



The impact of carbon emission disclosure and environmental performance on firm value with good corporate governance as a moderator

Ahmad Asrorudin¹, Iin Rosini², Supto³

^{1,2,3}Akuntansi, Universitas Pamulang, Indonesia, Indonesia

Article Info

Article history:

Received Jun 1, 2024

Revised Jun 16, 2024

Accepted Jun 28, 2024

Keywords:

Carbon Emission Disclosure;
Environmental Performance;
Firm Value;
Good Corporate Governance.

ABSTRACT

The purpose of this study is to determine how carbon emission information and environmental performance impact the value of businesses that have good corporate management. Secondary data comes from the financial statements of companies included in the Lq-45 Company Index listed on the IDX from 2018 to 2023. For six years, six companies were used as samples. In this study, panel data regression analysis was used. The results show that carbon emission disclosure has a significant impact on firm value with a negative coefficient, while environmental performance has no significant impact. In contrast, good corporate management cannot control the relationship between environmental performance and carbon recognition. Therefore, it is decided that society does not have much data on greenhouse gas emissions. Very few companies disclose the volume of their GHG emissions; many companies choose to only disclose how much GHG emissions they have reduced. However, not many companies disclose the real value of their GHG emissions, so the market cannot objectively assess how well a company's environmental performance is.

This is an open access article under the CC BY-NC license.



Corresponding Author:

Ahmad Asrorudin,

Akuntansi,

Universitas Pamulang,

Jl. Surya Kencana No.1, Pamulang Bar., Kec. Pamulang, Kota Tangerang Selatan, Banten 15417, Indonesia

Email: asrorudinahmad@gmail.com

1. INTRODUCTION

Investors find investment in the capital market highly appealing due to the wide range of possibilities available to issuers when making investment choices. Meanwhile, organizations can considerably benefit from acquiring supplementary money to enhance their investment and production capabilities. Investments in the capital market typically correlate with fluctuations in a company's stock price. Stock prices can experience volatile fluctuations as a result of changes in demand and supply within the capital market. Investor enthusiasm for the stock market can result in a positive reaction for the firm, therefore enhancing the company's reputation among the general public. To effectively compete in the market and attract investors in the capital market, organizations must prioritize the enhancement and optimization of their organizational value. Comprehending the significance of business value is crucial for guaranteeing long-term viability. The assessment of a company's worth in the capital market is a crucial factor for investors to contemplate before making an investment. Investors are inherently drawn to firms with great future prospects in order to optimize their investment returns (Firmansyah, Husna, et al., 2021).

The information that a company discloses to the public frequently influences market responses. The capital market's investor sentiment is a significant factor in determining a company's future success, as it is indicative of the overall market performance. Investors' confidence in the company's future is bolstered by the provision of information that aligns with their expectations. Managers' capacity to generate substantial company value is a factor in investors' confidence in the company's potential for success (Ismanto et al., 2023).

An area of concern in relation to sustainability is the environmental effect of business operations and their potential to cause degradation of the environment. The Kyoto Protocol, ratified in 1997 and implemented in 2005, has played a crucial role in motivating corporations to tackle the problem of global warming. One sustainability concern pertains to the environmental challenges arising from business activity, which can lead to the deterioration of the ecosystem. The Kyoto Protocol, which was passed in 1997 and implemented in 2005, has played a significant role in motivating corporations to tackle the problem of global warming (Lee et al., 2015).

Indonesia ranks prominently among the top nations worldwide in terms of carbon dioxide emissions. The following list outlines the ten primary sources responsible for the emission of carbon dioxide on a worldwide scale. The Indonesian Institute of Accountants (IAI) establishes the standards that regulate environmental responsibility in the evolving accounting practices in Indonesia (Carolina et al., 2009). Companies will publicly reveal comprehensive corporate social responsibility (CSR) disclosures as a demonstration of their commitment to environmental stewardship. Corporate endeavors to mitigate greenhouse gas (GHG) emissions. While Carbon Emission Disclosure in Indonesia remains voluntary, the Government of the Republic of Indonesia aggressively encourages corporate social responsibility through the implementation of Law No. 17 of 2004 (OJK, 2021), which ratified the Kyoto Protocol and seeks to reduce greenhouse gas (GHG) emissions. Furthermore, the government, namely the Ministry of Environment & Forestry, established Decree of the Minister of Environment No. 127 of 2002 as the official foundation for the Company Performance Rating Assessment Program (PROPER) (Ministry of Environment, 2002). The objective of this program is to enhance the commitment of stakeholders in environmental conservation endeavors. The source of this information is Rahmanita, (2020).

Organizations in environmentally sensitive industries are under growing pressure to take methods that successfully decrease carbon emissions across their operations (Kılıç & Kuzey, 2019). Indonesia is a nation that has formally endorsed and executed the protocol. The need is specified in Law Number 17 of 2004 and further specified in Government Regulation Number 61 of 2011 and Government Regulation Number 71 of 2011. These restrictions are applicable to organizations that are functioning inside the territory of Indonesia. Companies are increasingly adopting suitable steps to manage the growing environmental concerns due to the heightened attention on environmental issues (Firmansyah, Husna, et al., 2021).

Researchers have extensively examined the issues related to carbon emissions and environmental performance. Global warming and climate change are worldwide issues encountered by corporations (Griffiths et al., 2007). The primary cause of climate change issues stems from carbon emissions originating from the corporate sector. An ample quantity of carbon emissions increases the likelihood of climate change (Ongsakul & Sen, 2019). Controlling carbon emissions is crucial for ensuring the long-term viability of businesses. Therefore, organizations often establish organizational frameworks to effectively manage carbon emissions, assess the risks associated with carbon emissions, and address any issues related to carbon emissions (Kurnia et al., 2021).

The objective of this study is to investigate the impact of carbon emission disclosure and environmental performance on the value of a company. This study employs a carbon emission disclosure proxy, specifically the CDP index which comprises 18 items, as utilized in previous studies by Bae Choi et al., (2013) and Hardiyansah et al., (2021). However, this study differs from the research conducted by Muhammad & Aryani, (2021) and Kurnia et al., (2021) in that it adjusts the index to account for the quality of disclosure based on GRI 305. The company's environmental performance is assessed based on its participation in the Environmental Performance Rating Assessment Program

(PROPER). The PROPER report, produced by the Ministry of Environment, includes an evaluation of a company's environmental management practices. The company's degree of stakeholder confidence in maintaining its environment is directly proportional to the results of the environmental performance evaluation (PROPER) it obtains. Attaining the company's degree of sustainability (going concern) is contingent upon the establishment of trust among its stakeholders. Additionally, PROPER can serve as a means for a corporation to communicate with its stakeholders (Hardianti & Mulyani, 2023). Furthermore, this study examines the role of corporate governance as a moderator in the link between carbon emission disclosure and firm value. Encouraging companies to be more transparent in providing company information to the public is a key aspect of promoting good governance (Cahyani & Mayangsari, 2022). Implementing good corporate governance can significantly enhance a company's efficiency in utilizing its assets for investment purposes. In a study conducted by Muhammad & Aryani, (2021), it was demonstrated that effective governance has the potential to enhance the positive impact of carbon disclosure on a company's value. Foreign shareholders' monitoring mechanism can elicit a favorable response from investors regarding the company's carbon disclosure. Furthermore, the adoption of effective governance practices can incentivize companies to provide more transparent disclosure of their carbon emissions to the public (Kılıç & Kuzey, 2019). Based on previous studies, it has been found that effective governance can have positive effects on a company. Specifically, it can enhance transparency and ultimately lead to improved financial performance (Cahyani & Mayangsari, 2022). Thus, the incorporation of corporate governance is anticipated to play a beneficial role in moderating the connection between carbon emission disclosure, environmental performance, and firm value. Prior research has examined various aspects of corporate governance, including the presence of independent directors, the composition of audit committees, board diversity, the number of directors, managerial ownership, ownership concentration, and foreign ownership. This study utilizes governance based on the governance index in Indonesia, as specified in the Circular Letter of the Financial Services Authority number 32/SEOJK.04/2015 (Otoritas Jasa Keuangan-, 2015). The governance index is used to assess the implementation of governance by the company in a comprehensive manner, taking into account company data in Indonesia. The governance index has been tested by Firmansyah & Suhandi, (2021) to evaluate its impact on company value.

The LQ45 Stock Index is a metric that helps evaluate the performance of the stock market on the Indonesia Stock Exchange (IDX). This index is comprised of 45 public companies with the highest market capitalization value, who have also made notable transactions in the past year on the regular market. In order to be eligible for inclusion in the LQ45 stock list, a company must have been listed on the IDX for a minimum of three months. Furthermore, it is crucial for the company to possess a robust financial standing and considerable prospects for growth. According to Putra & Putri, (2022) and Juli, (2020), companies included in the LQ45 index are typically regarded as top-performing or preferred stocks in the stock market.

2. RESEARCH METHOD

Objective of the Study

This investigation is a quantitative secondary study. This research concentrates on the Indonesia Stock Exchange (IDX)-listed LQ45 Index companies from 2018 to 2023. The purposive sampling method was employed to acquire the sample for this study, which yielded 36 observation data from 6 companies over a six-year period. The criteria for this research sample are as follows:

Companies that are members of the LQ45 index and are listed on the Indonesia Stock Exchange between 2018 and 2023. a) Annual and sustainability reports were published from 2018 to 2022; b) Submit financial statements during the observation period; c) Companies that explicitly and implicitly disclose carbon emissions (either by including at least one policy related to carbon/greenhouse gas emissions or by disclosing at least one carbon emissions disclosure item); d) Organizations that were evaluated for their environmental performance under the Company Performance Rating Assessment Program (PROPER).

Operational Definition and Variable Measurement

Dependent Variable

Carbon Emission Disclosure (X_1)

Carbon accounting is the comprehensive measurement of carbon emissions. As per the GHG Protocol, the calculation of carbon footprint can be performed using a life cycle emission factor. This factor takes into account not only emissions resulting from fuel combustion, but also all other emissions that occur throughout the entire fuel life cycle, including emissions from fuel extraction, processing, and transportation. The author used the Carbon Emissions Disclosure Checklist to acquire the specific data required for the research (Hardiyansah et al., 2021; Hariswan et al., 2022).

Table 1. Carbon Emission Disclosure Checklist

Category	Item	Description
Climate change: Risks and opportunities	CC1	Assessment/description of risks (regulatory/regulatory both specific and general) related to climate change and actions taken to manage these risks.
	CC2	Assessment/description of current (and future) financial, business and opportunity implications of climate change.
	GHG1	Description of the methodology used to calculate greenhouse gas emissions (e.g. GHG protocol or ISO).
	GHG2	The existence of external verification of the calculation of the quantity of GHG emissions by whom and on what basis.
Greenhouse Gas (GHG) Emissions	GHG3	Total greenhouse gas emissions (metric tons CO ₂ -e) generated.
	GHG4	Disclosure of scope 1 and 2, or 3 direct GHG emissions.
	GHG5	Disclosure of GHG emissions by origin or source (e.g. coal, electricity, etc.).
	GHG6	Disclosure of GHG emissions by facility or segment level.
	GHG7	Comparison of GHG emissions with previous years.
Energy Consumption (EC)	EC1	The amount of energy consumed (e.g. tera-joules or Peta-joules).
	EC2	Calculation of energy used from renewable resources.
	EC3	Disclosure by type, facility or segment.
	RC1	Details of the plan or strategy to reduce GHG emissions.
Greenhouse Gas Reduction and Cost (RC/Reduction and Cost)	RC2	Breakdown of current GHG emission reduction target levels and emission reduction targets.
	RC3	Emission reductions and costs or savings achieved to date as a result of the emission reduction plan.
	RC4	Future emission costs that are taken into account in capital expenditure planning.
Akuntabilitas Emisi Karbon (AEC/Accountability of Emission Carbon)	AEC1	Indication that the board (or other executive body) has responsibility for actions related to climate change.
	AEC2	Description of the mechanism by which the board (or other executive body) reviews the company's progress with regard to climate change.

Source: Bae Choi et al., (2013) in (Hardiyansah et al., 2021; Hariswan et al., 2022).

Companies are categorized into three groups, namely scope 1-3, based on their emissions. The report includes Scope 1 and Scope 2, however Scope 3 is not required (Bae Choi et al., 2013). The term "Scope" is employed to categorize various carbon emission sources and facilitate the process of accounting and reporting. The words scope 1, scope 2, and scope 3 are widely recognized and have been employed in many programs and standards (The Institute of Chartered Accountants in Australia, 2008).

The Carbon Emission Disclosure index is calculated using the following steps: (Rusmana & Purnaman, 2020): a) Assign a numerical rating to each disclosure item using a binary scale; b) The highest possible score is 18, while the lowest possible score is 0. Each individual item has a value of 1. Therefore, if the firm includes all things in its report, the company's score will be 18; c) The scores for each firm are then aggregated; d) The total score is divided by the maximum number of elements (18) and then multiplied by 100%.

Environmental Performance (X₂)

The subsequent independent variable is the environmental performance. The Ministry of Environment has created the Company Performance Rating Assessment Program in Environmental Management (PROPER) to monitor environmental performance. The assessment is determined by the levels ranging from 1 to 5, adhering to established standards (Rusmana & Purnaman, 2020).

Table 2. PROPER rating measurement aspects

Color	Meaning	Scale
Gold	Very Good	5
Green	Excellent	4
Blue	Good	3
Red	Bad	2
Black	Very Bad	1

Source: Ministry of Environment, 2015

Good Corporate Governance (Z)

GCG outlines the rules governing the relationships between the company and its stakeholders, including shareholders, managers, government, employees, creditors, and other parties. These rules define the rights and obligations that regulate and control the company. GCG strives to generate additional value for stakeholders (Blesia et al., 2023). As per the National Governance Committee in the Indonesian GCG General Guidelines, the implementation of GCG is guided by principles such as transparency, accountability, responsibility, independence, and fairness. Investor interest is drawn to the application of these principles (Yuliusman & Kusuma, 2020).

The governance in this study is assessed by constructing an index that comprises five primary measurement dimensions in accordance with the principles of corporate governance established by the OJK, as outlined in Circular Letter of the Financial Services Authority Number 32 of 2015. The corporate governance measurement in this study is based on the SE OJK, with modifications from (Firmansyah, Jadi, et al., 2021). The index is generated by deriving the five primary dimensions, which are then combined to generate an index with a score of 1 if the criteria are satisfied and 0 if they are not. Briefly, the governance formula can be expressed as follows:

$$GCG = \frac{\text{total GCG established}}{\text{The whole set of requirements for establishing Good Corporate Governance (GCG)}}$$

Table 3. SEOJK Indicator No. 32/SEOJK.04/2015

Aspect	Principle	Recommendation
The Relationship between Public Companies and Shareholders in Ensuring the Rights of Shareholders.	Increasing the Value of Organizing the General Meeting of Shareholders (GMS).	1. Public Listed Companies have a method or technical procedure for collecting votes (voting) both openly and privately that prioritizes independence, and the interests of shareholders.
		2. All members of the Board of Directors and Board of Commissioners of the Public Listed Company attended the AGMS.
	Improving the Quality of Communication of Public Listed Companies with Shareholders or Investors.	3. Summary of GMS minutes is available on the Public Listed Company's Website for at least 1 (one) year.
		4. Public Listed Companies have a communication policy with shareholders or investors.
		5. A Public Listed Company discloses its communication policy with shareholders or investors on its Website.
Function and Role of Board of Commissioners	Strengthening the Membership and Composition of the	6. Determination of the number of members of the Board of Commissioners considers the condition of the Public Listed Company.

	Board of Commissioners.	7.	Determination of the composition of the Board of Commissioners takes into account the diversity of expertise, knowledge, and experience required.
		8.	The Board of Commissioners has a self-assessment policy to assess the performance of the Board of Commissioners.
	Improving the Quality of Duties and Responsibilities of the Board of Commissioners.	9.	The self-assessment policy to assess the performance of the Board of Commissioners is disclosed in the Annual Report of the Public Listed Company.
		10.	The Board of Commissioners has a policy regarding the resignation of members of the Board of Commissioners if involved in financial crimes.
		11.	The Board of Commissioners or the Committee that carries out the Nomination and Remuneration function develops a succession policy in the process of nominating members of the Board of Directors.
	Strengthening the Membership and Composition of the Board of Directors.	12.	Determination of the number of members of the Board of Directors considers the condition of the Public Listed Company as well as the effectiveness in decision making.
	Strengthening the Membership and Composition of the Board of Directors.	13.	Determination of the composition of the Board of Directors takes into account the diversity of expertise, knowledge, and experience required..
Function and Role of the Board of Directors		14.	Members of the Board of Directors in charge of accounting or finance have expertise and / or knowledge in the field of accounting.
		15.	The Board of Directors has a self-assessment policy to assess the performance of the Board of Directors.
	Improving the Quality of the Implementation of the Duties and Responsibilities of the Board of Directors.	16.	The self-assessment policy to assess the performance of the Board of Directors is disclosed in the annual report of the Public Listed Company.
		17.	The Board of Directors has a policy regarding the resignation of members of the Board of Directors if they are involved in financial crimes.
		18.	Public Listed Company has a policy to prevent insider trading.
		19.	Public Listed Company has an anti-corruption and anti-fraud policy.
Stakeholder Participation	Improving Corporate Governance Aspects through Stakeholder Participation.	20.	The Public Listed Company has a policy on the selection and upgrading of suppliers or vendors.
		21.	Public Listed Company has a policy on the fulfillment of creditors' rights.
		22.	Public Listed Company has a whistleblowing system policy.
		23.	The Public Listed Company has a policy of providing long-term incentives to Directors and employees.
		24.	The Public Listed Company utilizes the wider use of information technology in addition to the Website as a medium for information disclosure.
Information Disclosure	Improving the Implementation of Information Disclosure	25.	The Annual Report of a Public Listed Company discloses the ultimate beneficial owner in the shareholding of the Public Listed Company of at least 5% (five percent), in addition to the disclosure of the ultimate beneficial owner in the shareholding of the Public Listed Company through the main and controlling shareholders.

Source: SEOJK NUMBER 32 /SEOJK.04/2015
Otoritas Jasa Keuangan-, (2015)

Analysis Method

The procedure used in analyzing the data in this study is panel data regression analysis. Panel data Moderation regression analysis is a statistical method used to conduct tests using a combination of cross section data and time series data (Nachrowi & Usman, 2020). The panel regression equation used in this study using Moderation regression analysis can be formulated as follows:

$$Y = \alpha_0 + b_1X_1 + b_2X_2 + b_3X_1Z + b_4X_2Z + e \dots\dots\dots (1)$$

Description:

α_0 = Constant

$b_1 - b_4$ = Regression Coefficients

Y = Company Value

X_1 = Carbon Emmission Disclosure Variable

X_2 = Environmental Performance Variable

X_1Z = Interaction between Carbon Emmission Disclosure and Good Corporate Governance (GCG)

X_2Z = Interaction between Environmental Performance and Good Corporate Governance (GCG)

e = Residual Value.

3. RESULTS AND DISCUSSIONS

This study uses a sample of 6 companies from the LQ45 Index listed on the Indonesia Stock Exchange during the period 2018 to 2023. From this period, 36 observation data were generated for 6 years of observation. This data is used to provide an overview of the alleged influence of the independent variable on the dependent variable.

Table 4. Descriptive Statistics of Panel Regression Model

Descriptive Statistics					
	Mean	Maximum	Minimum	Std. Dev.	Observations
TQ	2.764494	7.069839	0.359550	2.054846	36
CED	0.615741	0.944444	0.277778	0.173345	36
KL	0.711111	1.000000	0.600000	0.154509	36

Source: Data processed 2024 (Eviews 12)

From Table 4, we can see the distribution and variation of each variable. The mean values of Firm Value, Carbon Emissions Disclosure, and Environmental Performance are greater than their standard deviations, indicating higher variation. All of these values provide an overview of the relevant data characteristics for each variable.

Panel Data Moderation Regression Analysis

Classical Assumption Test

Chow test is a statistical test used to determine whether there is a significant difference between two regression models. The Chow test is employed to determine the appropriate regression model to be chosen between the common effect and fixed effect models (Nachrowi & Usman, 2020). The Chow test indicates that the probability value for the Cross-section F statistic is 0.0000, and the probability value for the Cross-section Chi-square statistic is similarly 0.0000. The result indicates that the probability value is below 0.05. Therefore, the preferred model for the chow test is the Fixed Effects Model (FEM). The subsequent estimating model to consider is the Hausman test.

The Hausman test was used to ascertain the appropriate regression model to be employed in the investigation, namely between the fixed effect model and the random effect model (Nachrowi & Usman, 2020). The output of the Hausman test indicates that the Cross-section random probability value is 0.6065. This value is higher than the significance level of 0.05, suggesting that the Common effect model is the appropriate choice. Therefore, the next estimation model to consider is the Lagrange multiplier test.

The Lagrange multiplier test is employed to ascertain the appropriate regression model to be utilised in the investigation, specifically between the random effect model and the Common effect model (Nachrowi & Usman, 2020). The Lagrange multiplier test findings on Breusch-Pagan indicate that the Cross-section random probability value of 0.0000 is less than the significance threshold of 0.05. Therefore, the chosen model is the random effect model.

The conclusions of both the Hausman test and the Lagrange multiplier test yield the same results, indicating that the random effect model is the prevailing one. The random effect model was employed in this investigation. When doing panel data regression, it is essential to assume data normality, multicollinearity, and heteroscedasticity if the findings of the GLS method model are utilised (Nachrowi & Usman, 2020).

The normality test indicates no issues, as seen by the Jarque-Bera value of 2.197900. Additionally, the Chi-square table value was examined using 2 independent variables and a significance level of 0.05. The probability has a value of 0.333221. These results indicate that the probability is greater than 0.05, suggesting that the data follows a normal distribution. Therefore, the condition of normalcy is satisfied.

The heteroscedasticity test indicates that there is no presence of heteroscedasticity issue, as evidenced by the Chi-Square probability value of 0.3765. This value is greater than the significance level of 0.05, suggesting that the data used is devoid of heteroscedasticity symptoms and exhibits homoscedasticity. The multicollinearity test findings indicate that the correlation between Carbon Emission Disclosure (CED) and Environmental Performance (KL) is below the threshold of 0.90 for the correlation coefficient value. The presence of multicollinearity is shown when the correlation coefficient between each independent variable exceeds 0.80. However, based on the study data provided, there is no significant correlation seen among the independent variables that above the threshold of 0.80. To ensure that there is no multicollinearity among the independent variables in the research.

Based on the results of panel data model testing using the Chow test, Hausman test, and Lagrange Multiplier test, it is found that the most appropriate model to use in this study is the random effect model. The results of the panel data regression test with the random effect model can be seen as follows:

Table 5. Moderated Regression Analysis Test Results Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Hypothesis
C	3.368.976	2.555.451	1.318.349	0.1970	
CED	-1.000.003	4.705.728	-2.125.076	0.0417	Accepted
KL	-2.037.753	2.410.585	-0.845336	0.4044	Rejected
GCG_CED	4.056.453	2.581.812	1.571.165	0.1263	Rejected
GCG_KL	2.249.021	1.817.287	1.237.570	0.2252	Rejected
Adjusted R-squared = 0.353262					
Prob(F-statistic) = 0.001353					

Source: Data processed 2024 (Eviews 12)

The results of the random effect regression model equation in this study are derived from the panel data regression analysis in table 4.

$$TQ = 3.368.976 - 1.000003 - 2.037.753 + 4.056.453 + 2.249.021 + e$$

The results may be explained using the random effect model, as shown in table 4: a) The regression equation indicates that when the independent variables Carbon Emission Disclosure (CED) and KL (Environmental performance) are held constant, the predicted value of the company's value is 3.368976; b) The regression coefficient for carbon emission disclosure (CED), represented by CED, is -1.000003. The number of -1.000003 indicates that a one-unit rise in CED will result in a 100% decrease in the company's value, provided that the other independent variables in the model remain constant; c) The regression coefficient for environmental performance, represented by KL, is -2.037753. The figure -2.037753 indicates that a one-unit rise in KL will result in a 200% decrease in the company's value, assuming that the other independent variables in the model remain constant; d) The regression coefficient for the moderating effect of Good Corporate Governance on the relationship between carbon emission disclosure and company value, designated as GCG_CED, is 4.056453. The figure of 4.056453 represents the impact of a one-unit increase in carbon emission disclosure, tempered by Good Corporate Governance, on company value. This increase is estimated to be 400%, assuming that all

other independent variables in the model remain constant; e) The regression coefficient for the moderating effect of Good Corporate Governance on environmental performance and firm value is 2.249021. According to the analysis, a rise of one unit in Environmental Performance, when combined with Good Corporate Governance, can lead to a significant increase in the company's overall value. This increase is estimated to be around 200%, assuming all other factors remain constant; f) The presence of epsilon (error-term) or 'e' suggests the existence of other factors or variables that influence business value, apart from CED (Carbon Emission Disclosure), KL (environmental performance), and Good Corporate Governance moderating variables.

Koefisien Determinasi (R²)

The coefficient of multiple determination in EViews 12, as indicated in table 4, is equivalent to the Adjusted R square value found in other software packages. The table displays an Adjusted R square value of 0.353262. This indicates that the collection of dependent variables in the model can explain the independent variable by 35.32%. The remaining portion is accounted for by other factors that are not considered in the model.

Simultaneous Test.

According to the data shown in Table 4, the probability value (F-Statistic) obtained is 0.001353, which is less than 0.05. These findings suggest that the disclosure of carbon emissions (CED) and the environmental performance (KL) of a company have an impact on its overall worth (TQ).

Partial Test (Uji t)

The Firm Value of LQ45 Index companies listed on the Indonesia Stock Exchange (IDX) during the 2018-2023 period is influenced by carbon emissions / Carbon Emission Disclosure (CED), as indicated by the partial test results in Table 4. This is due to the fact that the probability value of 0.0417 is larger than $\alpha = 0.05$. The probability value of 0.4044, which is greater than $\alpha = 0.05$, indicates that environmental performance (KL) has no impact on Firm Value in the same company during the same period. Meanwhile, the disclosure of carbon emissions / Carbon Emission Disclosure (GCG_CED) on firm value (TQ) cannot be moderated by Good Corporate Governance due to the probability value of 0.1263 significance being greater than 0.05 with a positive relationship direction. Similarly, the positive direction of the relationship is indicated by the probability value of 0.2252, which is greater than 0.05. Consequently, Good Corporate Governance is unable to moderate the impact of environmental performance disclosure (GCG_KL) on firm value (TQ).

Effect of Carbon Emission Disclosure on Firm Value

During the initial test utilising the panel data regression technique, the variable representing carbon emission disclosure (CED) exhibits a negative coefficient of -1.000003, which is statistically significant at a level of 0.0417. Given that the significance value is less than 0.05, we may conclude that there is sufficient evidence to support the initial hypothesis that carbon emission disclosure (CED) has an impact on company value. This finding is consistent with the research conducted by (Damas et al., 2021; Firmansyah, Jadi, et al., 2021; Hardianti & Mulyani, 2023; Hardiyansah et al., 2021; Kurnia et al., 2021; Rahmanita, 2020; Rangga & Kristanto, 2023; Trimuliani & Febrianto, 2023; Zahara, 2022). Their research demonstrates that carbon emission disclosure (CED) has a substantial influence on the value of a company.

This discovery also supports the findings of research (Trimuliani & Febrianto, 2023) that posits that carbon information disclosure and carbon performance are among the most critical factors for contemporary investors. The company's value can be enhanced by superior carbon performance and disclosure of carbon emissions, which is indicative of sound corporate governance. The company can increase its value by reducing its cost of capital, increasing cash flow, or both as a result of improved corporate environmental disclosure.

This study presents contrasting findings to prior research (Khansa & Prasetyo, 2022; Wenni Anggita et al., 2022) that found no substantial impact of greenhouse gas emissions on business value. The adverse impact of the findings can be attributed to the limited availability of publicly accessible data on greenhouse gas emissions. Only a limited number of firms publicly declare the magnitude of their greenhouse gas (GHG) emissions. Several firms opt to simply reveal the extent to which they have decreased their greenhouse gas (GHG) emissions, but few companies publish the exact magnitude of their GHG emissions. Consequently, the market lacks an impartial means to evaluate the true environmental performance of these companies.

According to the legitimacy theory, a company's carbon emissions information can be used to gain legitimacy from both the community and the market, either positively or negatively. Furthermore, showcasing carbon emissions as a testament to environmental accountability, such as investing in renewable energy sources that effectively lower carbon emissions, can yield economic advantages for the stakeholder community, including boosted revenue and enhanced corporate reputation (Damas et al., 2021; Firmansyah, Jadi, et al., 2021).

Environmental responsibility in Indonesia creates a competitive advantage and boosts investor confidence. Companies that prioritise strong corporate governance have the ability to disclose their carbon emissions, which can enhance the company's value in the eyes of investors who are increasingly concerned about environmental issues, particularly carbon emissions. Investors in the Indonesian market are increasingly drawn to companies that prioritise environmental responsibility, particularly in light of the potential impact on climate change. Given the potential consequences of penalties and increased costs, companies find it beneficial to disclose their carbon emissions. This not only helps them avoid penalties from the government or environmental activists but also maintains investor confidence (Kurnia et al., 2021).

The Impact of Carbon Emission Disclosure on Company Value

In the second test using the panel data regression method, the coefficient for the environmental performance variable is -2.037753 , which has a significance level of 0.4044 . Since the significance level exceeds 0.05 , it is not possible to establish the second hypothesis that suggests a link between environmental performance and firm value. A positive coefficient would suggest that an increase in environmental performance would lead to an increase in company value. However, in this case, the negative coefficient indicates that an increase in environmental performance actually results in a decrease in company value by 20.37753 units. This finding aligns with previous research conducted by (Asnita & Wahidahwati, 2019; Khansa & Prasetyo, 2022), which similarly concluded that environmental performance does not impact firm value.

This research is supported by the findings of previous studies (Asnita & Wahidahwati, 2019; Khansa & Prasetyo, 2022) which suggest that disclosing environmental performance does not have a significant impact on firm value. The lack of economic incentives and sanctions for companies that disclose their environmental performance to CDP, (2022) (Carbon Disclosure Project) leads to a preference among companies to not disclose their environmental performance. Some investors do not consider environmental performance when making investment decisions, which is why this study may seem insignificant. Investors should be aware that a company's positive environmental performance does not necessarily guarantee profitability. Moreover, for investors, environmental management will lead to higher costs for the company, potentially impacting the income they receive.

The results of this study don't match up with those of (Rahmanita, 2020; Rusmana & Purnaman, 2020). (Rusmana & Purnaman, 2020) study found that environmental success has a positively significant effect on business value. This means that the better a company is at taking care of the earth, the more valuable it will become. This shows that the market will use environmental problems as one of the ways to judge the company because they have to do with how long the business will last. This means that the better the company's environmental performance, the higher its value will be.

The social relationship between companies and society is the subject of legitimacy theory. In conjunction with legitimacy theory, this theory asserts that the legitimacy of a company in the eyes of society is a strategic factor in the company's future development (Lestari & Khomsiyah, 2023). Legitimacy can be achieved when the company's existence is in harmony with the value system of society and the environment (Ningtyas Anggraina Ayu & Triyanto Dedik Nur, 2019). If environmental performance disclosure fails to have a substantial impact on firm value, it may suggest that the public does not regard it as pertinent or significant to their value system. In this context, companies may need to make additional efforts to establish their legitimacy, such as demonstrating their contributions to broader environmental objectives or enhancing their transparency and accountability regarding environmental performance.

Good Corporate governance moderates the disclosure of carbon emissions / Carbon Emission Disclosure to the value of the Company

The coefficient of the Good Corporate Governance variable as a moderator in the third test using the panel data regression method is 4.056453, with a significance level of 0.1263. The third hypothesis, which asserts that good corporate governance can moderate (strengthen the relationship) of carbon emission disclosure (CED) to firm value, cannot be proved due to the significance level being greater than 0.05. This discovery is consistent with prior research conducted by (Blesia et al., 2023; Firmansyah, Jadi, et al., 2021), which also determined that strong corporate governance is unable to moderate (increase the relationship) between carbon emission disclosure (CED) and firm value.

Confirming the findings of (Firmansyah, Jadi, et al., 2021) that the implementation of governance in Indonesia is unable to persuade investors to alter their negative perspective on the disclosure of carbon emissions by companies. The implementation of corporate governance fails to enhance investors' perceptions of carbon emission disclosure information that is deemed pointless or companies tend to contribute to environmental destruction. Furthermore, the implementation of corporate governance has not been successful in mitigating the information asymmetry between shareholders and managers. Despite the fact that corporate governance has been effectively implemented as regulated by the capital market authorities in Indonesia, the carbon disclosure information provided by companies to investors does not lead to any changes in investors' perspectives. Consequently, the implementation of corporate governance by Indonesian companies has yet to alter the negative perceptions of investors regarding current issues, despite the fact that these issues are global in nature and pertain to the company's future sustainability.

Signal theory elucidates the reason why companies are motivated to disclose financial and non-financial report information to external parties, as there is an information asymmetry between companies and outsiders (Ross, 1977). In contrast, market participants are prompted to invest and influence the company's future prospects by information that is contained within the company. Signal theory elucidates the rationale behind companies' inclination to communicate information in the form of signals to external parties, including creditors and debtors (Brigham & Houston, 2009). This theory elucidates that all actions contain information, which is a result of information asymmetry, in conjunction with Signal Theory. In this context, the disclosure of carbon emissions can be interpreted as a signal that the company is sending to investors and other stakeholders regarding its environmental performance (Viulina et al., 2023). Nevertheless, the research indicates that GCG is unable to enhance this signal in relation to its impact on firm value.

This research also supports the legitimacy theory, which posits that the disclosure of environmental information enhances the reputation of corporations. Investors have the option of considering carbon emission disclosure information when making investment decisions. Company policies regarding carbon emission disclosure may be established by management. Effective control and supervision functions are provided by good corporate governance to guarantee that management can achieve improved financial performance. Investors respond favourably and elevate the company's valuation due to the favourable news.

Good Corporate governance moderates environmental performance on Firm value

The coefficient of the Good Corporate Governance variable as a moderator in the fourth test using the panel data regression method is 2.249021, with a significance level of 0.2252. The fourth hypothesis, which asserts that good corporate governance can moderate (strengthen the relationship) of environmental performance (KL) to firm value, cannot be proven due to the significance level being greater than 0.05. This discovery is consistent with prior research conducted by (Noval et al., 2021; Putra & Putri, 2022), which also determined that the relationship between firm value and disclosure of environmental performance (KL) cannot be strengthened by good corporate governance.

Consistent with the research conducted by (Putra & Putri, 2022), the study reveals that the use of corporate governance practices by the sampled LQ45 enterprises has not been fully optimised. The disclosure and implementation of governance elements are currently inadequate and fail to align with the company's environmental performance. As a result, the positive impact of environmental performance disclosure on firm value is diminished by the presence of GCG, which acts as a moderating variable. Revealing the environmental performance of firms often entails acknowledging the environmental hazards and difficulties they encounter, such as changes in regulations, the environmental consequences of their company operations, or the expectations of consumers for eco-friendly practices. Certain firms may choose not to openly disclose these risks due to concerns about the detrimental effect it may have on their reputation in the market.

According to the definition provided by The Indonesian Institute for Corporate Governance (IICG), GCG encompasses a range of processes and mechanisms implemented within a company to ultimately enhance long-term shareholder value while also considering the interests of other stakeholders. Highlighting the main objective of GCG, it aims to enhance long-term shareholder value while considering the interests of other stakeholders. As a business consultant, GCG aims to enhance financial performance management, promote good governance of information systems, mitigate decision-making risks driven by self-interest, ensure effective supervision, and establish ethical guidelines while prioritising information transparency. According to experts, companies that adopt good corporate governance practices are seen as taking proactive steps to reduce the chances of making risky or self-serving decisions. This, in turn, is believed to enhance company performance and ultimately increase its overall value (Wiryakusuma, 2019).

The results of this study are consistent with signal theory, which posits that positive signals can elevate the value of a firm. The implementation and disclosure of environmental performance have the potential to send positive signals to stakeholders and parties outside the company, as previously mentioned. The company's commitment to collaborative development is demonstrated through the implementation and disclosure of environmental performance, which enables the company to establish a harmonious relationship with the surrounding environment. The disclosure of environmental performance also indicates that the company has implemented information transparency, which involves the company not withholding information from any party. This approach enables shareholders and external parties to accurately evaluate the information presented, thereby reducing information asymmetry. Positive signals can enhance the company's reputation among stakeholders, which in turn contributes to the company's value (Rahmanita, 2020; Rusmana & Purnaman, 2020).

4. CONCLUSION

Research indicates that the disclosure of carbon emissions information has a positive impact on the value of companies. Transparently disclosing information about carbon emissions can have a positive impact on investor confidence and enhance public perception of a company. In addition, companies with strong environmental performance often garner greater interest from investors and other stakeholders. Environmental performance encompasses various factors, including waste management, energy efficiency, and the implementation of sustainable policies. Companies that excel in environmental performance can reap significant advantages in the long run, such as an enhanced reputation and increased market trust. Having a strong reputation for environmental concerns and a

commitment to reducing negative impacts on the climate can significantly boost a company's value. It is worth considering that carbon emissions disclosure remains voluntary in Indonesia, yet it can have a substantial impact on a company's reputation and worth. It is highly beneficial for both the environment and the overall value of a company when more companies make a commitment to reducing carbon emissions. Having a strong emphasis on corporate governance can greatly enhance the effectiveness of a company's management control system. When Good Corporate Governance principles are effectively implemented, it leads to a more streamlined management control system. By taking into account the concerns of stakeholders, companies can enhance their governance and work towards achieving sustainability. Thus, while the direct impact of Good Corporate Governance on the relationship between Carbon Emission Disclosure, environmental performance, and firm value may not be evident, the adoption of these principles can enhance management control systems and contribute to the overall prosperity of the company.

It would be beneficial to investigate supplementary variables that may influence the value of a firm. This could entail the integration of additional investment decision proxies, such as the Market to Book Assets Ratio. The sample size and duration of future research could be increased to facilitate a more thorough examination by taking into account a variety of internal and external factors of the firm, including CSR disclosure and share ownership. Additionally, various industries could be employed to establish comparisons between distinct sectors.

ACKNOWLEDGEMENTS

We express our gratitude to our colleagues and thesis supervisors for their valuable contributions and insightful recommendations during the process of drafting and revising. Their insightful critique and aid significantly enhanced the calibre of this paper. This research would not have been feasible without the invaluable efforts of all persons and institutions affiliated with Pamulang University.

REFERENCES

- Asnita, A., & Wahidahwati. (2019). Pengaruh Kinerja Lingkungan Terhadap Nilai Perusahaan Dengan Pengungkapan Informasi Lingkungan Sebagai Variabel Intervening. *Jurnal Ilmu Dan Riset Akuntansi*, 8(7), 1-19.
- Bae Choi, B., Lee, D., & Psaros, J. (2013). An analysis of Australian company carbon emission disclosures. *Pacific Accounting Review*, 25(1), 58-79. <https://doi.org/10.1108/01140581311318968>
- Blesia, J. U., Trapen, E., & Arunglamba, R. S. (2023). The Moderate Effect of Good Corporate Governance on Carbon Emission Disclosure and Company Value. *The Indonesian Journal of Accounting Research*, 26(01), 151-182. <https://doi.org/10.33312/ijar.663>
- Brigham, E. F., & Houston, J. F. (2009). Fundamentals Management Of Financial. In *Cengage Learning* (12 TH). South-Western Cengage Learning.
- Cahyani, R. S. A., & Mayangsari, S. (2022). Pengaruh Enveromental Performance, Corporate Governance, Dan Corporate Social Responsibility Terhadap Kinerja Keuangan. *Jurnal Ekonomi Trisakti*, 2(2), 475-486. <https://doi.org/10.25105/jet.v2i2.14321>
- Carolina, V., Martusa, R., & Meythi. (2009). Akuntansi Lingkungan: Solusi untuk Problematika Penerapan Corporate Social Responsibility di Indonesia. *Prosiding Seminar Nasional*, 1-8. <https://media.neliti.com/media/publications/220037-akuntansi-lingkungan-solusi-untuk-proble.pdf>
- CDP. (2022). *Panduan Pelaporan Aspek Lingkungan Hidup Untuk Laporan Berkelanjutan (Sustainability Report)* (Issue 51). https://cdn.cdp.net/cdp-production/cms/reports/documents/000/006/116/original/Panduan_Lingkungan_Final_%281%29.pdf?164511954
- Damas, D., Maghviroh, R. EL, & Meidiyah, M. (2021). Pengaruh Eco-Efficiency, Green Inovation Dan Carbon Emission Disclosure Terhadap Nilai Perusahaan Dengan Kinerja Lingkungan Sebagai Moderasi. *Jurnal Magister Akuntansi Trisakti*, 8(2), 85-108. <https://doi.org/10.25105/jmat.v8i2.9742>
- Firmansyah, A., Husna, M. C., & Putri, M. A. (2021). Corporate Social Responsibility Disclosure, Corporate Governance Disclosures, and Firm Value In Indonesia Chemical, Plastic, and Packaging Sub-Sector Companies. *Accounting Analysis Journal*, 10(1), 9-17. <https://doi.org/10.15294/aaj.v10i1.42102>
- Firmansyah, A., Jadi, P. H., Febrian, W., & Fasita, E. (2021). Respon Pasar Atas Pengungkapan Emisi Karbon Di Indonesia : Bagaimana Peran Tata Kelola Perusahaan? *Jurnal Magister Akuntansi Trisakti*, 8(2), 151-170.

- <https://doi.org/10.25105/jmat.v8i2.9789>
- Firmansyah, A., & Suhanda, N. H. (2021). Bagaimana Peran Tata Kelola Perusahaan Dalam Hubungan Antara Manajemen Laba Dan Risiko Idiosinkratik di Indonesia? *Jurnal Ekonomi*, 26(2), 229. <https://doi.org/10.24912/je.v26i2.748>
- Griffiths, A., Haigh, N., & Rassias, J. (2007). A Framework for Understanding Institutional Governance Systems and Climate Change: *European Management Journal*, 25(6), 415-427. <https://doi.org/10.1016/j.emj.2007.08.001>
- Hardianti, T., & Mulyani, S. D. (2023). Pengaruh Carbon Emission Disclosure dan Ukuran Perusahaan Terhadap Nilai Perusahaan Dengan Kinerja Lingkungan Sebagai Variabel moderasi. *Jurnal Ilmiah Wahana Pendidikan, Mei*, 9(9), 275-291. <https://doi.org/https://doi.org/10.5281/zenodo.7951766>
- Hardiyansah, M., Agustini, A. T., & Purnamawati, I. (2021). The Effect of Carbon Emission Disclosure on Firm Value: Environmental Performance and Industrial Type. *Journal of Asian Finance, Economics and Business*, 8(1), 123-133. <https://doi.org/10.13106/jafeb.2021.vol8.no1.123>
- Hariswan, A. M., DP, E. N., & Mela, N. F. (2022). Pengungkapan Emisi Karbon Perusahaan Pertambangan di Indonesia. *Jurnal Al-Iqtishad*, 18(1), 19-41. <https://doi.org/http://dx.doi.org/10.24014/jiq.v18i1.16286>
- Ismanto, J., Rosini, I., & Nofryanti. (2023). Pengaruh Enterprise Risk Management, Profitabilitas Dan Kepemilikan Manajerial Terhadap Nilai Perusahaan Asuransi Di Bursa Efek Indonesia. *JURNAL INFORMASI, PERPAJAKAN, AKUNTANSI, DAN KEUANGAN PUBLIK*, 18(2), 199-218. <https://doi.org/10.25105/jipak.v18i2.16357>
- Juli, J. I. (2020). Reaksi Pasar Modal Terhadap Pengumuman PSBB DKI Jakarta Jilid II. *Jurnal Edueco*, 3(2), 51-66. <https://doi.org/10.36277/edueco.v3i2.60>
- Khansa, S., & Prasetyo, A. B. (2022). Pengaruh Emisi Gas Rumah Kaca Sebagai Indikator Kinerja Lingkungan Dan Pengungkapan Lingkungan Terhadap Nilai Perusahaan. *Diponegoro Journal of Accounting*, 11(1), 1-13. <http://ejournal-s1.undip.ac.id/index.php/accounting>
- Kılıç, M., & Kuzey, C. (2019). The effect of corporate governance on carbon emission disclosures. *International Journal of Climate Change Strategies and Management*, 11(1), 35-53. <https://doi.org/10.1108/IJCCSM-07-2017-0144>
- Kurnia, P., Nur, D. P. E., & Putra, A. A. (2021). Carbon Emission Disclosure And Firm Value: A Study Of Manufacturing Firms In Indonesia And Australia. *International Journal of Energy Economics and Policy*, 11(2), 83-87. <https://doi.org/10.32479/ijeep.10730>
- Lee, S., Park, Y., & Klassen, R. D. (2015). Market Responses to Firms' Voluntary Climate Change Information Disclosure and Carbon Communication. *Corporate Social Responsibility and Environmental Management*, 22(1), 1-12. <https://doi.org/10.1002/csr.1321>
- Lestari, A. D., & Khomsiyah, K. (2023). Pengaruh Kinerja Lingkungan, Penerapan Green Accounting, dan Pengungkapan Sustainability Report Terhadap Nilai Perusahaan. *Jurnal Ekonomi Bisnis, Manajemen Dan Akuntansi (JEBMA)*, 3(3), 514-526. <https://doi.org/10.47709/jebma.v3i3.2799>
- Muhammad, G. I., & Aryani, Y. A. (2021). The Impact of Carbon Disclosure on Firm Value with Foreign Ownership as A Moderating Variable. *Jurnal Dinamika Akuntansi Dan Bisnis*, 8(1), 1-14. <https://doi.org/10.24815/jdab.v8i1.17011>
- Nachrowi, N. D., & Usman, H. (2020). *Pendekatan Populer dan Praktis Ekonometrika Untuk Analisis Ekonomi dan Keuangan*. Fakultas Ekonomi Universitas Indonesia.
- Ningtyas Anggraina Ayu, & Triyanto Dedik Nur. (2019). Pengaruh Kinerja Lingkungan Dan Pengungkapan Lingkungan. *Jurnal Akuntansi, Audit Dan Sistem Informasi Akuntansi*, Vo.3 No.1(1), 14-26. <http://journalfeb.unla.ac.id/index.php/jasa/article>
- Noval, M., Widodo, A., & Hetika. (2021). Pengaruh Kinerja Keuangan Dan Kinerja Lingkungan Terhadap Nilai Perusahaan Manufaktur Di Bursa Efek Indonesia. *Symposium Nasional Akuntansi Vokasi (SNAV) Ke-9 Politeknik Negeri Ambon 26 - 28 Oktober 2021*, 54-64.
- OJK. (2021). Tanggung Jawab Sosial Perusahaan. In *Otoritas Jasa Keuangan*. https://www.ojk.go.id/keuanganberkelanjutan/Uploads/Content/Regulasi/Regulasi_23010609373575.pdf
- Ongsakul, V., & Sen, S. K. (2019). Low carbon energy symbiosis for sustainability: Review of shared value-based policy metabolism to enhance the implementability of the sustainable development goals in Asia. *International Journal of Energy Economics and Policy*, 9(2), 24-30. <https://doi.org/10.32479/ijeep.7236>
- Otoritas Jasa Keuangan-. (2015). Surat daran Otoritas Jasa Keuangan Nomor 32 /SEOJK.04/2015. In *Otoritas Jasa Keuangan*. <https://www.ojk.go.id/id/regulasi/otoritas-jasa-keuangan/surat-edaran-ojk-dan-dewan-komisioner/Documents/Pages/seojk-Nomor-32-SEOJK-04-2015-Pedoman-Tata-Kelola-Perusahaan/seojk-nomor-32-seojk-04-2015.pdf>
- Putra, M. T. S., & Putri, I. G. A. M. A. D. (2022). Pengaruh Pengungkapan Corporate Social Responsibility terhadap

- Nilai Perusahaan dengan Good Corporate Governance sebagai Variabel Pemoderasi. *E-Jurnal Akuntansi*, 32(5), 1317. <https://doi.org/10.24843/EJA.2022.v32.i05.p15>
- Rahmanita, S. (2020). Pengaruh Carbon Emission Disclosure Terhadap Nilai Perusahaan Dengan Kinerja Lingkungan Sebagai Variabel Pemoderasi. *Akuntansi: Jurnal Akuntansi Integratif*, 6(01), 54–71. <https://doi.org/10.29080/jai.v6i01.273>
- Rangga, E. N. S., & Kristanto, S. B. (2023). Pengungkapan Emisi Karbon, Biaya CSR, Profitabilitas, Dan Kebijakan Hutang Terhadap Nilai Perusahaan. *Jurnal Riset Akuntansi Dan Keuangan*, 19(1), 67. <https://doi.org/10.21460/jrak.2023.191.442>
- Ross, S. A. (1977). Determination of Financial Structure: the Incentive-Signalling Approach. *Bell J Econ*, 8(1), 23–40. <https://doi.org/10.2307/3003485>
- Rusmana, O., & Purnaman, S. M. N. (2020). Pengaruh Pengungkapan Emisi Karbon Dan Kinerja Lingkungan Terhadap Nilai Perusahaan. *Jurnal Ekonomi, Bisnis Dan Akuntansi (JEBA)*, 22(1), 42–52. <http://www.jp.feb.unsoed.ac.id/index.php/jeba/article/viewFile/1563/1577>
- Trimuliani, D., & Febrianto, R. (2023). Pengungkapan Emisi Karbon dan Kinerja Karbon terhadap Nilai Perusahaan: Moderasi Kepemilikan Negara. *Jurnal Informatika Ekonomi Bisnis*, 5, 900–906. <https://www.infeb.org/index.php/infeb>
- Viulina, A. E., Utamingtyas, T. H., & Ulupui, I. G. K. A. (2023). Pengaruh Kinerja Keuangan dan Pengungkapan Emisi Karbon terhadap Kinerja Lingkungan dengan Good Corporate Governance sebagai Variabel Moderasi. *Business and Investment Review (BIREV)*, 1(4), 51–64. <https://lgdpublishing.org/index.php/birev%0A>
- Wenni Anggita, Ari Agung Nugroho, & Suhaidar. (2022). Carbon Emission Disclosure And Green Accounting Practices On The Firm Value. *Jurnal Akuntansi*, 26(3), 464–481. <https://doi.org/10.24912/ja.v26i3.1052>
- Wiryakusuma, I. G. B. Y. (2019). Pengaruh Corporate Governance Terhadap Volatilitas Harga Saham. *JRAK*, 15(1), 1–10.
- Yuliusman, Y., & Kusuma, I. L. (2020). Hubungan Good Corporate Governance dengan Nilai Perusahaan yang Dimoderasi Oleh Pengungkapan Corporate Social Responsibility dan Profitabilitas. *Jurnal Akuntansi Dan Pajak*, 21(01), 91–102. <https://doi.org/10.29040/jap.v21i1.1078>
- Zahara, F. (2022). Pengungkapan Kinerja Lingkungan Sebagai Mekanisme Peningkatan Kinerja untuk Menciptakan Nilai Perusahaan. *Owner*, 6(4), 1–18. <https://doi.org/10.33395/owner.v6i4.1086>