

THE EFFECT OF GREEN ACCOUNTING AND CARBON EMISSION DISCLOSURE ON FIRM VALUE IN INFRASTRUCTURE COMPANIES ON THE INDONESIA STOCK EXCHANGE FOR THE 2021-2025 PERIOD

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Abstrak

Penelitian ini bertujuan untuk menguji secara empiris pengaruh green accounting dan carbon emission disclosure terhadap firm value pada perusahaan sektor infrastruktur yang terdaftar di Bursa Efek Indonesia periode 2021–2025. Penelitian ini merupakan penelitian kuantitatif dengan data sekunder yang diolah menggunakan SPSS 26. Sampel ditentukan melalui metode purposive sampling dan diperoleh 284 observasi perusahaan-tahun, yang kemudian menjadi 178 observasi setelah dilakukan penyesuaian data pencilan (outlier). Green accounting diukur dengan variabel dummy berdasarkan kepemilikan sertifikat ISO 14001, carbon emission disclosure diukur menggunakan indeks Carbon Disclosure Project (CDP), dan firm value diproksikan dengan Tobin's Q. Teknik analisis data menggunakan regresi linear berganda. Hasil penelitian menunjukkan bahwa green accounting tidak berpengaruh signifikan terhadap firm value, sedangkan carbon emission disclosure berpengaruh positif signifikan terhadap firm value. Nilai Adjusted R² sebesar 0,391 menunjukkan variabel independen dalam model mampu menjelaskan 39,1% variasi firm value.

Kata Kunci: *Firm value, green accounting, carbon emission disclosure.*

Abstract

This study empirically examines the effect of green accounting and carbon emission disclosure on firm value, in infrastructure sector companies listed on the Indonesia Stock Exchange during

2021–2025. This quantitative study uses secondary data processed with SPSS 26. The sample was determined through purposive sampling, yielding 284 firm-year observations, reduced to 178 observations after outlier adjustment. Green accounting is measured with a dummy variable based on ISO 14001 certification ownership, carbon emission disclosure is measured using the Carbon Disclosure Project (CDP) index, and firm value is proxied by Tobin's Q. Data were analyzed using multiple linear regression. The results show that green accounting has no significant effect on firm value, while carbon emission disclosure has a significant positive effect on firm value. The Adjusted R² of 0.391 indicates the independent variables explain 39.1% of the variation in firm value.

Keywords: *Firm value, green accounting, carbon emission disclosure*

A. INTRODUCTION

Firm value reflects the market's perception of a company's performance and future prospects, and is one of the main considerations for stakeholders in formulating investment strategies, managing risk, and promoting business sustainability (Yuliandhari et al. 2023). A high firm value reflects management's success in managing resources and building investor confidence in the company's ability to create long-term value (Oktaviani et al. 2024).

Growing global attention to climate change and environmental degradation has driven a shift in corporate orientation from being purely profit-oriented toward giving greater attention to social and environmental aspects of operational activities (Prasasti, Nirwana, and Yusmaniarti 2025). For example, PT Astrindo Nusantara Infrastruktur Tbk (BIPI) acquired a 20% stake in PT Maharaksa Energi Hijau worth Rp500,000,000 as part of its strategy to strengthen its investment portfolio in the green energy sector, as reported in an Indonesia Stock Exchange (IDX) disclosure in April 2026.

Green accounting is an accounting system that integrates environmental costs and benefits into a company's recording and reporting, covering the identification of waste management costs, pollution control, and the use of natural resources (Tambunan and Aminah 2025). Carbon emission disclosure is a form of corporate transparency in conveying information on the amount of carbon emissions generated by operational activities, including emission sources, targets, and reduction

strategies (Stefani and Gunawan 2024). Both practices are believed to strengthen investor confidence and thereby have the potential to increase firm value (Chrirtoper and Khairani 2024).

Prior studies show inconsistent results regarding this relationship. Al-dhaimesh (2020), Lestari & Khomsiyah (2023), and Pratama et al. (2024) found that green accounting has a positive effect on firm value, while other studies found insignificant results. Similar differences in findings were also found in the relationship between carbon emission disclosure and firm value. This inconsistency forms the basis for this study to re-examine both relationships in infrastructure companies listed on the Indonesia Stock Exchange during the 2021-2025 period.

Based on the above description, this study is formulated to answer: (1) whether green accounting affects firm value; and (2) whether carbon emission disclosure affects firm value, in infrastructure companies listed on the IDX during the 2021-2025 period.

1. Legitimacy Theory and Stakeholder Theory

Legitimacy theory explains that companies strive to obtain and maintain legitimacy from society by aligning their activities with prevailing social norms and values, including through the disclosure of the environmental impact of their operations. Stakeholder theory, developed by Freeman, complements legitimacy theory by emphasizing that companies are responsible not only to shareholders but also to all stakeholders through the provision of transparent information regarding the management of environmental impacts (Freeman n.d.). Both theories serve as the main basis for explaining why green accounting and carbon emission disclosure have the potential to affect firm value.

Firm value is a key indicator reflecting a company's performance and future growth prospects; a higher value signifies greater investor confidence in the company's ability to create long-term value (Oktaviani, Satriansyah, and Widianingrum 2024).

Green accounting is a financial reporting approach that accounts for environmental costs and benefits, assisting companies in formulating appropriate policies to address environmental issues while maintaining harmonious relationships with the community (Christopher and Khairani 2024).

Carbon emission disclosure reflects a company's commitment to environmental and sustainability issues and serves as a form of transparency toward stakeholders (Putri and Agustin 2023). Financial performance reflects a company's ability to manage finances effectively and efficiently to achieve optimal business profits and forecast future financial conditions (Fitriana et al. 2025).

2. Hypothesis Development

The implementation of green accounting reflects a company's commitment to identifying, measuring, and reporting environmental costs, thereby increasing transparency and stakeholder trust (Pratama et al. 2024; Lestari and Khomsiyah 2023). Based on legitimacy theory, companies that obtain legitimacy from society and investors tend to have a better image, thereby being able to increase firm value.

H1: Green accounting has a positive effect on firm value.

The broader a company's carbon emission disclosure, the greater its influence on investor decisions, since carbon emission issues have become an important concern related to a company's sustainability and prospects (Ramdani and Nugraha 2024; Kurnia, Nur, and Putra 2021). Based on stakeholder theory, transparency in carbon emission disclosure increases the trust of investors and other stakeholders.

H2: Carbon emission disclosure has a positive effect on firm value.

B. METHOD

This study uses a quantitative approach with a causal design. The research population consists of infrastructure sector companies listed on the Indonesia Stock Exchange (IDX) during the 2021-2025 period. The sample was determined through purposive sampling with the following criteria: (1) infrastructure companies listed on the IDX from 2021 to 2025; (2) publishing annual reports and financial statements during that period; and (3) having complete data to calculate all research variables. Data were collected from the official IDX website (www.idx.co.id) and the official websites of each company. The operational definitions and measurement of the variables are presented in Table:

Tabel 1. Measurement of Variabels

Variable	Operational Definition	Measurement	Scale
Green Accounting (X1)	The implementation of an accounting system that integrates environmental aspects.	Dummy: 1 if the company holds an ISO 14001 certificate, 0 otherwise.	Dummy
Carbon Emission Disclosure (X2)	The level of carbon emission information disclosure by the company.	CDP index (content analysis, 18 items across 5 categories); CED = number of items disclosed / total number of disclosure items × 100%.	Ratio
Firm Value (Y)	The market's perception of a company's value and prospects.	Tobin's Q = (Market value of equity + Total liabilities) / Total assets.	Ratio

C. RESULTS AND DISCUSSIONS [Times New Roman 12, Bold]

1. Descriptive Statistics

After outlier adjustment, the number of observations used in the testing was 178 firm-year data points. The descriptive statistics of the research variables are presented in Table 2

Tabel 2. Descriptive Statistics

Variable	N	Min	Max	Mean	Std. Dev
Green Accounting (X1)	178	0.00	1.00	0.57	0.496
Carbon Emission Disclosure (X2)	178	0.00	0.83	0.3229	0.21613

Firm Value (Y)	178	0.32	1.71	0.9841	0.29464
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Source: SPSS output, processed data, 2026

The average green accounting value of 0.57 indicates that most of the sample companies already hold ISO 14001 certification. The average carbon emission disclosure of 0.32 (32%) indicates a relatively low level of carbon emission disclosure, with the highest disclosure (83%) achieved by PT Cardig Aero Services Tbk. The average firm value of 0.98 (close to 1) indicates that the market's valuation of the sample companies is generally at a fair level, with the highest value achieved by PT Mitra Pemuda Tbk in 2021 and the lowest value by PT First Media Tbk in 2025.

2. Classical Assumption Test

The initial Kolmogorov-Smirnov normality test showed that the data were not normally distributed (Asymp. Sig. = 0.000). After outlier adjustment, the Asymp. Sig. value increased to 0.054 (> 0.05), so the residuals were declared normally distributed. The multicollinearity test showed that all independent variables had tolerance values > 0.10 and VIF values < 10 (ranging from 1.022 to 1.870), indicating no symptoms of multicollinearity. The heteroscedasticity test using the Glejser test showed that all variables had significance values > 0.05 , indicating the model was free from heteroscedasticity. The autocorrelation test produced a Durbin-Watson value of 1.993, which falls between dU (1.8248) and 4-dU (2.1752), indicating the model was free from autocorrelation problems. Thus, the regression model satisfied the requirements of the Best Linear Unbiased Estimator (BLUE) and was suitable for hypothesis testing.

3. Hypothesis Test Results

The F-test results show a significance value of 0.000 (< 0.05), indicating that green accounting and carbon emission disclosure simultaneously have a significant effect on firm value.

Tabel 3. T-Test

Coefficients ^{a a}			
	Model	t	Sig.
1	(Constanta)	-,456	.649
	Carbon Emission Disclosure	1.079	.282
	Green Accounting	5.031	.000

The t-test results indicate that green accounting has a significance value of 0.282 (> 0.05), meaning it does not have a significant effect on firm value; thus, H1 is rejected. Carbon emission disclosure has a significance value of 0.000 (< 0.05) with a positive coefficient, meaning it has a significant positive effect on firm value; thus, H2 is accepted.

Coefficientt of Determination(R^2)

Tabel 3. Coeffisientt of Determination (R^2)Test

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of theEstimate
1	.642 ^a	.412	.391	.12365

The Adjusted R^2 value of 0.391 indicates that the green accounting and carbon emission disclosure variables, , explain 39.1% of the variation in firm value, while the remaining 60.9% is explained by factors outside this research model.

D. CONCLUSIONS

Based on the test results of 178 observations of infrastructure sector companies listed on the Indonesia Stock Exchange during the 2021-2025 period, it can be concluded that: (1) green accounting has no effect on firm value; and (2) carbon emission disclosure has a significant positive effect on firm value.

This study has several limitations: the research object only covers the infrastructure sector, so the results cannot yet be generalized to other sectors; the measurement of green accounting using an ISO 14001 ownership dummy does not yet reflect the magnitude of investment or the effectiveness of implementation; and the measurement of carbon emission disclosure based on the CDP index only assesses the extent of disclosure, not the quality or effectiveness of emission reduction.

E. SUGGESTIONS

Future research is recommended to expand the research object to other sectors and extend the observation period; to use a more comprehensive measurement of green accounting (such as the amount of environmental costs or environmental performance); and to consider the quality and effectiveness of carbon emission reduction programs, not merely the extent of disclosure.

REFERENCES

- Al-dhaimesh, Othman Hel. 2020. "Green Accounting Practices and Economic Value Added: An Applied Study on Companies Listed on the Qatar Stock Exchange." *International Journal of Energy Economics and Policy* 10(6):164–68.
- Anggita, Wenni, Ari Agung Nugroho, and Suhaidar. 2022. "Carbon Emission Disclosure and Green Accounting Practices on the Firm Value." *Jurnal Akuntansi* XXVI(03):464–81.
- Bellamy, Amanda, Lilik Handajani, and Iman Waskito. 2023. "Pengaruh Penerapan Green Accounting dan Kinerja Lingkungan Terhadap Kinerja Perusahaan." *Valid Jurnal Ilmiah* 20(2):52–61.
- Benkraiem, Ramzi, Fatima Shuwaikh, Faten Lakhal, and Assil Guizani. 2022. "Carbon Performance and Firm Value of the World's Most Sustainable Companies." *Economic Modelling* 116:106002.
- Bolton, Patrick, and Marcin Kacperczyk. 2021. "Do Investors Care about Carbon Risk?" *Journal of Financial Economics* 142(2):517–49.

- Chrirtoper, Wijaya, and Siti Khairani. 2024. "Pengaruh Pengungkapan Emisi Karbon dan Green Accounting Terhadap Nilai Perusahaan Sektor Industri." *Jurnal Riset Mahasiswa Ekonomi Manajemen dan Akuntansi* 4(2):130–40.
- Crossley, Richard M., Mohamed H. Elmaghrhi, and Collins G. Ntim. 2021. "Sustainability and Legitimacy Theory: The Case of Sustainable Social and Environmental Practices of Small and Medium-Sized Enterprises." *Accounting & Finance*.
- Fitriana, Aning, Destin Alfianika Maharani, Shella Rizqi Amelia, and Lia Widya. 2025. "Pengungkapan Emisi Karbon untuk Meningkatkan Nilai Perusahaan: Apakah Kinerja Keuangan Mampu Memoderasi?" *Jurnal Studi Akuntansi dan Keuangan* 7(2):407–20.
- Freeman, R. Edward. n.d. *A Stakeholder Approach to Strategic Management*. Darden Graduate School of Business Administration, University of Virginia.
- Gantino, Rilla, Endang Ruswanti, and Agung Mulyo Widodo. 2023. "Green Accounting and Intellectual Capital Effect on Firm Value Moderated by Business Strategy." *Jurnal Akuntansi* 27(01):38–61.
- Ghozali, Imam. 2018. *Aplikasi Analisis Multivariate dengan Program IBM SPSS 25*. Edisi 9. Semarang: Badan Penerbit Universitas Diponegoro.
- Indrastuti, Dewi Kurnia. 2024. "Performance or Size: Moderating the Effect of Green Accounting on Firm Value." *International Journal of Business, Economics and Law* 33(1):23–29.
- Kurnia, Pipin, D. P. Emrinaldi Nur, and Adhitya Agri Putra. 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.
- Lee, Jeong-hwan, and Jin-hyung Cho. 2021. "Firm-Value Effects of Carbon Emissions and Carbon Disclosures—Evidence from Korea." *International Journal of Environmental Research and Public Health*.
- Lestari, Ade Dwi, and Khomsiyah. 2023. "Pengaruh Kinerja Lingkungan, Penerapan Green Accounting, dan Pengungkapan Sustainability Report Terhadap Nilai Perusahaan." *Jurnal Ekonomi Bisnis, Manajemen dan Akuntansi* 3:527–39.

- Maharani, Destin Alfianika, Anastasia Anggarkusuma Arofah, Ika Siti Fatimah, and Tiya Latifah. 2022. "Ukuran Perusahaan Memoderasi Pengaruh Sensitivitas Industri dan Profitabilitas Terhadap Pengungkapan Emisi Karbon." *Jurnal Ilmiah Akuntansi Kesatuan* 10(3):541–50.
- Oktaviani, Devina, Arief Satriansyah, and Enggar Widianingrum. 2024. "The Effect of Profitability, Company Size and Leverage on Company Value." *Jurnal Ilmiah Akuntansi Kesatuan*.
- Prasasti, Sheli Nirwana, and Yusmaniarti. 2025. "Implementasi Green Accounting pada Perusahaan Manufaktur: Studi Literatur." *Jurnal Akuntansi, Keuangan, Perpajakan dan Tata Kelola Perusahaan* 3(1).
- Pratama, Daffa Rinaldi, Eni Reptiningsih, and Eka Dyah Setyaningsih. 2024. "Pengaruh Green Accounting, Kinerja Lingkungan, dan Ukuran Perusahaan Terhadap Nilai Perusahaan Pada Perusahaan Sektor Pertambangan." *J-CEKI: Jurnal Cendekia Ilmiah* 4(1):2873–85.
- Ramdani, Kafi Ezra, and Arie Apriadi Nugraha. 2024. "Pengaruh Pengungkapan Emisi Karbon dan Kinerja Lingkungan Terhadap Nilai Perusahaan." *Indonesian Accounting Literacy Journal* 4(3):215–25.
- Stefani, and Juniati Gunawan. 2024. "Sustainability in Business: How Green Accounting, Carbon Emission Disclosure, and Green Transformational Leadership Influence Firm Value with Eco-Efficiency as a Moderator." *IRJEMS* 3(12):185–95.
- Surya, Dirvi, and Ameliani Zeila. 2025. "The Influence of Green Accounting, Corporate Social Disclosure, Carbon Emission Disclosure, and Green Product Innovation on Firm Value." *Jurnal Ekonomi dan Bisnis* 28(2):469–90.
- Tambunan, Petrus Hamonangan, and Aminah. 2025. "Penerapan Green Accounting Terhadap Pengelolaan Limbah Pada Rumah Sakit Swasta Bandar Lampung." *JEMSI* 11(2):681–95.
- Yuliandhari, Willy Sri, Rr Sri Saraswati, Zaid Muhammad, and Rasid Safari. 2023. "Pengaruh Carbon Emission Disclosure, Eco-Efficiency dan Green Innovation Terhadap Nilai Perusahaan." *Owner: Riset & Jurnal Akuntansi* 7:1526–39.
- Yuliani, Elvina, and Budi Prijanto. 2022. "Pengaruh Penerapan Green Accounting Terhadap Nilai Perusahaan dengan Profitabilitas Sebagai Variabel Moderating." *Jurnal Ilmiah Akuntansi dan Keuangan* 5(5):2275–84.

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