Jurnal Riset Akuntansi Mercu Buana JRAMB Online ISSN 2548-4338, Print ISSN 2460-1233
Vol 12, N0 01, May 2026

THE INFLUENCE OF GREEN INTELLECTUAL CAPITAL DISCLOSURE ON ENVIRONMENTAL PERFORMANCE AND FIRM VALUE IN INDONESIA

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Article Info
Submission :09-04-2026 Revised : 13-05-2026 Accepted: 25-05-2026 Published : 31-05-2026

Keyword: Pengungkapan *green intellectual capital*, kinerja lingkungan, nilai perusahaan, asimetri informasi, legitimasi

Pengaruh Pengungkapan Modal Intelektual Hijau Terhadap Kinerja Lingkungan Dan Nilai Perusahaan Di Indonesia

Abstrak

Penelitian ini bertujuan untuk menganalisis peran pengungkapan *green intellectual capital* pada peningkatan nilai perusahaan secara langsung dan melalui kinerja lingkungan. Penelitian ini dilatarbelakangi oleh meningkatnya perhatian terhadap isu keberlanjutan serta tingginya asimetri informasi yang mendorong kebutuhan investor terhadap informasi yang lebih transparan dan kredibel. Selain itu, perusahaan juga menghadapi tekanan untuk memperoleh legitimasi melalui praktik keberlanjutan yang dapat diterima oleh pemangku kepentingan. Penelitian menggunakan pendekatan kuantitatif dengan data perusahaan yang terdaftar di pasar modal Indonesia. Sampel dipilih berdasarkan metode *purposive sampling*. Penelitian ini menggunakan *ordinary least squares* untuk uji hipotesis. Hasil penelitian menunjukkan bahwa pengungkapan *green intellectual capital* berperan sebagai sinyal awal yang mampu mengurangi asimetri informasi dan meningkatkan kepercayaan investor, sehingga mendorong peningkatan nilai perusahaan. Selain itu, pengungkapan tersebut juga mendorong peningkatan kinerja lingkungan yang berfungsi sebagai bentuk transformasi sinyal sekaligus sebagai mekanisme legitimasi melalui kinerja yang terverifikasi. Kinerja lingkungan selanjutnya menjadi saluran yang mentransmisikan pengaruh pengungkapan terhadap nilai perusahaan. Nilai perusahaan dipengaruhi oleh informasi yang diungkapkan dan realisasi praktik keberlanjutan. Implikasi penelitian ini menegaskan pentingnya integrasi antara transparansi informasi dan implementasi keberlanjutan untuk meningkatkan kredibilitas dan kepercayaan pasar.

Keywords: *Green intellectual capital disclosure, environmental performance, firm value, information asymmetry, legitimacy*

Abstract

This study examines the effect of green intellectual capital disclosure on firm value, both directly and indirectly through environmental performance as a mediating variable. The research is motivated by growing concerns about sustainability and the persistence of information asymmetry in capital markets, which encourages investors to demand more transparent and credible corporate information. In addition, companies are increasingly pressured to obtain legitimacy through sustainability practices that align with stakeholder expectations. This research employs a quantitative research design, using purposively selected firms listed on the Indonesian capital market. The relationships among variables are analyzed using Ordinary Least Squares regression. The findings indicate that green intellectual capital disclosure functions as a strategic signal that reduces investor uncertainty and enhances market confidence, thereby increasing firm value. Broader sustainability disclosure practices encourage companies to improve their environmental achievements, indicating the realization of corporate sustainability commitments while simultaneously enhancing external legitimacy. Environmental performance further functions as an intermediary pathway through which green intellectual capital disclosure influences market valuation. These findings imply that firm value is shaped not only by the communication of sustainability information but also by the company's tangible environmental practices and achievements. Therefore, integrating transparency and sustainability practices is important for enhancing corporate credibility and investor trust.

: https://doi.org/10.26486/b9wrp655
URL : https://ejurnal.mercubuana-yogya.ac.id/index.php/akuntansi/index
Email : jramb@mercubuana-yogya.ac.id

How to cite:

Setyowati, S. M., & Bagaskara, F. A. (2026). The Influence of Green Intellectual Capital Disclosure on Environmental Performance and Firm Value in Indonesia. *JRAMB, 12*(01), 29-40. doi: https://doi.org/10.26486/b9wrp655

INTRODUCTION

This study examines whether disclosing green intellectual capital improves environmental performance and enhances firm value. Climate change and environmental regulations are driving the business landscape toward green transformation to ensure the industry's sustainability prospects (Sane & Setyowati, 2024). The circular economy intensifies business competition, influences firm valuation, and shapes decision-making, making the creation of a company's competitive advantage more important than traditional accounting systems (Gillan et al., 2021). Green intellectual capital (GIC) is an internal resource that provides a competitive advantage for achieving company sustainability by leveraging environmental knowledge and applying green innovation to business processes (Solihin, Harnovinsah, Tugiantoro, 2023). GIC represents the accumulation of knowledge, organizational systems, and external relationships that support innovation and environmentally friendly practices (Mansoor et al., 2021). GIC enables companies to integrate sustainability practices into business processes and create long-term value (Solihin, Harnovinsah, Tugiantoro, 2023). However, the economic value of the GIC will be reflected in the market price if it is explicitly disclosed. In line with the sustainable development of the capital market, investors today are not only evaluating historical financial performance, but also considering how companies are managing environmental risks and building sustainable growth prospects (Broadstock et al., 2021; Gillan et al., 2021). Sustainability disclosure is increasingly interpreted as an indicator of a firm's capability to sustain future cash flows and manage environmental risk exposure (Gillan et al., 2021).

Disclosure of intangible assets, including green human capital, green structural capital, and green relational capital, facilitates the implementation of policies that create a company image that is responsive, adaptive, and environmentally responsible (Nawangsari et al., 2021; Nisar et al., 2021). Sustainability information is perceived as an indicator of a company's ability to maintain cash flow sustainability and manage environmental risks (Gantino et al., 2023; Nawangsari et al., 2021). Market-based firm value represents an investor's collective assessment of the company's economic prospects and future risks (Setyowati, 2022). From a signaling perspective, stock prices and market-based ratios reflect the market's assessment of the strategic information the company publishes, including sustainability disclosures (Gillan et al., 2021). Thus, market-based firm value serves as a relevant proxy for assessing whether investors truly value a sustainability strategy. Previous research has focused on the determinants of corporate value from green innovation (Husnaini & Tjahjadi, 2021; Isfani & Pratama, 2025; Snae & Setyowati, 2024; Wilutama & Viverita, 2024), environmental performance (Broadstock et al., 2021; Gillan et al., 2021), disclosure of corporate social responsibility (Bofinger et al., 2022), and GIC (Alnaim & Metwally, 2024; Asiaei et al., 2023; Haldorai et al., 2022). Empirical evidence also shows that the quality of ESG disclosures is positively correlated with the value of market-based companies (Bofinger et al., 2022). In the same pattern, researchers argue that GIC disclosures can serve as a quality signal that indicates a company's competitive advantage (Solihin, Harnovinsah, Tugiantoro, 2023) in managing environmental risks and creating sustainable cash flows (Connelly et al., 2011). Although research on the disclosure of green strategies and corporate values has been growing (Gillan et al., 2021). Empirical evidence that specifically tests the direct influence of GIC disclosures on firm value is still relatively limited, especially in developing countries (Tonay & Murwaningsari, 2022).

GIC reflects the company's ability to integrate green practices into its business processes, including organizational greening activities that span the entire value chain, such as production processes, waste management, organizational culture, environmental strategy, and employee behavior (Nisar et al., 2021). In the context of sustainability, a company's performance is no longer measured solely by financial achievements but also by its ability to meet environmental

responsibilities (Khanifah et al., 2020). The increasing public attention to greenwashing has also led investors to focus not only on the breadth of sustainability disclosures but also on the credibility of the implementation of the company's environmental practices. Understanding how markets respond to intangible asset-based sustainability information is becoming increasingly important, especially in developing countries that still face relatively high levels of information asymmetry, such as Indonesia. Therefore, environmental performance is increasingly seen as an important indicator that can influence investors' perceptions of a company's prospects and risks, ultimately reflected in the firm's value (Haldorai et al., 2022; Pratama et al., 2020). However, research that simultaneously examines the roles of GIC disclosure and legitimacy mechanisms in shaping environmental performance and firm value remains limited, especially in emerging markets. This condition makes research on green intellectual capital disclosure, environmental performance, and firm value important for determining whether sustainability information has economic relevance in capital markets and for examining how environmental performance strengthens the credibility of investors' responses to sustainability signals. This study not only aims to test the influence of GIC disclosure but also to explain the mechanism by which environmental performance transforms information into firm value.

This research offers several innovations to the intellectual capital literature and to sustainable capital markets. First, the research focuses on the direct impact of GIC disclosure on firm value across all sectors in the Indonesian market. GIC disclosure is a credible information channel that provides explicit signals to the public. Investors can assess the company's capacity to manage environmental risks and create long-term value (Connelly et al., 2011). The assumption is that GIC is an intangible strategic asset that cannot be directly observed by investors (Haldorai et al., 2022). The economic value and contribution of GIC to environmental innovation and performance (Alnaim & Metwally, 2024; Asiaei et al., 2023) are not automatically reflected in the stock price. Investor responses arise when GIC is disclosed through credible, publicly available communication channels. Such conditions can occur in Indonesia, given the capital market's characteristics, which still face a relatively high level of information asymmetry (Jafar et al., 2024). As well as variations in literacy and investor sophistication. Under conditions of high uncertainty, investors are increasingly sensitive to the publication of sustainability information as it affects risk perceptions and long-term cash flow expectations (Broadstock et al., 2021). The need for explicit, structured information is becoming increasingly crucial for reducing investment uncertainty. This study argues that, in the Indonesian market context, GIC disclosure has the potential to be more economically relevant, as it helps reduce information asymmetry and increase market confidence.

Second, this study not only examines the direct influence of GIC disclosure on firm value, but also explains the mechanism by which such sustainability information is transformed into market response through environmental performance. Research on GIC disclosure and intellectual capital disclosure in the Indonesian market context remains relatively limited. Previous research has generally examined the relationship between sustainability disclosure and corporate value directly without explaining the underlying transmission process (Bofinger et al., 2022; Gillan et al., 2021). Several studies have found that disclosing intellectual capital can improve transparency and help investors assess the company's economic prospects (Pratama et al., 2020). Nevertheless, Ardianto & Holiawati (2025) suggest that sustainability-based intangible asset disclosures are not always responded to in a significant way by the market. Market responses to GIC disclosure remain inconclusive. Inconsistencies in previous research results can be caused by voluntary disclosure practices that vary widely across companies, without standard rules or standards. Differences in focus and in investors' ability to capture signals of competitive advantage expressed in intangible assets (Gillan et al., 2021). This study argues that investors often need external legitimacy mechanisms to verify the sustainability information companies disclose. This study integrates signaling theory and legitimacy theory to explain that GIC disclosure extends beyond symbolic communication and is internalized into operational activities that lead to better environmental performance. Environmental performance is positioned as a form of external legitimacy that verifies the credibility of the sustainability signals that companies convey to investors (Yadiati et al., 2019).

Third, this study uses the PROPER rating as a proxy for environmental legitimacy that has distinctive characteristics in the Indonesian context. The use of PROPER makes a contextual

contribution because the rating represents an environmental evaluation conducted by government authorities and is generally considered credible by stakeholders. This study examines how GIC disclosure is transformed into environmental performance to explain the indirect effect of GIC disclosure on firm value through environmental performance. The assumption is that external recognition from public authorities serves as a legitimacy mechanism that can verify the company's sustainability practices, thereby increasing the credibility of the information conveyed to stakeholders. In the context of emerging markets, the institutional legitimacy of regulators is important because investors often face limited information about the quality of a company's sustainability implementation (Jafar et al., 2024). The legitimacy gained through the PROPER rating has the potential to strengthen investors' interpretation of GIC disclosures and increase its economic relevance to the firm value.

Hypothesis Development

The company's intangible assets in the form of knowledge, skills, human resources, relationships, and reputation are intellectual capital that has strategic value for the company (Yadiati et al., 2019). In the context of sustainability, GIC represents the company's ability to integrate environmental aspects into its business activities and become a source of long-term competitive advantage. However, as an intangible asset, the economic value of GIC cannot be directly observed by investors, so a communication mechanism is required to reduce information asymmetry. According to signaling theory, GIC disclosures serve as explicit signals that convey a company's quality and prospects to the market (Connelly et al., 2011). In conditions of relatively high information asymmetry, GIC disclosures are becoming increasingly relevant as they help investors evaluate risks and potential future cash flows. The information disclosed is interpreted as a representation of sustainability-based competitive advantage, thereby increasing investor confidence and encouraging a positive market response, reflected in the firm's value. Based on theoretical arguments, the researcher proposes the following hypothesis:

H1: Green intellectual capital disclosure has a positive effect on firm value

GIC disclosure not only serves as a means of communication but also reflects the company's commitment to implementing sustainability practices in real terms. According to legitimacy theory, companies seek to gain social acceptance by adapting their activities to evolving environmental norms and expectations (Yadiati et al., 2019). The disclosure of GIC is an early indication of this commitment, encouraging companies to realize it by improving environmental performance as a form of legitimacy. As attention to environmental issues increases, stakeholders are not only responding to the information disclosed but also demanding verifiable evidence of implementation.

From a signaling theory, good environmental performance serves as a more credible signal because it reflects the realization of previously communicated information (Connelly et al., 2011). Environmental performance gives investors confidence in the company's ability to manage environmental risks and maintain the sustainability of cash flow, thereby increasing the firm's value (Khanifah et al., 2020). Thus, the disclosure of GIC and environmental performance forms an indirect relationship mechanism, where the disclosure of GIC as an initial signal is internalized in operational activities and transformed into verified environmental performance, which subsequently becomes the basis for investor evaluation. This process shows that environmental performance acts as an intervening mechanism, transmitting the influence of GIC disclosure on the firm's value. Based on theoretical arguments, the researcher proposes the following hypothesis:

H2: Green intellectual capital disclosure has a positive effect on environmental performance
H3: Environmental performance has a positive effect on the firm value
H4. Green intellectual capital disclosure positively affects the value through environmental performance.
The proposed research hypotheses are presented in Figure 1:

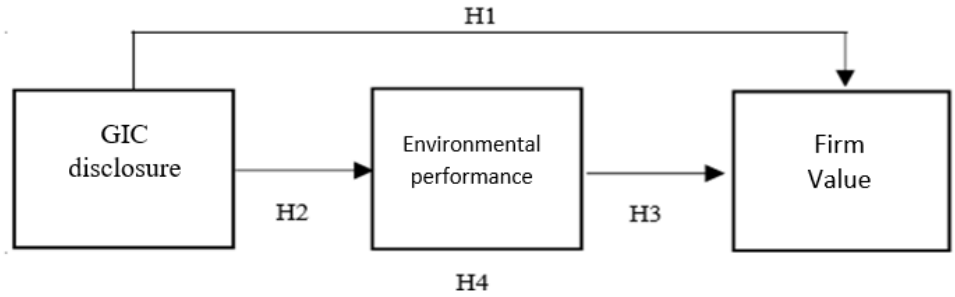

Figure 1. Hypothesis Development

METHOD

The study population comprises non-financial firms listed on the Indonesia Stock Exchange (IDX). Samples were selected using a purposive sampling method based on several criteria: (1) companies disclosing green intellectual capital information, (2) firms participating in the PROPER program, (3) availability of audited financial statements during 2019–2021, (4) publication of annual and sustainability reports for the 2019–2021 period, (5) fiscal year ending on December 31, (6) positive equity value at the beginning of the observation period, and (7) availability of data required to measure ROA and firm size. The study relies on secondary data obtained from publicly available company financial statements.

GIC disclosure (GICD) is an independent variable. This study used a content analysis method that adapted the green intellectual capital framework developed by Chen (2008) and Yadiati et al. (2019). The measurement of green human capital, green structural capital, and green relational capital was conducted through manual data collection from corporate annual reports and sustainability reports. The disclosure assessment used an unweighted disclosure index with a dichotomous scoring method: a value of 1 was assigned when a disclosure item appeared in the report, and 0 when it did not. The disclosure index score was calculated by comparing the number of disclosed items with the total disclosure items using the following formula:

$$\text{GICDI} = \frac{\sum \text{Ditemij}}{\sum \text{ADitemij}}$$

where:
GICDI: GIC disclosure index
∑ij Ditem: Total GIC score disclosed (0-10 points)
∑ij ADitem: Total GIC that should be disclosed (10 points)

The disclosure instrument comprises 10 disclosure items that represent the dimensions of green intellectual capital (see Table 1).

Table 1. GIC disclosure instrument

Dimensions	Disclosure Items	Score
Green Human Capital	a. Report employee productivity and their involvement in supporting the environmental sustainability initiative.	0/1
	b. Disclose products and services related to environmental protection.	0/1
	c. Disclose management activities related to environmental protection.	0/1
Green Structural Capital	a. Disclose research and development (R&D) activities related to environmental protection.	0/1
	b. Reveal innovations related to environmental protection.	0/1
	c. Disclose management systems related to environmental protection.	0/1
	d. Disclose the company's environmental certifications or	0/1

		standards related to environmental protection.	
Green Relational Capital	a.	Reveal the relationship with the supplier related to environmental protection.	0/1
	b.	Disclose customer satisfaction related to products related to environmental protection.	0/1
	c.	Reveal its relationship with strategic partners related to environmental protection.	0/1

Environmental performance (EP) is a mediating variable. The environmental performance measurements presented in Table 2 were obtained from the official website of the Ministry of Environment and Forestry of the Republic of Indonesia (MoEF), following the methodology used by Nur et al. (2025). Based on the Decree of MoEF regarding the results of the assessment of the company's performance rating in environmental management in 2019 – 2021.

Table 2. PROPER rating

Color	Remarks	Score
Black	Companies that neglect environmental management responsibilities and contribute to environmental pollution or ecological damage.	1
Red	Firms whose environmental management practices are still below regulatory expectations and not yet fully compliant.	2
Blue	Represents companies that have fulfilled the required environmental management standards and regulations.	3
Green	Indicates environmental performance that goes beyond minimum regulatory requirements through initiatives related to energy conservation, emission control, and waste reduction.	4
Gold	Reflects outstanding environmental management practices supported by advanced innovations that create positive economic and social contributions.	5

In this study, firm value is proxied by Tobin's Q. This market-based indicator measures the extent to which the market values a company relative to the replacement value of its assets, including equity and outstanding liabilities (Nekhili & Cherif, 2011). A higher Tobin's Q ratio generally indicates stronger investor confidence regarding the firm's profitability and future business growth potential (Hendratama & Barokah, 2020). The Tobin's Q measurement applied in this research follows the calculation approach developed by Downs et al. (2016), using the following formula:

$$\text{Tobin's Q} = (\text{MVE} - \text{BVE} + \text{TA}) / \text{TA}$$

where:
MVE: Market Value of Equity
BE: Book Value of Equity
TA: Total Assets

In this study, the control variables are Return on Assets (ROA) and firm size, proxied by the natural logarithm of total assets. To examine the proposed hypotheses, the analysis employs Ordinary Least Squares (OLS) regression. The regression model is formulated as follows:

$FVi_{,t+1} = \alpha_0 + \beta 1 GICD_{i,t} + \beta 2 ROA_{i,t} + \beta 3 SIZE_{i,t} + e$ ..... (1)
$EP_{i,t} = \alpha_0 + \beta 1 GICD_{i,t} + \beta 2 ROA_{i,t} + \beta 3 SIZE_{i,t} + e$ ..... (2)
$FVi_{,t+1} = \alpha_0 + \beta 1 EP_{i,t} + \beta 2 ROA_{i,t} + \beta 3 SIZE_{i,t} + e$ ..... (3)
$FVi_{,t+1} = \alpha_0 + \beta 1 GICD_{i,t} + \beta 2 EPi,t + \beta 3 ROA_{i,t} + \beta 4 SIZE_{i,t} + e.$ ..... (4)

where:
α_0 : Constant
β: Slope or regression coefficient or intercept
$FVi_{,t+1}$: Firm value in company i period t

$GICD_{i,t}$: Disclosure green intellectual capital company in period t
$ROA_{i,t}$: Return on Assets of firm i in period t
$SIZE_{i,t}$: Company size in company i period t
e: Error

Model 1 is a regression equation model used to test how GIC disclosure practices affect firm value. Model 2 was used to test how GIC disclosure practices affect environmental performance—model 3 tests how environmental performance affects a firm's value. Model 4 examines how GIC disclosure is transformed (mediated) into environmental performance, thereby affecting the firm value.

RESULT AND DISCUSSION

Statistics Descriptive

Table 3 presents the descriptive statistics. The total research sample consisted of 93 firm-year observations. The average value of $GICD_{i,t}$ is 0.290, indicating that the company's disclosed information regarding GIC remains low, with a maximum of 0.900 and a minimum of 0.100. Meanwhile, the average $EP_{i,t}$ value is 3,290, indicating that the company's overall performance is quite good, with most companies in the blue and green PROPER ratings, ranging from 1 to 5 in the gold category. The average $FVi,_{t+1}$ of 0.488 indicates that the company's market valuation is not sufficiently strong, ranging from 0.012 to 1.443. The average FVi at t+1 is still above the median. The control variables in the study were $ROA_{i,t}$ and $Size_{i,t}$ with mean values of 9,064 and 29,869, respectively.

Table 3. Statistics descriptive

Variable	N	Min	Max	Mean	Std
$GICD_{i,t}$	93	0,100	0,900	0,290	0,187
$EP_{i,t}$	93	1.000	5.000	3.290	0,950
$FV_{i,t+1}$	93	0,012	1.413	0,488	0,222
$ROA_{i,t}$	93	-0.570	44.840	9.064	2.023
$SIZE_{i,t}$	93	27.435	32.484	29.869	1.410

GICD: Green Intellectual Capital Disclosure; EP: Environmental Performance; FV: Firm Value; ROA: Return on Assets; SIZE: Size.

Regression Test Results

Table 4 presents empirical evidence on the influence of GICD implementation on environmental performance and firm value. The OLS regression results showed that GICDi,t had a positive effect on FVi,t+1. The coefficient value was 0.268, with a t-test value of 2.650 and a significance level of 0.009 < 0.05, indicating that the data supported H1. Model 2 testing showed the results of testing the effect of GICDi,t on EPi,t. The coefficient value was 0.313, with a t-test value of 3.486 and a significance level of 0.000 < 0.01, indicating that the data support H2. GICD has a positive impact on the company's environmental performance.

Model 3 testing showed the results of the test of the effect of EPi,t on $FVi,_{t+1}$. The coefficient value was 0.205, with a calculated t-value of 1.996 and a p-value of 0.049 (< 0.05), indicating that the data supported H3. Environmental performance positively affects the firm's value. In model 4, the regression results on the influence of GICDi,t on $FVi,_{t+1}$ via environmental performance are presented.

Table 4. Regression Test Results

Variable	FVi_{t+1} (1)		$EP_{i,t}$ (2)		FVi_{t+1} (3)		FVi,t_{+1} (4)	
	Coeff	T	Coeff	t	Coeff	t	Coeff	t
$GICD_{i,t}$	0.268	2.650***	0.313	3.486***			0.259	2.082**
$EP_{i,t}$					0.205	1.996**	0.276	2.217**
$ROA_{i,t}$	0.265	2.700**	0.079	0.88600	0.268	2.682**	-0.133	-1.355**
$SIZE_{i,t}$	0.028	0.27000	0.359	4.033***	0.019	0.18600	-0.129	-1.26400

GICD: Green Intellectual Capital Disclosure; EP: Environmental Performance; FV: Firm Value; ROA: Return on Assets; SIZE: Size. N=93; t-test in parentheses * p < 0.1; ** p < 0.05; *** p < 0.01

Model 4 testing showed that GICDi,t coefficient on $FVi,_{t+1}$ decreased from 0.268 to 0.259, indicating that $EP_{i,t}$ is the appropriate mediating variable. The data support H4 in the study; the EPi,t variable partially mediated the relationship between GICDi,t and $FVi,_{t+1}$. This study applies the mediation testing procedure introduced by Baron and Kenny (1986) using the causal step method, as the empirical relationships among the variables demonstrate stable coefficient patterns and consistent levels of significance across the regression analysis. The causal step approach is commonly used in business, accounting, and management research, employing OLS, especially in studies with relatively small sample sizes and simple mediation models (Hair et al., 2022; Hayes, 2022). This approach is relevant for research aimed at elucidating the mechanism of transmission of influence between variables through structured causal relationships. The findings indicate that disclosing green intellectual capital positively affects firm value and simultaneously improves environmental performance. In addition, better environmental performance is associated with higher firm value. The coefficient of the effect of GICD on firm value decreased after environmental performance variables were included in the regression model, but remained significant. The estimation results across all research models demonstrate that the relationships among the variables align with the proposed theoretical framework, with statistically significant coefficients explaining the connections among GICD, environmental performance, and firm value.

Discussion

GIC Disclosure and Firm values

The results of this study show that GICD has a positive effect on the firm value. These findings indicate that Indonesia's capital market is beginning to respond to sustainability information as part of a company's economic assessment, particularly information on its ability to manage environmental risks and sustain long-term business performance. In the context of emerging markets such as Indonesia, investors still face a relatively high level of information asymmetry, especially regarding the quality of the company's sustainability implementation (Jafar et al., 2024). This condition makes investors increasingly sensitive to non-financial information that can help explain a company's prospects and risks (Connelly et al., 2011). These results support signaling theory, which holds that firms communicate relevant information to the market to minimize information asymmetry and shape investor assessments. (Connelly et al., 2011). GIC disclosures serve as a strategic communication medium that represents a company's capacity to manage sustainability-based intangible assets that investors cannot directly observe. GIC disclosure demonstrates a company's ability to incorporate green human capital, green structural capital, and green relational capital into its operations. By providing this information transparently, the company enables investors to understand better its potential to generate sustainable long-term value. In conditions of relatively high information asymmetry, the publication of strategic information, such as the disclosure of GIC, is an important signal that shapes investors' expectations of future risks and cash flows (Connelly et al., 2011; Setyowati, 2022).

GICD sends positive signals to stakeholders and encourages increased investor interest in shareholding. In conditions of relatively high information asymmetry, GIC disclosure is becoming an increasingly relevant signal for helping investors evaluate a company's quality. The information

is interpreted as an indicator of sustainability based competitive advantage, thereby increasing market confidence in the company's prospects. Investor response is reflected in increased demand for shares, which ultimately affects the firm's value. The market's positive response to the GIC disclosure also reflects changes in investor behavior in Indonesia over the past few years. The growth of ESG-based investment, the implementation of sustainable finance by the Otoritas Jasa Keuangan (OJK), and increasing public attention to environmental issues are encouraging investors to consider a company's sustainability when making investment decisions. In these conditions, companies that disclose GICs more broadly tend to be perceived as better able to adapt to the risks of the transition to a green economy. This perception increases investor confidence and is reflected in the company's market valuation (Broadstock et al., 2021). These findings align with previous research indicating that disclosing intellectual capital, especially sustainability-based intellectual capital, can increase investor confidence and is an important determinant of firm value (Nawangsari et al., 2021).

GIC disclosures can help companies build strategic reputations amid increasing pressure on sustainability transparency. In Indonesia, sustainability disclosure practices are highly heterogeneous across companies and remain mostly voluntary. As a result, companies that actively disclose information about green intellectual capital gain an information advantage over those whose disclosure remains limited. This condition leads the market to assign greater appreciation to companies considered more transparent and more strongly sustainability-oriented (Snae & Setyowati, 2024). These findings confirm that the economic value of GIC is not automatically reflected in market prices in the absence of adequate communication mechanisms. Thus, the disclosure of GIC acts as a catalyst, transforming the company's internal potential into market perception. The market's positive response suggests that investors interpret the GIC disclosure as a signal of continued competitive advantage (Broadstock et al., 2021; Gillan et al., 2021). Therefore, within the framework of signal theory, GIC disclosure has economic relevance in increasing the firm value and empirically supports H1.

Disclosure of GIC, Environmental Performance, and Firm Value

The findings indicate that environmental performance partially mediates the relationship between GIC disclosure and firm value. This implies that GIC disclosure influences firm value not only directly but also indirectly through its role as an intervening factor in environmental performance. These findings indicate that investors are not only responding to symbolic sustainability information but also considering the tangible implementation of the company's sustainability practices.

The relationship between GIC disclosure and environmental performance (H2) can be explained through legitimacy theory. The disclosure of GIC reflects the company's commitment to sustainability practices that drive companies to gain social legitimacy through improved environmental performance. Companies not only communicate green practices but are also encouraged to implement them in practice to meet stakeholder expectations and gain recognition from external authorities (Yadiati et al., 2019). Growing concerns about environmental conditions further intensify pressure on legitimacy, so the company seeks to enhance its green reputation by improving its environmental performance. A green reputation as an intangible asset is a strategic attribute that supports the organization's sustainability (Yadiati et al., 2019).

The association between environmental performance and firm value (H3) may be interpreted using signaling theory. Strong environmental performance represents a credible indicator of a company’s genuine commitment to sustainability practices. Such information increases investor confidence in the firm’s capacity to control environmental risks while sustaining long-term cash flows. The results of this study are also in line with previous research findings (Khanifah et al., 2020). This suggests that strong environmental performance enhances the company's reputation, thereby contributing to higher firm value in investors' eyes. The effectiveness of signals depends on how the market interprets sustainability information. In this research, investors tend to view environmental performance as a strategic indicator relevant to the company's long-term prospects.

In the mediation relationship (H4), the disclosure of GIC and environmental performance forms an interconnected causal process. The disclosure of GIC serves as an initial signal that reflects the company's internal capabilities in managing sustainability aspects. The signal is then internalized in operational activities, resulting in improved environmental performance. Furthermore, measurable environmental performance and external recognition are the main channels through which GIC disclosure influences firm value (Connelly et al., 2011; Yadiati et al., 2019). Thus, environmental performance acts as an intervening mechanism that connects the information communicated by the company to the market response. This process shows that part of the influence of GIC disclosure on firm value occurs through improved environmental performance, thereby reinforcing the economic relevance of the company's implemented sustainability practices (Broadstock et al., 2021; Khanifah et al., 2020).

In practice in Indonesia, PROPER has relatively strong institutional legitimacy because it is issued directly by MoEF. The rating is one of the indicators that investors and the public easily recognize in evaluating the company's environmental reputation. Companies with better PROPER ratings tend to gain positive perceptions regarding environmental risk management capabilities, regulatory compliance, and operational sustainability (Khanifah et al., 2020). Thus, environmental performance serves as a form of external legitimacy, strengthening the market's assessment of the quality of the sustainability information the company discloses (Yadiati et al., 2019). The partial mediation relationship shows that some of GIC disclosure's influence on the firm value operates through improved environmental performance. At the same time, the remaining effect stems from investors' direct response to the company's disclosure. This indicates that the Indonesian capital market is beginning to pay attention to sustainability disclosure as a strategic source of information. However, actual implementation remains an important factor in shaping companies' credibility (Gillan et al., 2021).

These findings also show that sustainability disclosure and environmental performance are two complementary mechanisms in shaping market perception. GIC disclosures serve as an initial signal of the company's sustainability orientation, while environmental performance provides evidence of implementation, strengthening investors' confidence in the quality of the signals (Connelly et al., 2011). Thus, it is not enough for companies to increase the intensity of their sustainability disclosures; they must also ensure that these disclosures are supported by real, measurable improvements in environmental performance. The partial mediation analysis indicated that although GIC disclosures directly influence the firm value, the indirect pathway through environmental performance also helps explain the relationship. Thus, the integration between GIC disclosure and environmental performance shows that a firm's value in the context of sustainability is determined not only by the information communicated but also by the performance realized. These results empirically support H2, H3, and H4.

CONCLUSION

This study aims to analyze the role of green intellectual capital disclosure in increasing firm value, both directly and through environmental performance as an intervening mechanism. The study's results show that GIC disclosure is economically relevant in shaping market perceptions of the firm's value. The disclosure of GIC serves as a strategic signal that communicates the company's capabilities in managing sustainability-based resources, thereby reducing information asymmetry and increasing investor confidence in the company's long-term prospects. In addition, this study also shows that environmental performance plays an important role in transmitting the influence of GIC disclosure on firm value. GIC disclosure does not stop at the level of communication; it is internalized in operational activities that lead to better environmental performance, which, in turn, serves as the basis for investors' evaluation of the company's quality and sustainability. Thus, a firm's value in the context of sustainability is determined not only by the information disclosed but also by the achievement of verifiable performance. These findings imply that integrating GIC disclosure with environmental performance is a key driver of increased firm value. For management, the disclosure of the GIC needs to be consistent and followed by real implementation, so it is not symbolic but reflects actual sustainability practices. For investors, the results of this study confirm the importance of considering non-financial information, particularly

sustainability-related factors, in investment decision-making. Academically, this research enriches the literature by integrating perspectives from signal theory and legitimacy to explain how sustainability information is transformed into corporate value through environmental performance mechanisms, especially in the context of emerging markets with relatively high information asymmetry. Therefore, further research is recommended to develop more standardized measures of GIC disclosure and to consider other variables that can strengthen the mechanism by which sustainability information is transmitted to firm value.

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