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The Influence Of Carbon Emission Disclosure And Green Innovation On Firm Value With Oversight Mechanism As Moderator

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Abstract

To examine the effect of carbon emission disclosure and green innovation on firm value and the frequency of board meetings moderates the positive influence of carbon emission disclosure and green innovation on firm value, this research uses secondary data from all companies from the cyclical, non-cyclical, basic material, energy and industrial sectors on the Indonesia Stock Exchange using purposive sampling for the period of 2022-2023 with total of 80 research objects. Regression Model Fit Test show Random Effcet Model (REM) is the most suitable for the study and make the assumption classic test is no longer need. Meanwhile hypotheses results state that there is a significant positive influence of carbon emission disclosure and green innovation on firm value, and the frequency of board meetings strengthens the positive influence of green innovation on firm value, and conversely the frequency of board meetings cannot strengthen the significant positive influence of carbon emission disclosure on firm value. This research contributes to the development of carbon emission disclosure and green innovation studies in companies listed on the Indonesian Stock Exchange. Where this study will produce material for consideration for policy makers or regulators regarding the importance of regulations regarding measuring firm's value regarding implementation of carbon emission disclosure and green innovation.

Keywords: Carbon Emission Disclosure, Green Innovation, Board Meetings, Firm Value.

INTRODUCTION

The success of technology and industry around the world is inseparable from the negative impacts of climate change. Climate change is related to the decline in environmental quality due to industrial growth, carbon accumulation, and increased carbon emissions from other human activities (I Made Narsa, 2021). As this issue becomes increasingly important to governments around the world, this condition has led 196 countries to agree to the Paris Agreement. This agreement stipulates that each participating country will commit to reducing the level of climate change by reducing gas emissions.

Firm value is very important because more and more reviews are conducted by investors on firm value, one of which is consistency and transparency in disclosing carbon emissions as a form of compliance with regulations as stipulated in OJK Circular No. 30/SEOJK.04/2016, issuers or public companies must include social and environmental responsibility reports in their annual reports or sustainability reports.

According to research conducted by (Saka & Oshika, 2014a), carbon emission disclosure has a positive impact on stock prices in the market. According to research conducted by (Guidry & Patten, 2010), the publication of additional sustainability reports triggers a positive reaction in the stock market. In addition, (Qiu et al., 2016) found that environmental and social disclosure has a positive relationship with the company's stock value. However, according to (Konar & Cohen, 2001), companies that publish their chemical emissions will reduce the company's value. Meanwhile, research (Hassan et al., 2009) found no relationship between voluntary disclosure and firm value.

Greenhouse gas (GHG) carbon emissions are not a new problem for the global community. According to data from The Emissions Gap Report 2022 from the United Nations Environment Programme (UNEP), global greenhouse gas emissions have been a particular concern since 1970 and continue to be analyzed by UNEP to this day. From 1970 to 2023, carbon emissions have

doubled by 58 Gt CO2e per year. It should also be remembered that carbon emissions themselves have effects (externalities) on the environment, one of which is the house effect which makes Indonesia one of the largest contributors of Greenhouse Gases in the world.

Since carbon emissions are considered the main cause of global warming and environmental damage, several countries have agreed to an agreement to jointly reduce the effects of greenhouse gases, namely the Paris Agreement. The Paris Agreement aims to guide countries to reduce carbon and greenhouse gas emissions as a form of mitigation of climate change due to global warming. One of the countries that signed the agreement is Indonesia. However, according to data collected by Carbon Brief, Indonesia is the country with the 4th largest carbon dioxide gas emissions in the world in 2015. In that year, Indonesia's gas emissions reached 4.8% of total global emissions. Therefore, action is needed from the national and international governments so that this emission problem can be handled.

Disclosure of carbon emissions is essential because it provides transparency to authorities about business efforts to address the impacts of climate change and global warming (Carbon Disclosure Project, 2009). In the Limited Liability Company (PT) Law No. 40 of 2007, Article 66c stipulates that PT must include a report on social and environmental responsibility activities in its annual report. In addition, as regulated in OJK Circular No. 30/SEOJK.04/2016, issuers must include a report on social and environmental responsibility in their annual report or sustainability report.

Furthermore, this study will look at the effect of the effectiveness of the board of commissioners meeting on the company's value. Where in accordance with the Financial Services Authority Regulation Number 21 / POJK.04 / 2015 concerning the Implementation of Public Company Governance and the Financial Services Authority Regulation Number 33 / POJK.04 / 2014 concerning the Board of Directors and Board of Commissioners of Issuers or Public Companies Article 31 paragraph 3, issuers are required to hold a Board of Commissioners Meeting together with the Board of Directors at least 1x in 4 (four) months or 3x in 1 (one) year. Research (Ntim & Kofi, 2011) states that the frequency of board of commissioner meetings has a positive effect on firm value. In addition, the results of research (Brick & Chidambaran, 2010a) also show that board of commissioner meetings have a significant effect on firm value. Where the study states that the Board of Commissioners meeting has a positive effect on operational performance and increases the value of the acquisition of future investment opportunities for the company

Since Board of Commissioners is one of the criteria in measuring the performance of the Board of Directors Commissioners that has the authority to supervise the fulfillment of the firm value (Brick & Chidambaran, 2010b), but a different perspective states that board meetings are not always useful because the little time for directors to gather outside the company is not used to share ideas and input with management; and the fact that the CEO or President Director is the party that sets the board meeting agenda is the cause of this problem (Jensen, 1993) . Based on this gap, this study uses the Frequency of Board of Commissioners Meetings as moderator to see whether the role of the board of commissioners strengthen or weakens the influence of carbon emission disclosure and green innovation on firm value.

Based on the things that have been expressed from several references from previous studies, this study wants to examine "The influence of carbon emission disclosure and green innovation on firm value with the frequency of board of commissioner meetings as moderator".

RESEARCH METHODS

Definition and Variables Measurement

Carbon Emissions Disclosure

Carbon emission disclosure is one example of environmental disclosure included in additional reports stipulated in the legislation. Based on research by (Bae Choi et al., 2013) and (Sudibyo, 2018), researchers created a checklist based on the information request sheet provided by the Carbon Disclosure Project (CDP), and found five main categories related to climate change and carbon emissions: climate change risks and opportunities (CC/Climate Change), greenhouse gas emissions (GHG/Green house Gas), energy consumption (EC/Energy Consumption), greenhouse gas reduction and costs (RC/Reduction and Cost) and carbon emission accountability (AEC/Accountability of Emissi on Carbon).

The calculation of the Carbon Emission Disclosure index is carried out using the following steps:

1. Score each disclosure item on a dichotomous scale (yes or no);
2. The maximum score is 18, while the minimum score is 0. Each item is worth 1, so if a company discloses all items in the information in its report, the company's score is 18;
3. The scores for each company are then added up.

Green Innovation (GI)

This study uses 3 (three) dimensions according to the study conducted by (Rachmawati, 2023), namely: Green Supply Chain, Green Marketing, and Green Organizational Culture. Measurement of the Green Innovation variable will use the following calculation index:

$$GI = \frac{\text{Total items disclosed in each element}}{\text{The total number of items in each element}} \times 100\%$$

Board Meetings Frequency

The Board of Commissioners plays an important role in providing advice, supervision and monitoring the discipline of management to ensure that company managers run the company in accordance with the mandate of shareholders. This condition is in accordance with research (Lipton & Lorsch, 1992) which states that the Board of Commissioners has a significant role in implementing good corporate governance. And one of the important indicators in measuring the intensity and effectiveness of company monitoring and discipline is the frequency of board of commissioner meetings (Vafeas, 1999). In accordance with POJK Number 33 / POJK.04 / 2014 concerning the Board of Directors and Board of Commissioners of Issuers or Public Companies, the minimum number of board meetings held during 1 (one) reporting year is 4 (four) times. This study will measure the frequency of Board of Commissioners Meetings by using the "natural logarithm" calculation of the total Board of Commissioners Meetings that have been held for 1 (one) year.

Board Meetings Frequency = *Ln (*Board Meeting Assessment Weight for 1 year*)*

Table 1.

Board Meetings Frequency	Assessment Weight
> (more than) 4 times a year	3
= 4 times a year	2
<(less than) 4 times a year	1

Firm Value

Firm value is the level of success of a company from the perception of investors which is often associated with stock prices. The value of the company will be reflected in the stock price, because the stock market price is considered a reflection of the company's actual performance (Fama, 1978). Firm value is closely related to good corporate governance (GCG) because its goal

is to improve the welfare of the company's shareholders. The higher the stock price, the higher the prosperity of the shareholders in the company.

Firm value can be measured through the level of assets and liabilities and the value of shares outstanding. This value can be seen in the company's financial statements. In this study, Tobin's Q is used to measure firm value. According to (Klapper & Love, 2002,) in (Irawan & Apriwenni, 2021), Tobin's Q is a common measuring tool used to measure firm value. Because Tobin's Q includes all of the company's assets and liabilities—not just the company's common stock or equity—this evaluation ratio can provide the most relevant information

$$Tobin'sQ = \frac{Total\ Market\ Value + Total\ Liabilities}{Total\ Akiva}$$

Debt to Equity Ratio **(DER) – possible limitations for ced companies are difficult to use as control variables**

Debt to Equity Ratio (DER) is a ratio used to assess debt with equity. This ratio is calculated by comparing all debts, including current debt with all equity. If the company can manage the combination of debt with equity, then the company can maximize the value of the company. The formula used is:

$$DER = \frac{Total\ Liabilities}{Total\ Equity}$$

Data Collection and Analysis Techniques

The data and information collection technique in this study uses content analysis techniques on carbon emission disclosure and green innovation variables as well as ratio analysis for firm value and debt to equity variables. The data used in this study is secondary data in the form of panel data, namely Cyclical, Non-Cyclical, Basic Material, Energy and Industrial company data registered during the 2022-2023 period.

1. Regression Model FitTest

In panel data regression, there are three methods commonly used to estimate the regression model, namely the Common Effect Model, the Fixed Effect Model, and the Random Effect Model. To determine the best estimation model, a model suitability test can be carried out consisting of the Chow Test, the Hausman Test, and the Lagrange Multiplier Test.

2. Classical Assumption Test

The classical assumption test is used to obtain regression calculation results that are in accordance with the Best Linear Unbiased Estimator (BLUE). In various studies with regression analysis tools, classical assumption tests are always used so that the data is valid. However, in the use of regression analysis tools with panel data, classical assumption tests are not needed.
(Gujarati, 2012:237) said that classical assumption tests are not needed in data analysis because panel data can minimize bias that is likely to arise information, variation and degree of freedom in the analysis results

(Baltagi, n.d.:5-7) states that the advantages of using panel data in research are as follows.

- Panel data is able to control individual heterogeneity;
- Panel data provides more information, variability, degrees of freedom and reduces collinearity between variables;
- Panel data is more able to observe the dynamics of adjustment;
- Panel data is able to identify and measure impacts that are not detected in pure time series and cross-section data;
- Panel data allows for building and testing behavioral models more completely than pure time series and cross-section data;
- Panel data is obtained from micro units such as individual companies.

Therefore, in this study, we do not use classical assumption tests in the analysis method.

3. Panel Regression Analysis

In this study, multiple linear regression statistics will be used for panel data using Eviews 12. This technique is used to test the research hypothesis mentioned in the previous chapter. Regression will be carried out as an analysis tool. The panel data used in this study are cross-section data from 102 sample companies, and time series data for 2 (two) years, namely 2022-2023. The total amount of data after both are combined in panel form becomes 204 analysis data. The panel regression model in this study is formulated as follows: According to (Gujarati & Porter, 2015), the difference in units and magnitude of variables causes the regression equation to be made with a logarithmic model to reduce the symptoms of heteroscedasticity and to determine the sensitivity between variables. Logarithmic transformation reduces heterocedasticity, this is because the transformation that describes the scale for measuring variables reduces the difference between the two values from ten times to a two-fold difference. The ordinal board meeting frequency variable was transformed using a logarithmic model, namely the Natural Logarithm (Ln), with the aim of equating the calculation units of the other variables so that they are easy to calculate without changing the correlation or relationship between variables. Thus, the panel regression equation in this study is:

$$\mathbf{TBQ = \alpha + \beta 1CED + \beta 2GI + \beta 4BM*CED + \beta 5BM*GI + \beta 6DER + e}$$

whereas:
TBQ = Tobins' Q (Y)
CED = *Carbon Emission Disclosure* (X1)
GI = *Green Innovation* (X2)
BM = *Board Meetings (Z)*
BM*CED = Moderating *Board Meeting - Carbon Emission Disclosure*
BM*GI = Moderating *Board Meeting - Green Innovation*
DER = *Debt to Equity Ratio* (Control)
E = error/residual
Ln = Natural logarithm

RESULT AND DISCUSSION

Description of Research Object

The research sample was taken by purposive sampling, namely sampling using certain considerations and criteria, namely considering Cyclical, Non-Cyclical, Basic Material, Energy and Industrial companies registered during the 2022-2023 period which routinely release Annual Reports and Sustainability Reports consecutively in 2022-2023, as well as companies that receive PROPER ratings (Blue, Green, Yellow). After calibration was carried out on the determination of the sample criteria to be used, a final sample of 74 companies was obtained which will then be processed in a time-series manner using data from 2022-2023 according to the variables used.

Descriptive Statistical Data

Based on the results of data processing, the following descriptive statistical data was obtained:

Tabel 2
Descriptive Statistical Data

	TBQ	CED_X1	GI_X2
Mean	1.453357	0.853829	0.810088
Median	1.21575	0.904762	0.82
Maximum	5.3858	1	0.96
Minimum	0.0126	0.604762	0.62
Std. Dev.	0.971939	0.115726	0.069954

From the statistical table above, information on the average value for the quality of carbon emission disclosure is obtained at 85.38% with a maximum value of 100% which indicates that there are companies that have implemented all the required green innovation indicators. For green innovation, based on the statistical results, the average and maximum values were 81% and 96%, respectively. However, from a total of 148 observation samples for 2021-2022, there are still companies that have a fairly low carbon emission disclosure value of 60.47% and have a green innovation implementation initiative of 62%. The same thing happens with green innovation, where there are still companies that have an implementation level of 62%. This condition means that the implementation of carbon emission disclosure and green innovation has not been fully implemented evenly.

Regression Model Fit Test Results

Tabel 3
Chow Test (Fixed Effect Model)

Redundant Fixed Effects Tests
Equation: Untitled
est cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.051609	(73,68)	0
Cross-section Chi-square	215.0464	73	0

Tabel 4
Haussman Test (Random Effect Model)

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.051649	6	0.9149

Tabel 5
Lagrange Multiplier Test (Common Effect Model)

Lagrange Multiplier Tests for Random Effects Null hypotheses: No effects (all others) alternatives	
	Test Hypothesis Cross-section
Breusch-Pagan	19.703540

Based on the results of the model suitability test obtained from the results of the Chow, Hausman and Lagrange Multiplier tests, it was concluded that the regression model for this study is the Common Effect. Model (CEM). This conclusion was obtained from the Chi-Square probability value for the Chow Test of 0.000 (<0.05) so that the test must be continued with the Haussman Test. In the Hausman Test, a probability value of 0.1674 (> 0.05) was obtained, which means that it meets the criteria of the Random Effect Model. Continued with the last test by comparing it with the Common Effect Model value through the Lagrange Multiplier Test by looking at the Breusch-Pagan value. In the Lagrange test, a Breusch-Pagan value of 0.000 (<0.05) was obtained, which concluded that the model that is suitable for this study is the Random Effect Model (REM).

Discussion

Tabel 5
Regression Test (*Random Effect Model*)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.272123	2.288543	1.866743	0.064
CED_X1	7.001732	4.694383	1.491513	0.1381
GI_X2	11.21786	5.164992	2.171903	0.0315**
LOGBM_Z	-2.72427	2.577279	-1.05703	0.2923
X1_Z	-2.67356	2.180272	-1.22625	0.2221
X2_Z	4.157985	2.386923	1.741985	0.0837*
DER_C1	-0.00879	0.017507	-0.50184	0.6166
** 5%, *10% (sign)				

Carbon Emission Disclosure has no effect on firm value

This study cannot prove the positive influence of carbon emission disclosure on firm value. The test results for H1 are not in line with the proposed hypothesis, namely that carbon emission disclosure has a positive effect on firm value. Thus, in the sample companies in this study, increasing carbon emission disclosure does not have an effect on increasing firm value. This implies that stakeholders have not considered the carbon emission disclosure factor in economic decisions that lead to the formation of firm value.

Based on the legitimacy theory, one way for companies to make themselves acceptable to society is by showing concern for society through transparency of their social and environmental responsibilities and carbon emission disclosure is included in this effort. It is possible that disclosure of social and environmental responsibilities can still be done voluntarily, and the costs incurred to do so are quite large. Stakeholders may argue that the costs incurred by the company would be better used for funding and company operations, thereby increasing the company's

income. In addition, one of the reasons why the implementation of carbon disclosure has not yet provided positive implications for firm value is the existence of the "institutional isomorphism" factor. According to (DiMaggio & Powell, 2010), institutional pressure is divided into three parts, namely mimetic, coercive, and normative. Mimetic pressure refers to the pressure to imitate other competing organizations when there is uncertainty. Coercive pressure relates to external pressure exerted by regulatory bodies and other bodies. Normative pressure is pressure that comes from the professional community. These three forces have an impact on company activities and cause the implementation of carbon disclosure to be limited to meeting stakeholder pressure to gain legitimacy, where this pressure can come from the government, shareholders or even from internal company employees (Chithambo et al., 2020).

The results of this study are also in line with the results of research (Hsu & Wang, 2013), that disclosure of GHG emissions does not affect firm value, which will incur costs so that the market will be concerned about budget overruns. Likewise with the comparison of costs and returns, if the amount of costs is greater than the return, the disclosure of greenhouse gas emissions is considered expensive. In addition, the market tends to dislike negative reports such as changes in the weather from the company, because this will bring a bad image to the company so that the stock price will decrease, such as the results of research presented by (Konar & Cohen, 2001) and (Ramadhan et al., 2023) which states that disclosure of chemical emissions has a negative effect on firm value.

Green Innovation* berpengaruh positif signifikan terhadap *firm value

The results of the data analysis state that the implementation of green innovation has a significant positive effect on firm value and is in accordance with the legitimacy theory where companies must always show that management actions are in line with sustainable development values. This can usually be achieved by disclosing it in business reports. (Dai & Xue, 2022) states that green innovation has a positive effect on firm value, especially for companies at the growth-stage level where implementing green innovation can increase firm value by increasing the company's ability to implement sustainable development and reduce costs and company debt. The same condition is also produced by a study (Xie et al., 2022a) which states that the implementation of green innovation has an impact on increasing firm value in the long term, especially for "heavy polluted" companies. This is because the company's investment in the implementation of green innovation will increase energy efficiency where the company can utilize the reprocessed carbon waste and have a positive effect on the environment around the company in terms of reducing the impact of pollution and environmental costs that arise in the future.

Board Meeting Frequency can not strengthen the significant influence of carbon emission disclosure on firm value

The results of the initial study related to the proxy of meeting frequency conducted by (Jensen, 1993), stated that board of commissioner meetings are not always beneficial for management performance. The results of this study have a correlation with the results of this study where the proxy of board of commissioner meetings cannot strengthen the positive influence of carbon emission disclosure on firm value.

Based on Agency Theory, the existence of GCG proxies through supervisory mechanisms is intended to protect the interests of shareholders (principals) from mismanagement actions by management (agents). In GCG, internal and external supervisory mechanisms are involved. It seems that the Board of Commissioners factor measured through the Frequency of Board Meetings represents only a small part of the aspects of the supervisory mechanism considered by stakeholders. This study proves that the aspect of internal supervision in the form of meeting frequency has not been able to provide a positive signal and a central role related to management compliance in disclosing carbon emissions in order to increase firm value.

(Sahoo et al., 2023) and (Malini et al., 2021) also show results that contradict the agency theory which states that board of commissioner meetings have no effect on firm value, which means that

in investing in a company, investors do not pay much attention to board of commissioner meetings. In addition, board of commissioner meetings are usually held behind closed doors and are not broadcast to the general public. The number of meetings held and the context in which they are held can only be seen in the annual report published after the year ends.

Board Meeting Frequency strengthens the significant influence of green innovation disclosure on firm value

The results of the study indicate that board meeting frequency strengthens the influence of green innovation implementation on firm value. The role of the Board of Commissioners' control through the board meeting instrument has been proven to have made the implementation of green innovation well-supervised so that it has an effect on positive market responses that can increase firm value. This Board Meeting Instrument shows that if the board of commissioners carries out its duties and responsibilities effectively to supervise and provide direction to management regarding strategic policies taken by the company, these policies can be responded to positively by stakeholders.

The results of this study indicate the role of the Board of Commissioners in supporting the Legitimacy Theory which emphasizes the need for companies to disclose their social and environmental responsibilities as an effort to be recognized by the community. The results of this study are in line with research by (D. F. Eluyela et al., 2018), (Harymawan et al., 2020) dan (Utomo et al., 2018b) which prove that the role of the Board of Commissioners can strengthen the influence of environmental performance on firm value. This implies that the number of supervisory mechanisms with the proxy of the role of the Board of Commissioners will increase the disclosure of environmental performance so that its existence can increase firm value through the disclosure of environmental performance. And one of the important indicators in measuring the intensity and effectiveness of company monitoring and discipline is the shareholder policy towards strengthening the function of the Board of Commissioners in carrying out checks and balances, one of which can be implemented through the instrument of board of commissioner meetings which are held periodically

CONCLUSION

Based on the results of the analysis and discussion of the results of data processing, this study has 4 (four) points of conclusion, namely:

1. There is a significant influence between Carbon Emission Disclosure on Firm Value;
2. There is a significant influence between Green Innovation on Firm Value;
3. Board Meeting Frequency cannot strengthen the positive influence of Carbon Emission Disclosure on Firm Value;
4. Board Meeting Frequency strengthens the positive influence of Green Innovation on Firm Value.

REFERENCES

Armstrong, C. S., Guay, W. R., & Weber, J. P. (2010). The role of information and financial reporting in corporate governance and debt contracting. *Journal of Accounting and Economics*, *50*(2–3), 179–234. https://doi.org/10.1016/j.jacceco.2010.10.001

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

Baltagi, B. H. (n.d.). *Econometric Analysis of Panel Data* (3rd ed.). John Wiley & Sons Ltd.

Brick, I. E., & Chidambaran, N. K. (2010a). Board meetings, committee structure, and firm value. *Journal of Corporate Finance*, *16*(4), 533–553. https://doi.org/10.1016/j.jcorpfin.2010.06.003

Brick, I. E., & Chidambaran, N. K. (2010b). Board meetings, committee structure, and firm value. *Journal of Corporate Finance*, *16*(4), Article 4. https://doi.org/10.1016/j.jcorpfin.2010.06.003

Chang, C., & Chen, Y. (2013). Green organizational identity and green innovation. *Management Decision*, *51*(5), 1056–1070. https://doi.org/10.1108/MD-09-2011-0314

Chithambo, L., Tingbani, I., Agyapong, G. A., Gyapong, E., & Damoah, I. S. (2020). Corporate voluntary greenhouse gas reporting: Stakeholder pressure and the mediating role of the chief executive officer. *Business Strategy and the Environment*, *29*(4), 1666–1683. https://doi.org/10.1002/bse.2460

Dai, D., & Xue, Y. (2022). The Impact of Green Innovation on a Firm's Value from the Perspective of Enterprise Life Cycles. *Sustainability*, *14*(3), 1226. https://doi.org/10.3390/su14031226

Damanpour, F., Walker, R. M., & Avellaneda, C. N. (2009). Combinative Effects of Innovation Types and Organizational Performance: A Longitudinal Study of Service Organizations. *Journal of Management Studies*, *46*(4), 650–675. https://doi.org/10.1111/j.1467-6486.2008.00814.x

Díaz-García, C., González-Moreno, Á., & Sáez-Martínez, F. J. (2015). Eco-innovation: Insights from a literature review. *Innovation*, *17*(1), 6–23. https://doi.org/10.1080/14479338.2015.1011060

DiMaggio, P., & Powell, W. W. (2010). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields (translated by G. Yudin). *Journal of Economic Sociology*, *11*(1), 34–56. https://doi.org/10.17323/1726-3247-2010-1-34-56

Duchin, R., Matsusaka, J. G., & Ozbas, O. (2010). When are outside directors effective?☆. *Journal of Financial Economics*, *96*(2), 195–214. https://doi.org/10.1016/j.jfineco.2009.12.004

Eluyela, D. F., Akintimehin, O. O., Okere, W., Ozordi, E., Osuma, G. O., Ilogho, S. O., & Oladipo, O. A. (2018). Board meeting frequency and firm performance: Examining the nexus in Nigerian deposit money banks. *Heliyon*, *4*(10), e00850. https://doi.org/10.1016/j.heliyon.2018.e00850

Fama, E. F. (1978). The Effects of a Firm's Investment and Financing Decisions on the Welfare of Its Security Holders. *The American Economic Review*, *68*(3), 272–284. JSTOR.

Ganda, F. (2018). The effect of carbon performance on corporate financial performance in a growing economy. *Social Responsibility Journal*, *14*(4), 895–916. https://doi.org/10.1108/SRJ-12-2016-0212

Guidry, R. P., & Patten, D. M. (2010). Market reactions to the first-time issuance of corporate sustainability reports: Evidence that quality matters. *Sustainability Accounting, Management and Policy Journal*, *1*(1), 33–50. https://doi.org/10.1108/20408021011059214

Gujarati, D. (2012). *Dasar-Dasar Ekonometrika* (5th ed., Vol. 2). Salemba Empat.

Gujarati, D., & Porter, D. C. (2015). *Dasar-Dasar Ekonometrika* (5th ed., Vol. 2). Salemba Empat.

Harymawan, I., Nasih, M., & Nowland, J. (2020). Top management team meetings and firm performance. *Accounting Research Journal*, *33*(6), 691–708. https://doi.org/10.1108/ARJ-03-2020-0062

Hassan, O. A. G., Romilly, P., Giorgioni, G., & Power, D. (2009). The value relevance of disclosure: Evidence from the emerging capital market of Egypt. *The International Journal of Accounting*, *44*(1), 79–102. https://doi.org/10.1016/j.intacc.2008.12.005

Hsu, A. W., & Wang, T. (2013). Does the market value corporate response to climate change? *Omega*, *41*(2), 195–206. https://doi.org/10.1016/j.omega.2011.07.009

I Made Narsa, A. N. K. J. (2021). Factors That Can Be Predictors of Carbon Emissions Disclosure. *Jurnal Akuntansi*, *25*(1), 70. https://doi.org/10.24912/ja.v25i1.725

Irawan, S., & Apriwenni, P. (2021). PENGARUH FREE CASH FLOW, FINANCIAL DISTRESS, DAN INVESTMENT OPPORTUNITY SET TERHADAP MANAJEMEN LABA. *Jurnal Akuntansi Bisnis*, *14*(1). https://doi.org/10.30813/jab.v14i1.2458

Jensen, M. C. (1993). The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems. *The Journal of Finance*, *48*(3), 831–880. https://doi.org/10.1111/j.1540-6261.1993.tb04022.x

Klapper, L. F., & Love, I. (2002). Corporate Governance, Investor Protection and Performance in Emerging Markets. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.303979

Konar, S., & Cohen, M. A. (2001). Does the Market Value Environmental Performance? *Review of Economics and Statistics*, *83*(2), 281–289. https://doi.org/10.1162/00346530151143815

Lipton, M., & Lorsch, J. W. (1992). A Modest Proposal for Improved Corporate Governance. *The Business Lawyer*, *48*(1), 59–77. JSTOR.

Makeeva, E., Popov, K., & Teplova, O. (2024). Patenting for profitability: Green energy innovations and firm performance in BRICS countries. *Frontiers in Environmental Science*, *12*, 1332792. https://doi.org/10.3389/fenvs.2024.1332792

Malini, H., Natalia, D., & Giriati, G. (2021). Corporate Governance and Company Value: A Manufacturing Industry Case Study. *INOBIS: Jurnal Inovasi Bisnis Dan Manajemen Indonesia*, *4*(4), 450–461. https://doi.org/10.31842/jurnalinobis.v4i4.196

Ntim, C., & Kofi, O. (2011). The Impact of Corporate Board Meetings on Corporate Performance in South Africa. *African Review of Economics and Finance*, *2*(2), 83–103.

Okpala, O. P., & Iredele, O. O. (2019). CORPORATE SOCIAL AND ENVIRONMENTAL DISCLOSURES AND MARKET VALUE OF LISTED FIRMS IN NIGERIA. *Copernican Journal of Finance & Accounting*, *7*(3), 9. https://doi.org/10.12775/CJFA.2018.013

Qiu, Y., Shaukat, A., & Tharyan, R. (2016). Environmental and social disclosures: Link with corporate financial performance. *The British Accounting Review*, *48*(1), 102–116. https://doi.org/10.1016/j.bar.2014.10.007

Rachmawati, S. (2023). The New Model: Green Innovation Modified to Moderate the Influence of Integrated Reporting, Green Intellectual Capital toward Green Competitive Advantage. *International Journal of Energy Economics and Policy*, *13*(2), 61–67. https://doi.org/10.32479/ijeep.13921

Ramadhan, P., Rani, P., & Wahyuni, E. S. (2023). Disclosure of Carbon Emissions, Covid-19, Green Innovations, Financial Performance, and Firm Value. *Jurnal Akuntansi Dan Keuangan*, *25*(1), 1–16. https://doi.org/10.9744/jak.25.1.1-16

Sahoo, M., Srivastava, K. B. L., Gupta, N., Mittal, S. K., Bakhshi, P., & Agarwal, T. (2023). Board meeting, promoter CEO and firm performance: Evidence from India. *Cogent Economics & Finance*, *11*(1), 2175465. https://doi.org/10.1080/23322039.2023.2175465

Saka, C., & Oshika, T. (2014a). Disclosure effects, carbon emissions and corporate value. *Sustainability Accounting, Management and Policy Journal*, *5*(1), 22–45. https://doi.org/10.1108/SAMPJ-09-2012-0030

Saka, C., & Oshika, T. (2014b). Disclosure effects, carbon emissions and corporate value. *Sustainability Accounting, Management and Policy Journal*, *5*(1), 22–45. https://doi.org/10.1108/SAMPJ-09-2012-0030

Saputra, M. F. M. (2020). PENGARUH KINERJA LINGKUNGAN DAN BIAYA LINGKUNGAN TERHADAP KINERJA KEUANGAN DENGAN PENGUNGKAPAN LINGKUNGAN SEBAGAI VARIABEL INTERVENING (Studi Empiris Pada Perusahaan Pertambangan Yang Terdaftar di BEI Tahun 2014-2018. *Jurnal Riset Akuntansi Tirtayasa*, *5*(2), 123–138. https://doi.org/10.48181/jratirtayasa.v5i2.8956

Sudibyo, Y. A. (2018). Carbon emission disclosure: Does it matter. *IOP Conference Series: Earth and Environmental Science*, *106*, 012036. https://doi.org/10.1088/1755-1315/106/1/012036

Utomo, M. N., Wahyudi, S., Muharam, H., & Sianturi, J. A. T. P. (2018a). Commissioner Board Monitoring to Create Firm Performance through Environmentally Friendly Management. *Journal of Environmental Management and Tourism*, *9*(3), Article 3. https://doi.org/10.14505//jemt.9.3(27).26

Utomo, M. N., Wahyudi, S., Muharam, H., & Sianturi, J. A. T. P. (2018b). Commissioner Board Monitoring to Create Firm Performance through Environmentally Friendly Management. *Journal of Environmental Management and Tourism*, *9*(3), 659. https://doi.org/10.14505//jemt.9.3(27).26

Vafeas, N. (1999). Board meeting frequency and firm performance. *Journal of Financial Economics*, *53*(1), 113–142. https://doi.org/10.1016/S0304-405X(99)00018-5

Xie, Z., Wang, J., & Zhao, G. (2022). Impact of Green Innovation on Firm Value: Evidence From Listed Companies in China's Heavy Pollution Industries. *Frontiers in Energy Research*, *9*, 806926. https://doi.org/10.3389/fenrg.2021.806926