

The Effects of Green Accounting and Intellectual Capital on Firm Value with Profitability Moderation

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Abstract: This research discusses the role of Green Accounting and Intellectual Capital affect firm value, while moreover assessing profitability as a moderating variable. The analysis is conducted on mining firms listed on the Indonesia Stock Exchange for the 2023–2024 period. A quantitative design is applied, employing classical assumption testing, t-tests for significance, tests of the coefficient of determination, and Moderated Regression Analysis (MRA) to evaluate the impact of the independent variables on the dependent variable with the inclusion of a moderating variable. Data processing is carried out using SPSS. The study demonstrates that Green Accounting does not have a significantly influences firm value, whereas Intellectual Capital exerts a strong and significant positive effect. Profitability is found not to moderate the connection between Green Accounting and firm value, but it significantly enhances the influence of Intellectual Capital on firm value. Overall, the firm value of mining companies is predominantly shaped by Intellectual Capital, with profitability amplifying the value added by intellectual assets.

Key Words: Green Accounting; Intellectual Capital; Firm Value; Profitability; Moderation Analysis

Introduction

Global economic changes require companies to maintain performance and value stability, reflecting investor perceptions in the capital market. In the mining sector, company value tends to fluctuate, despite its contribution to the sector's GDP increasing to 10.64% in 2023. Several issuers have experienced a decline in market value, such as PT Adaro Energy Indonesia Tbk (ADRO), whose Tobin's Q dropped from 1.07 (2022) to 0.96 (2023), and PT Bumi Resources Tbk (BUMI) from 1.02 to 0.91 (Databoks, 2024). This situation indicates that a company's financial performance does not necessarily correspond with its market value.

In addition to fluctuating company values, the mining sector faces significant environmental pressures. The PROPER evaluation (KLHK, 2023) showed that only six companies received a green rating, while twelve received a black rating. Environmental pollution cases reported by Kaltimkece.id (2022) also have the potential to damage a company's reputation and influence investor perceptions. Therefore, the implementation of green accounting and intellectual capital management are important indicators suspected of influencing company value in industries with high environmental risks.

Green accounting is an accounting practice that combines ecological costs and benefits into financial reporting to increase transparency and sustainability (Ikhsan, 2008). Green accounting disclosure is measured using the Global Reporting Initiative (GRI) standards as developed by (Clarkson, Li, Richardson, & Vasvari, 2008) and (Braam, Weerd, Hauck, & Huijbregts, 2016). Previous research has shown mixed results, with (Astuti & Ahmar, 2025) finding a positive effect on firm value, while (Anggraini, Nugroho, & Susanto, 2024) found a negative effect. Intellectual capital, as an intangible asset, as measured by the VAIC method (Pulic, 1998), also shows inconsistent research results, with both positive and insignificant (Yuliawati & Alinsari, 2022).

This research investigates, profitability, as proxied by ROA, acts as a moderating measured since it reflects a firms ability in producing returns from its assets (Ghozali, 2020). Several studies have found that profitability may reinforce the association between green accounting and intellectual capital on firm value (Anggraini et al., 2024) and (Amirullah, Dharma, & Putri, 2021), although other studies have shown different results (Muhammad Raihan Ihza Afief, Jantje J. Tinangon, 2020). Based on empirical phenomena and inconsistencies in previous findings, this study explores the role of green accounting and intellectual capital implementation on firm value, including profitability as a moderating variable, in the mining sector traded on the Indonesia Stock Exchange (IDX) for the 2023–2024 period. The aim is to empirically examine how green accounting as well intellectual capital implementation impact the valuation of firms among mining company quoted on the IDX.

Theoretical Basis

Signaling theory argues that companies disclose information to external parties to minimize information asymmetry. Spence (1973) emphasized that signals are used to enable the market to assess a corporation's quality. monetary and non-monetary disclosures, including environmental information and intellectual capital, are signals that can increase investor confidence (Ghozali, 2020). Green accounting is a framework encompassing capturing, quantifying, and reporting environmental costs (Ramdhani, 2024). This implementation reflects a organization's dedication to sustainability, hence providing a favorable signal to investors (Gantino, Ruswanti, & Widodo, 2023). Extensive environmental disclosure is believed to increase market perception of a company's value (Astari, Laurens, Wicaksono, & Sujarminto, 2023).

Green accounting acts as a positive signal directed to investors because it demonstrates an organization's commitment to transparent and responsible environmental practices. When these signals are trusted, investors perceive the company as having lower risk, better governance, and more secure long-term prospects. This positive market response ultimately increases the value of the company. The measurement of green accounting in this study uses environmental disclosure indicators based on GRI standards, which have been applied in research (Braam et al., 2016). Measurement is carried out by quantifying the number of disclosure items appearing across a company's sustainability report.

Intellectual capital includes a company's knowledge, skills, experience, and innovation (Nguyen & Doan, 2020). In signaling theory, intellectual capital disclosure conveys the message that a company is capable of creating added value through innovative capabilities, process efficiency, and strong external relationships. When this information is received by the market, investors assess the company as having long-term competitiveness, higher growth potential, and lower performance risks. This positive perception strengthens investor confidence, increases interest in the stock, and ultimately drives an increase in company value. Optimal intellectual capital management is seen by the market as evidence of innovation capacity and managerial quality. Intellectual capital is assessed using the VAIC™ approach as formulated by Pulic (1998).

Firm value represents how the market perceives future prospects of the company and performance (Astari et al., 2023). This value reflects shareholder welfare and investor expectations for future growth (Maharani & Handayani, 2021). In this study, Tobin's Q is employed as an indicator because it reflects market expectations regarding asset value and profit prospects. Meanwhile, profitability captures the firm's proficiency in creating returns from its assets (Nurhaliza & Harmain, 2022) and (Yuliawati & Alinsari, 2022). Profitability acts as a factor that strengthens or weakens the credibility concerning green accounting and intellectual capital signals. When profitability is high, the market perceives sustainability

signals and intellectual capacity as supported by solid financial performance, making them more convincing. Consequently, the effect exerted by green accounting and intellectual capital on company value is further enhanced. However, when profitability is low, investors may perceive these signals as less consistent with financial performance, thus weakening their impact on company value. In this study, profitability is measured using ROA because it provides a comprehensive picture of asset management efficiency without being affected by differences in capital structure.

Hypothesis

The Influence of Green Accounting on Firm Value

Signaling theory posits that companies use environmental disclosure as a constructive signal to reduce information asymmetry and demonstrate sustainability commitment. Green accounting based on GRI standards provides transparent environmental information, thereby increasing investor confidence and market perception of the entity's prospects. This outcome aligns with earlier studies (Astari et al., 2023) and (Wenni Anggita, Ari Agung Nugroho, & Suhaidar, 2022), which shows that green accounting has been shown to have positive implications for firm value. Therefore, the research assumption is:

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

The Influence of Intellectual Capital on Company Value

According to signaling theory, intellectual capital signals an organization's ability to generate innovation, productivity, and competitive advantage. High intellectual capital indicates managerial quality and potential added value, thus attracting investor interest. This aligns with (Nguyen & Doan, 2020), which argues that intellectual capital contributes positively to firm value. Therefore, the research hypothesis is:

H2: Intellectual capital exerts a positive influence on firm value.

Profitability Moderates the Effect of Green Accounting on Firm Value

Profitability strengthens the signal provided through green accounting disclosures as it signals a firm's profit-generating ability, thus making environmental signals more credible to investors. Companies are perceived not only as environmentally conscious but also as efficient in managing assets, thus strengthening the influence of green accounting on firm value. This finding aligns with research by (Ramdhani, 2024) and (Oktapiyani & Hamdana, 2024), which shows that profitability moderates this relationship. Therefore, the research hypothesis is:

H3: Profitability moderates the effect of green accounting on firm value.

Profitability Acts as a Moderator of Intellectual Capital on Firm Value

Profitability reflects a company's effectiveness in generating profits. In signaling theory, high profits amplify the credibility of intellectual capital signals because they indicate that intellectual capital truly creates added value. These results support research by (Pramathana & Widarjo, 2020) and (Widyati & Astika, 2023), which demonstrated that profitability plays a moderating role in the effect of intellectual capital on firm value. As a result, the research hypothesis is stated as follows::

H4: Profitability moderates the effect of intellectual capital on firm value.

Method

This research adopts a quantitative approach using an associative to evaluate the impact of green accounting and intellectual capital on firm value, with profitability acting as a moderating variable. The subjects of this research were mining firms listed on the IDX during the 2023–2024 period. Samples were selected using purposive sampling based on specific criteria or considerations (Sugiyono, 2023). The sampling criteria in this research were mining firms that published complete annual and sustainability reports during 2023–2024,

with a total sample of 112 firm. All data were then processed employing the classical assumption test, significance testing using the t-test, and the test of the coefficient of determination. Furthermore, a Moderated Regression Analysis (MRA) was performed to assess the impact of the independent variables on the dependent variable by including moderating variables that act to reinforce or diminish the influence linking the two variables. The entire analysis process was processed using SPSS software.

Table 1. Operationalization of Research Variables

Variable	Indicator	Reference Source
Green Accounting	GA Disclosure = Total score obtained by the company/Total maximum score	(Clarkson et al., 2008) and (Braam et al., 2016)
Intellectual Capital	VAIC = VACA+VAHUS+STVA	Pulic (1998) in (Astari et al., 2023)
Firm Value	Tobins'Q = (MVE+Debt)/Total Assets	(Dzahabiyya, Jhoansyah, & Danial, 2020)
Profitability	ROA = (Net Profit/Total Assets)x100%	(Andika & Astini, 2021)

Results and Discussion

Classical Assumption Test

Normality Test

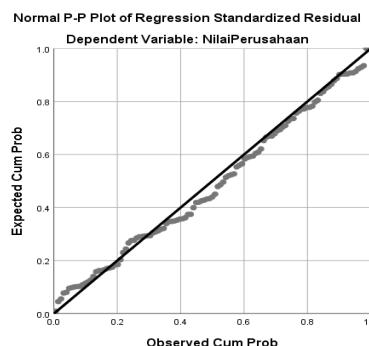


Figure 1. Normality Test Results

The findings suggest that classical assumption test results indicate that residuals are normally distributed, as seen from the P-P Plot pattern which follows the diagonal line.

Multicollinearity Test

Table 2. Multicollinearity Test Results

Model	Coefficients ^a						Collinearity Statistics	
	Unstandardized Coefficients		Standardized Coefficients		T	Sig.	Tolerance	VIF
	B	Std. Error	Beta					
1	(Constant)	-1.116	.097		-11.507	.000		
	GreenAccounting	.044	.115	.012	.378	.706	.987	1.013
	Int.Capital	.351	.012	.942	29.592	.000	.987	1.013

a. Dependent Variable: FirmValue

Confirms that no multicollinearity exists because the Tolerance value = 0.987 and VIF = 1.013 for all variables.

Autocorrelation Test

Table 3. Autocorrelation Test Result

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.941 ^a	.886	.884	.60853	2.084

a. Predictors: (Constant), Int.Capital, GreenAccounting

b. Dependent Variable: FirmValue

Based on table 3, autocorrelation was also not found because the Durbin Watson value = 2.084, is within the safe limit of 1.5-2.5.

Heteroscedasticity Test

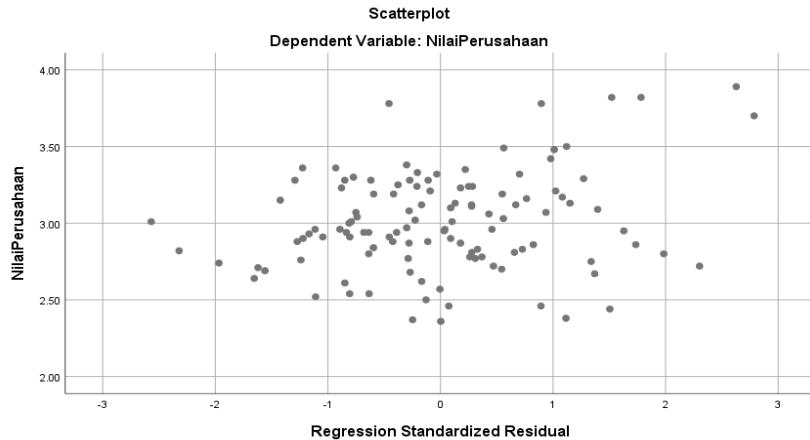


Figure 2. Heteroscedasticity Test Result

Shows a scatterplot of randomly distributed residuals, thus showing no signs of heteroscedasticity. Thus, all classical assumptions are met, and the regression model is suitable for use.

Hypothesis Testing

T-Test (Partial)

Table 2 shows indicates that the significance value of Green Accounting on company value is $0.706 > 0.05$ and the coefficient valued is 0.044. At a significance level of 5%, so Green Accounting does not significantly influence company value. Then the significance value of Intellectual Capital on Company Value is $0.000 < 0.05$ and the coefficient value is 0.351. With a significance level of 5%, it can be inferred that intellectual capital has a significant positive influence on company value.

Coefficient of Determination (R^2) Test

In Table 3, the R Square value of 0.886 indicates that the model has very strong predictive ability, meaning that green accounting and intellectual capital are able to explain 88.6% of the variability in company value, whereas the remaining 11.4% is explained by other factors beyond the model. This high coefficient of determination indicates that intellectual variables are a dominant factor in increasing company value.

Moderated Regression Analysis (MRA) Test

Table 4. MRA X1-Z-Y Test Results

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1	(Constant) .610	.225		2.706	.008
	GreenAccounting -1.957	1.087	-.541	-1.800	.075
	X1*Z .786	.504	.468	1.559	.122

a. Dependent Variable: FirmValue

Table 4 shows that the interaction model between green accounting and profitability is unable to moderate the effect. This is evidenced by a significance value of 0.122, which is greater than 0.05, indicating that is insignificant.

Table 5. MRA X2-Z-Y Test Results
Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.962 ^a	.926	.924	.49126

a. Predictors: (Constant), X2*Z, IntellectualCapital

b. Dependent Variable: FirmValue

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients Beta	T	Sig.
	B	Std. Error			
1	(Constant)	-.488	.069	-7.070	.000
	IntellectualCapital	-.277	.092	-.077	.003
	X2*Z	.116	.003	.958	.000

a. Dependent Variable: FirmValue

Table 5 shows that profitability moderates and enhances the effect of intellectual capital on firm value. The interaction model yields a significance value of 0.000 < 0.05, which is highly significant. Furthermore, the R-square value of 0.926 confirms that profitability substantially enhances the model's strength.

The results show that Green Accounting does not affect firm value, suggesting that environmental disclosure is not yet a strong signal for investors. Conversely, Intellectual Capital exerts a positive and significant effect, indicating that intellectual capital provides a signal considered relevant in assessing a company's future prospects and performance. Profitability does not have a moderating effect on Green Accounting, suggesting that high profits do not make environmental information more convincing to investors. However, profitability moderates the effect of Intellectual Capital on firm value, strengthening signaling theory because high profits make intellectual capital signals more credible and increase market response.

Conclusion

This study examines the impact of green accounting and intellectual capital on firm value, with profitability as a moderating variable in mining companies. The findings reveal that green accounting does not have a significant effect on firm value, whereas intellectual capital has a positive and significant effect. Profitability does not moderate the effect between green accounting and firm value, but it does strengthen the influence of intellectual capital on firm value. These findings confirm that firm value is more influenced by intellectual capital and strengthened by profitability. This study implies the need for companies to improve their intellectual capital management and profitability. Further research is recommended to expand the sample, add non-financial variables, and use a longer observation period.

References

Amirullah, H. R., Dharma, F., & Putri, W. R. E. (2021). Pengaruh Intellectual Capital terhadap Nilai Perusahaan saat Pandemi COVID 19 dengan Profitabilitas sebagai Variabel Moderasi. *Jurnal Akuntansi Bisnis Dan Ekonomi*, 7(2), 2039–2050.

Andika, S., & Astini, D. (2021). Pengaruh Intellectual Capital Terhadap Capital Gain. *Jurnal Akuntansi, Keuangan, Pajak Dan Informasi (JAKPI)*, 1(2), 122–135. <https://doi.org/10.32509/jakpi.v1i2.2171>

Anggraini, A. D., Nugroho, W. S., & Susanto, B. (2024). Pengaruh Pengungkapan Intellectual Capital, Good Corporate Governance , dan Green Accounting terhadap Nilai Perusahaan dengan Profitabilitas sebagai Variabel Moderasi. *UMMagelang Conference Series*, 10–24.

<https://doi.org/10.31603/conference.11862>

Astari, T. A., Laurens, S., Wicaksono, A., & Sujarminto, A. (2023). Green Accounting and Disclosure of Sustainability Report on Firm Values in Indonesia. *E3S Web of Conferences*, 426. <https://doi.org/10.1051/e3sconf/202342602024>

Astuti, T., & Ahmar, N. (2025). Effects of green intellectual capital, green accounting, and green innovation on firm value: The moderating role of return on assets. *Environmental Economics*, 16(1), 1–12. [https://doi.org/10.21511/ee.16\(1\).2025.01](https://doi.org/10.21511/ee.16(1).2025.01)

Braam, G. J. M., Weerd, L. Uit de, Hauck, M., & Huijbregts, M. A. J. (2016). Determinants of corporate environmental reporting : The importance of environmental performance and assurance Doi link to publisher : <https://doi.org/10.1016/j.jclepro.2016.03.039> Version of the following full text : Publisher 's version Published under. *Journal of Cleaner Production*, 129(2016), 724–734.

Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, 33(4–5), 303–327. <https://doi.org/10.1016/j.aos.2007.05.003>

Dzahabiyya, J., Jhoansyah, D., & Danial, R. D. M. (2020). Analysis Firm Value With Tobins' Q. *JAD: Jurnal Riset Akuntansi Dan Keuangan Dewantara*, 4(1), 46–55. Retrieved from <http://ejournal.stiedewantara.ac.id/index.php/JAD/issue/view/49%0Ahttp://ejournal.stiedewantara.ac.id/index.php/JAD/article/view/520>

Gantino, R., Ruswanti, E., & Widodo, A. M. (2023). Green Accounting And Intellectual Capital Effect On Firm Value Moderated By Business Strategy. *Jurnal Akuntansi*, 27(1), 38–61. Retrieved from <http://dx.doi.org/10.24912/jm.v27i1.1118>

Ghozali. (2020). *25 Grand Theory*.

Maharani, P., & Handayani, S. (2021). Pdfcoffee.Com_1141-Article-Text-2138-2-10-20210315-Pdf-Free. *Jurnal Pendidikan*, 5-No.1(1), 220–231.

Muhammad Raihan Ihza Afief, Jantje J. Tinangon, H. G. (2020). Pengaruh Modal Intelektual Terhadap Nilai Perusahaan Dengan Kinerja Keuangan Sebagai Variabel Moderating Pada Perusahaan Perbankan Yang Terdapat Di Bursa Efek Indonesia. *Journal of Innovation Research and Knowledge*, 2(10), 3967–3974. <https://doi.org/10.53625/jirk.v2i10.5242>

Nguyen, A. H., & Doan, D. T. (2020). The impact of intellectual capital on firm value: Empirical evidence from Vietnam. *International Journal of Financial Research*, 11(4), 74–85. <https://doi.org/10.5430/ijfr.v11n4p74>

Nurhaliza, S., & Harmain, H. (2022). Nurhaliza, Sit. Harmain Hendra "Analisis Rasio Profitabilitas Dalam Menilai Kinerja Keuangan Perusahaan Pada Pt.Indofood Sukses Makmur Tbk Yang Terdaftar Di Bei" *Jurnal Ilmiah Manajemen, Ekonomi, dan Akuntansi*, Vol.6, No.3. (2022) 1193-1194. *Jurnal Ilmiah Manajemen, Ekonomi, & Akuntansi (MEA)*, 6(3), 1189–1202.

Oktapiyani, H., & Hamdana, H. (2024). Interaksi Dinamis: Implementasi Green Accounting, Kinerja Lingkungan Dan Pengaruhnya Terhadap Nilai Perusahaan Melalui Lensa Profitabilitas Pada Perusahaan Industri Yang Terdaftar Di Bei Periode 2019 – 2023. *Jurnal GeoEkonomi*, 15(2), 247–250. <https://doi.org/10.36277/geoekonomi.v15i2.524>

Pramathana, B., & Widarjo, W. (2020). The Effect of Intellectual Capital Performance on Company's Financial Performance. *Jurnal Reviu Akuntansi Dan Keuangan*, 10(3), 497–508. <https://doi.org/10.22219/jrak.v10i3.13273>

Ramdhani, P. (2024). (33-43)+262 (1). *Sanskara Akuntansi Dan Keuangan*, 3(01), 33–43. <https://doi.org/10.58812/sak.v3.i01>

Sugiyono. (2023). Metode Penelitian Kuantitatif Kualitatif R&D. In *Educacao e Sociedade* (Vol.

1). Retrieved from
http://www.biblioteca.pucminas.br/teses/Educacao_PereiraAS_1.pdf
http://www.anpocs.org.br/portal/publicacoes/rbcs_00_11/rbcs11_01.htm
http://repositorio.ipae.gov.br/bitstream/11058/7845/1/td_2306.pdf
<https://direitoufma2010.files.wordpress.com/2010/>

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>

Widyati, N. K. A., & Astika, I. B. P. (2023). Intellectual Capital, Nilai Perusahaan dan Profitabilitas sebagai Variabel Mediasi. *E-Jurnal Akuntansi*, 33(12), 3303–3315.
<https://doi.org/10.24843/eja.2023.v33.i12.p14>

Yuliawati, R., & Alinsari, N. (2022). Pengaruh Modal Intelektual Terhadap Nilai Perusahaan Dengan Profitabilitas Sebagai Variabel Moderasi. *Owner*, 6(3), 1698–1708.
<https://doi.org/10.33395/owner.v6i3.939>