable, but replaces it with media exposure because the researcher considers the media to be very important in the development of the times, especially

nowadays and researchers are also aiming to determine how media coverage impacts the value of a company. Hence, the focus of this study is on the impact of disclosing carbon emissions, implementing environmentally friendly innovations, and media exposure on a company's value.

2. Literature Review

2.1. Stakeholder Theory

Stakeholder Theory offers a holistic perspective on managing a business, this theory seeks to identify, understand, and involve various parties or constituents who are directly or indirectly concerned with the decisions and actions made by the organization. This approach highlights that businesses have obligations to various other stakeholders who are affected by the operations and results of these business activities in addition to shareholders or investors (Beckman et al., 2016). To achieve sustainability, managers must disclose information to stakeholders about their environmental performance (Tauringana & Chithambo, 2015).

2.2. Firm Value

Firm value is measured by the market value of its common stock. Another method to assess a company's value is by analyzing how well the company is performing, as demonstrated by the changes in the buying and selling of its stocks on the stock exchange. The supply and demand of shares represents how society perceives the success of the company. The value of a company's stock is a true reflection of how the public perceives its success, as it is influenced by how many people are buying and selling in the market, which leads to the trading of securities between companies and shareholders. The term used to describe this partnership is known as market equilibrium. Increasing company value is one way to achieve the company's normative goal of maximizing shareholder wealth. Shareholder wealth increases as the company's share price rises. Businesses that have high stock prices are typically seen as having a high overall worth due to their perceived ability to enhance the well-being of their shareholders. This study uses Tobin's Q ratio to calculate firm value (Triyani & Rusmanto, 2023).

2.3. Carbon Emissions Disclosure

Carbon emission occurs when carbon is released into the atmosphere as a result of burning fossil fuels. This activity leads to the emission of carbon dioxide gas into the air, which in turn contributes significantly to a relatively rapid increase in global temperature or global warming. The implementation of the Kyoto Protocol has significant implications in the form of the introduction of the concept of carbon accounting. This idea stresses the significance of businesses conducting a sequence of actions that involve identifying, assessing, documenting, showcasing, and revealing the carbon emissions produced in their day-to-day operations. Furthermore, there is also the requirement for reporting carbon emissions in detail, which offers extensive data on the amount of carbon emissions discharged by the organization. The report further discusses the measures being implemented by the organization to control carbon emissions, highlighting the financial implications and outlining plans to address the obstacles presented by climate change (Irwhantoko & Basuki, 2016). Using this method, businesses are required to be environmentally conscious and open in providing information to stakeholders on how they support climate change mitigation efforts and promote environmental sustainability.

2.4. Green Innovation

Green innovation is a corporate strategy approach that incorporates environmental considerations into all of its operations, from product distribution to production. It involves creating new environmentally-friendly techniques, such as maximizing resource efficiency, minimizing the use of harmful chemicals, and working to stop pollution and reduce adverse impacts on the environment. Businesses that use green innovations not only improve operational effectiveness but also support environmental sustainability (Damas et al., 2021).

2.5. Media Exposure

Media exposure is a business operation or event that has an effect on society and the environment and is reported or covered by the media. Media coverage is a form of public pressure and a way for people or

communities to show support for a business. Public scrutiny is facilitated by media coverage of environmental and social issues resulting from business operations, which also puts pressure on businesses to reduce conflicts associated with these issues and to be more careful and concerned about them. Because it allows businesses to disseminate financial and non-financial information, the media is a very important tool for businesses (Widiastuti et al., 2018).

3. Methodology

3.1. Type of Research

This research utilizes quantitative research techniques combined with descriptive methodologies. Referring to Sugiyono (2019), in quantitative research, researchers focus on examining particular groups or samples, collecting data using various research methods, analyzing numerical data, and evaluating predetermined hypotheses.

3.2. Data Source

The focus of this study is on energy sector firms that are recognized on the Indonesia Stock Exchange from 2019 to 2023. The study makes use descriptive statistics and path analysis through the software Eviews 12. The purpose of this examination is to give an overview of the research factors based on various data points including quantity, maximum, minimum, average, scope, and standard deviation. The writer in this text focuses on numerical data for analysis.

3.3. Operational Variables

The researcher uses three categories of research variables: independent and dependent. Independent variables have an impact, while dependent variables trigger changes. In this study, firm value is influenced by disclosure of carbon emissions, green innovation, and media exposure.

Table 1. Operational Variables

No	Variable Types	Variables	Measurement Scale	
1	Dependent	Firm Value	$\text{Tobin'Q} = \frac{\text{Total Market Value} + \text{Total Book Value of Liabilities}}{\text{Total Book Value of Assets}}$	Ratio
2	Independent	Carbon Emissions Disclosure	$\text{CED} = \frac{\text{Number of items disclosed}}{\text{Number of disclosure items}}$	Ratio
3	Independent	Green Innovation	$\text{GI} = \frac{\text{Number of items disclosed}}{\text{Number of disclosure items}}$	Ratio
4	Independent	Media Exposure	Dummy Variable (Value 1 if revealed and 0 otherwise)	Ratio

3.4. Population and Sample

No	Criteria	Does Not Meet the Criteria	Total
1.	Energy sector companies listed on the Indonesia Stock Exchange (IDX) during the research period from 2019-2023.	(0)	83
2	Energy sector companies that publish annual reports and sustainability reports during the period 2019 to 2023	(67)	16
Total Companies that Meet the Criteria			16
Research Year			5 Years
Total Research Sample Data			80

The study used annual and sustainability reports from energy companies on the IDX website. It looked at energy companies listed on the Indonesia Stock Exchange from 2019 to 2023. 16 companies were chosen according to criteria, leading to 80 research observations over 5 years.

3.5. Research method

The research utilizes secondary data, collected by researchers. The information used in this study comes from the yearly financial statements of energy companies traded on the Indonesia Stock Exchange between 2019 and 2023. This dataset includes both sustainability reports and company financial statements.

3.6. Statistic Methods

Using the help of E-views software, multiple regression and path analysis were the statistical techniques used to evaluate the hypotheses. Following the completion of data collection for this research, statistical analyses were performed to evaluate the average, deviation, and range of the data. Subsequent tests were conducted to check for assumptions such as autocorrelation, heteroscedasticity, multicollinearity, and data normality. The study will employ multiple regression analysis to investigate the influence of independent variables on the dependent variable, along with utilizing path analysis to test the proposed hypotheses. Additionally, we will carry out model feasibility testing (including F and T tests) and determine coefficients of determination.

4. Results and Discussion

4.1. Descriptive Statistical Test Results

Table 2. Descriptive Statistical Test Results

	X1	X2	X3	Y
Mean	0.697875	0.728125	0.762500	1.231375
Median	0.780000	0.750000	1.000000	0.980000
Maximum	0.940000	1.000000	1.000000	12.61000
Minimum	0.060000	0.000000	0.000000	0.510000
Std. Dev.	0.227199	0.270354	0.428236	1.345580
Skewness	-0.971317	-1.336530	-1.233694	7.712463
Kurtosis	2.872737	4.333064	2.522002	65.57659
Jarque-Bera	12.63341	29.74103	21.05496	13845.86
Probability	0.001806	0.000000	0.000027	0.000000
Sum	55.83000	58.25000	61.00000	98.51000
Sum Sq. Dev.	4.077939	5.774219	14.48750	143.0363
Observations	80	80	80	80

Source: Data processed by Eviews 12

According to the findings of the calculations mentioned above, it is evident that a sum of 80 data points were utilized in this research, gathered over a span of 5 years from 16 different companies. The dependent variable (Y) is firm value, while the independent variables are disclosure of carbon emissions (X1), green innovation (X2), and media exposure (X3). Below is a detailed analysis of how each factor affected the results of the statistical tests.

1. The descriptive analysis of the Carbon Emissions Disclosure variable (X1) has varying values, including an average of 0.697875, a maximum of 0.940000, a minimum of 0.060000, and a standard deviation of 0.227199.
2. The descriptive analysis of the Green Innovation variable shows a wide range of values, with an average of 0.728125, a maximum of 1.000000, a minimum of 0.000000, and a standard deviation of 0.270354.
3. The Media Exposure (X3) variable has an average value of 0.762500, a maximum value of 1.000000, a minimum value of 0.000000, and a standard deviation of 0.428236, making its descriptive analysis valuable.
4. The Company Value (Y) variable was analyzed descriptively. The results show a wide range of values, with an average of 1.231375, a maximum of 12.61000, a minimum of 0.510000, and a standard deviation of 1.345580.

4.2. Classical Assumption Test Results

4.2.1. Normality Test Results

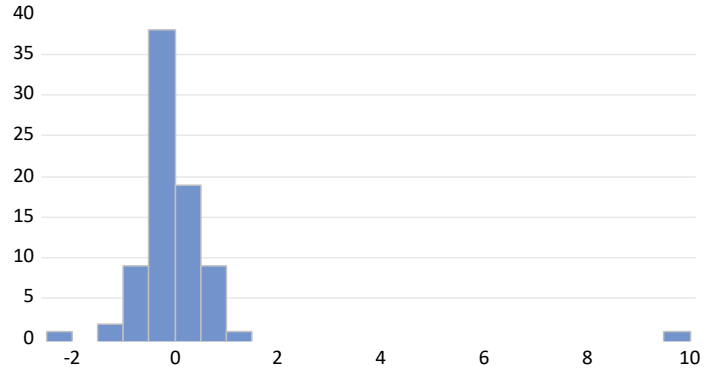

Figure 1. Normality Test Results

Source: Data processed by Eviews 12

The Histogram Curve image results indicate that the histogram bar curve graph has a shape similar to a normal curve (bell-shaped), which is skewed to the left, with a difference in width on the right and left sides. The model is not normally distributed, which means it is not typical in its distribution. However, researchers use the Central Limit Theory in the 1961 Central Theorem book which states that for large samples, especially more than 30 (n ≥ 30), it can be classified as normally distributed. And the sample used by researchers is 80> 30, so the data is normally distributed. (Ruth Pranadipta & Natsir, 2023).

4.2.2. Multicollinearity Test Results

Table 3. Multicollinearity Test Results

	X1	X2	X3
X1	1.000000	0.690112	0.170384
X2	0.690112	1.000000	0.063892
X3	0.170384	0.063892	1.000000

Source: Data processed by Eviews 12

The VIF values for X1, X2, and X3 are less than 10 in the results, namely 1.000000 each independent variable (1.000000 < 10), and the correlation coefficient of every independent variable is below 0.8, namely 1.000000 X1, 0.690112 X2, and 0.170384 X3 in each independent variable (1.000000 < 0.8), (0.690112 < 0.8), and (0.170384 < 0.8). This implies that the model does not experience multicollinearity.

4.2.3. Heteroscedasticity Test Results

Table 4. Heteroscedasticity Test Results

Dependent Variable: ABS(RESID)
Method: Panel Least Squares
Date: 11/30/24 Time: 12:47
Sample: 2019 2023
Periods included: 5
Cross-sections included: 16
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.704645	0.418349	4.074692	0.0001
X1	-0.229077	0.721047	-0.317701	0.7516
X2	-1.572858	0.598313	-2.628821	0.0104
X3	0.190760	0.277418	0.687626	0.4938

Source: Data processed by Eviews 12

According to the findings of this study, it has been determined that the Glejser Test value in the Heteroscedasticity test has a Prob value. X2 of 0.0104 <0.05 and X3 of 00104 <0.0, while Prob. X1 is 0.7516> 0.05. The probability value must be higher than 0.05 to show heteroscedasticity in the model. However, if the data does not cross the boundaries of 500 and -500, it can be considered to meet the requirements of the heteroscedasticity test, indicating that there is equal residual variance (Napitupulu et al., 2021).

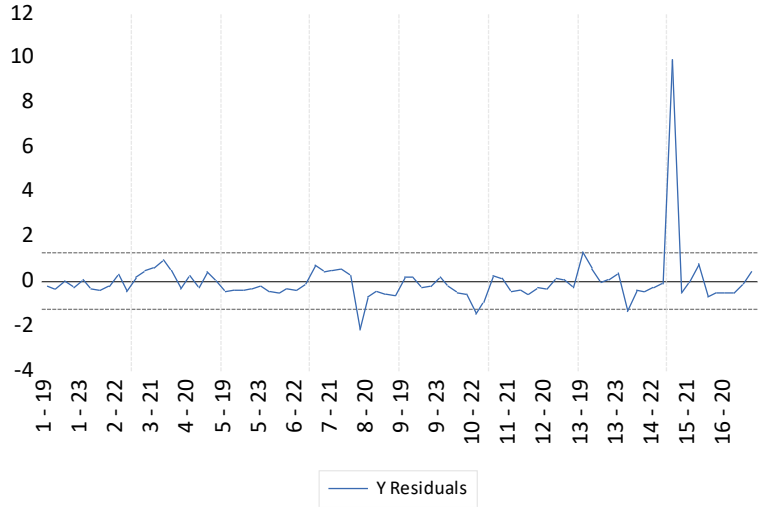

Figure 2. Residual Graph

Source: Data processed by Eviews 12

The residual variances are equal, as shown by the residual graph (blue color), as none of them cross the 500 and -500 boundaries. Therefore, neither the heteroscedasticity test results nor the symptoms are present.

4.2.4. Autocorrelation Test Results

Table 5. Autocorrelation Test Results

Dependent Variable: Y
Method: Panel Least Squares
Date: 12/01/24 Time: 20:40
Sample: 2019 2023
Periods included: 5
Cross-sections included: 16
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.483544	0.512016	4.850521	0.0000
X1	-0.280579	0.882486	-0.317941	0.7514
X2	-1.704484	0.732272	-2.327665	0.0226
X3	0.242253	0.339531	0.713492	0.4777

R-squared	0.143246	Mean dependent var	1.231375
Adjusted R-squared	0.109426	S.D. dependent var	1.345580
S.E. of regression	1.269827	Akaike info criterion	3.364345
Sum squared resid	122.5470	Schwarz criterion	3.483447
Log likelihood	-130.5738	Hannan-Quinn criter.	3.412096
F-statistic	4.235621	Durbin-Watson stat	1.235008
Prob(F-statistic)	0.008004		

Source: Data processed by Eviews 12

The DW test is specifically designed for detecting first order autocorrelation in a regression model that includes an intercept and does not involve log variables among the independent variables. Its purpose is to ascertain the presence of autocorrelation within the model. When determining whether autocorrelation is present, decision making is based on the Durbin-Watson (DW) statistic: (1) A DW value below -2 means positive autocorrelation. (2) A DW value between -2 and 2 means no autocorrelation. (3) A DW value above 2 means negative autocorrelation (Marus, Saulus et al., 2020). DW value of 1.235008 is between -2 to 2, meaning there is no autocorrelation.

4.2.5. Multiple Linear Regression Analysis Results

Table 6. Multiple Linear Regression Analysis Results

Dependent Variable: Y
Method: Panel Least Squares
Date: 12/01/24 Time: 21:23
Sample: 2019 2023
Periods included: 5
Cross-sections included: 16
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.483544	0.512016	4.850521	0.0000
X1	-0.280579	0.882486	-0.317941	0.7514
X2	-1.704484	0.732272	-2.327665	0.0226
X3	0.242253	0.339531	0.713492	0.4777

R-squared	0.143246	Mean dependent var	1.231375
Adjusted R-squared	0.109426	S.D. dependent var	1.345580
S.E. of regression	1.269827	Akaike info criterion	3.364345
Sum squared resid	122.5470	Schwarz criterion	3.483447
Log likelihood	-130.5738	Hannan-Quinn criter.	3.412096
F-statistic	4.235621	Durbin-Watson stat	1.235008
Prob(F-statistic)	0.008004		

Source: Data processed by Eviews 12

Based on the calculations shown above, the test results were determined using a multiple linear regression model with the provided equation:

$$\mathbf{Y = 2.483544 - 0.280579(X1) - 1.704484(X2) + 0.242253(X3)+ \varepsilon}$$

The equation provides an explanation that:

1) The constant in the equation indicates that when the independent variables do not change, the company value remains at 2.483544. This constant value signifies the stability of the relationship between the variables. As shown by the regression coefficients of - 0.280578, - 1.70448, and 0.242253, each addition (due to the + sign) of one score or communication value will result in an increase in the score of - 0.280578, - 1.70448, and 0.242253.

2) The coefficient for Carbon Emissions Disclosure in the regression analysis is -0.280578, which is not statistically significant at the 0.05 level determined by the researcher, thus the Carbon Emissions Disclosure variable is not significantly correlated with or essentially not linked to the Firm Value.

3) The Green Innovation variable has a regression coefficient of -1.70448, indicating a significance level of 0.0226. This value is below the standard error significance level set by the author, which is less than 0.05, the Green Innovation variable seems to have a noteworthy impact on the Firm Value.

4) The Media Exposure variable has a regression coefficient value of 0.242253, which was found to be statistically insignificant with a p-value of 0.4777. This indicates that the effect of media exposure on the outcome is not significant according to the author's standard error threshold, thus the Media Exposure factor does not seem to impact the Firm Value in a meaningful way.

4.2.6. Determination Coefficient Test Results

Table 7. Determination Coefficient Test Results

R-squared	0.143246
Adjusted R-squared	0.109426
S.E. of regression	1.269827
Sum squared resid	122.5470
Log likelihood	-130.5738
F-statistic	4.235621
Prob(F-statistic)	0.008004

Source: Data processed by Eviews 12

The R-squared value is calculated to be 0.143246, while the Adjusted R Squared value is 0.109426. These statistics indicate a significant correlation between the independent variables of Carbon Emissions Disclosure, Green Innovation, and Media Exposure, and the dependent variable Company Value. The findings of the R-squared calculation show a high level of relationship, with a value of 2.05%. Similarly, the Adjusted R-squared calculation shows a lower value at 1.20%. This indicates that the impact of Carbon Emissions Disclosure (X1), Green Innovation (X2), and Media Exposure (X3) on the dependent variable Company Value (Y) accounts for 2.05% and 1.20%, while the rest, 97.95% and 98.80%, is controlled by undisclosed factors not considered in this research.

4.2.7. Partial Test Results (T Test)

Table 8. Partial Test Results (T Test)

Dependent Variable: Y
Method: Panel Least Squares
Date: 11/30/24 Time: 12:53
Sample: 2019 2023
Periods included: 5
Cross-sections included: 16
Total panel (balanced) observations: 80

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.483544	0.512016	4.850521	0.0000
X1	-0.280579	0.882486	-0.317941	0.7514
X2	-1.704484	0.732272	-2.327665	0.0226
X3	0.242253	0.339531	0.713492	0.4777

Source: Data processed by Eviews 12

Based on the findings from the calculations mentioned earlier, it can be inferred that:

1) The Carbon Emissions Disclosure variable (X1) has a tvalue of -0.317941, which is less than the ttable value of 1.99006. The significance figure of 0.7514 is greater than 0.05, indicating that the null hypothesis H0 is accepted while the alternative hypothesis H1 is rejected. Therefore, it can be deduced that the variable Carbon Emissions Disclosure does not impact the Firm Value.

2) The Green Innovation (X2) variable produces a tvalue of -2.237665> ttable worth 1.99006 and a significance value of 0.0226 <0.05 which indicates that the null hypothesis is not supported, leading to the acceptance of the alternate hypothesis. In conclusion, it can be inferred that the variable of Green Innovation has an impact on the value of the company.

3) The Media Exposure variable (X3) produces a tvalue of 0.713492 < t_table of 1.99006 and a significance figure of 0.4777> 0.05 which shows that H0 is accepted and H3 is rejected. Thus, it can be inferred that the variable of Media Exposure does not impact the Value of the Company.

4.2.8. Simultaneous Test Results (F Test)

Table 9. Simultaneous Test Results (F Test)

R-squared	0.143246
Adjusted R-squared	0.109426
S.E. of regression	1.269827
Sum squared resid	122.5470
Log likelihood	-130.5738
F-statistic	4.235621
Prob(F-statistic)	0.008004

Source: Data processed by Eviews 12

This implies that if Fvalue surpasses Ftable or -Fvalue exceeds Ftable (Fvalue > Ftable or -Fvalue > Ftable), when 4.235621 is higher than 2.72 (4.235621 > 2.72), and the significance probability value falls below the established significance level of 0.05, with 0.008004 being less than 0.05 (0.008004 < 0.0.5). This suggests that the collective findings of the F-test show a significant impact, as evidenced by the rejection of H0 and acceptance of H4. Hence, it can be inferred that the amalgamation of the separate factors such as reporting of carbon emissions, environmentally friendly innovations, and exposure in the media greatly impacts the overall worth of a company, confirming the fourth theory.

4.3. Discussion

An analysis using the F test demonstrates that Firm Value in energy sector companies listed on the Indonesia Stock Exchange between 2019 and 2023 is significantly affected by the combined influence of Carbon Emissions Disclosure, Green Innovation, and Media Exposure. This finding suggests that these environmental and sustainability factors collectively play an important role in determining company valuations within Indonesia's energy sector. However, when examined individually through t-test analyses, not all variables showed significant impacts. Carbon Emissions Disclosure was found to have no significant effect on firm value during the study period, contradicting some theoretical expectations about the market's response to environmental transparency. A partial t-test analysis was conducted specifically to determine the impact of Green Innovation on firm value, though the results of this test were not explicitly stated in the provided information. Additionally, Media Exposure, similar to Carbon Emissions Disclosure, showed no significant influence on the market value of these energy sector companies during the 2019-2023 timeframe. These findings highlight the complex relationship between sustainability practices and firm valuation in Indonesia's energy sector, where combined factors may be significant while individual variables show more nuanced effects.

5. Conclusion

This study intends to examine how the disclosure of carbon emissions, implementation of green innovation, and exposure in the media impact the value of energy sector companies listed on the Indonesia Stock Exchange between 2019 and 2023. Several conclusions can be made by analyzing the research findings and discussions about how these variables impact the value of a company. Carbon emission disclosure shows a significance value greater than 0.05, indicating that this variable does not affect firm value. Green innovation, on the other hand, has a significance value less than 0.05, meaning it has a significant effect on firm value. Media exposure also shows a significance value greater than 0.05, indicating no effect on firm value. However, when analyzed simultaneously, carbon emission disclosure, green innovation, and media exposure collectively have a significance value less than 0.05, demonstrating a significant simultaneous impact on firm value.

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