

Effect of Intellectual Capital Disclosure and Sustainability Reporting on the Value of Listed Industrial Goods Companies in Nigeria

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ABSTRACT: This study examined the effect of intellectual capital disclosure and sustainability reporting on the value of listed industrial goods companies in Nigeria. The study adopts a panel data approach, covering 130 observations from companies listed on the Nigerian Exchange over a specified period. The findings reveal that sustainability reporting has a statistically significant positive effect on firm value, indicating that firms with higher levels of ESG disclosure are more likely to attract investor confidence and achieve higher market valuation. In contrast, intellectual capital disclosure exhibits a significant negative relationship with firm value, suggesting that investors in the Nigerian industrial goods sector may not fully recognize or trust the information conveyed through voluntary intangible asset reporting. Correlation analysis further supports these findings, showing a strong positive association between SR and FV, while ICD is weakly negatively associated with FV. The study concludes that sustainability reporting serves as a credible signal of firm quality and long-term strategic orientation, consistent with signaling theory. It recommends that firms enhance the quality and credibility of both sustainability and intellectual capital disclosures to improve transparency, investor confidence, and sustainable value creation in the Nigerian capital market.

KEYWORDS: Intellectual Capital Disclosure, Sustainability Reporting, Firm Value.

INTRODUCTION

The increasing complexity of modern business environments and the growing demand for corporate transparency have led to heightened interest in non-financial disclosures as key determinants of firm value. Traditional financial reporting systems have been criticized for their inability to capture intangible assets and sustainability practices that significantly influence long-term corporate performance and investor decision-making (Lev & Zambon, 2003; Dumay & Garanina, 2013). As a result, intellectual capital disclosure and sustainability reporting are increasingly viewed as essential mechanisms for communicating long-term value creation to stakeholders (Eccles, Ioannou & Serafeim, 2014; Dumay, La Torre & Farneti, 2019). Despite this global shift, corporate reporting practices in many emerging economies, including Nigeria, remain heavily oriented toward mandatory financial disclosures, with limited emphasis on voluntary non-financial reporting (Uwuigbe, Eluyela & Lawal, 2018). Empirical evidence suggests that Nigerian firms exhibit generally low levels of intellectual capital disclosure, and where such disclosures exist, they lack consistency, depth, and comparability across firms and sectors (Guthrie & Petty, 2000; Adebayo & Arowoshegbe, 2022). This weak disclosure culture contributes to persistent information asymmetry between corporate managers and investors, thereby undermining the efficiency of capital markets and distorting firm valuation (Healy & Palepu, 2001; Onyekwelu & Emeh, 2020).

In the context of sustainability reporting, although regulatory initiatives such as the Nigerian Exchange Group Sustainability Disclosure Guidelines encourage ESG reporting, compliance remains largely voluntary and enforcement mechanisms are weak (NGX, 2019; Okafor, Adeleye & Adusei, 2021). Consequently, sustainability disclosures among Nigerian listed firms vary widely in quality and scope, limiting their usefulness for investment analysis and corporate valuation (Lawal, Eluyela & Akomolafe, 2020; Uwuigbe et al., 2020). This inconsistency raises concerns about whether sustainability reporting in Nigeria truly influences firm value or merely serves symbolic legitimacy purposes without substantial economic impact (Suchman, 1995; Deegan, 2002). Furthermore, existing empirical studies on the relationship between intellectual capital disclosure, sustainability reporting, and firm value in Nigeria present mixed and inconclusive findings. While some studies report positive associations between sustainability disclosures and firm value (Uwuigbe et al., 2018; Okafor et al., 2021), others find insignificant or context-dependent

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effects, particularly for intellectual capital disclosure (Akinwale and Abiola, 2021; Abubakar and Abdullahi, 2019). Most of these studies adopt cross-sectoral approaches, focus on financial performance rather than market-based valuation, or analyze either intellectual capital or sustainability reporting in isolation, thereby limiting their explanatory power and sector-specific relevance (Nimtrakoon, 2015; Ozkan, Cakan & Kayacan, 2017).

The industrial goods sector in Nigeria represents a strategically important segment of the economy, characterized by high reliance on intangible resources, innovation, and stakeholder relationships. Yet, there is a noticeable scarcity of empirical research focusing specifically on this sector, despite its substantial contribution to market capitalization and economic growth (Arowoshegbe & Emmanuel, 2016; Lawal et al., 2020). The absence of focused evidence on how intellectual capital disclosure and sustainability reporting jointly affect firm value in this sector creates a critical knowledge gap that undermines informed decision-making by investors, regulators, and corporate managers.

Consequently, the central problem addressed in this study is the lack of robust, sector-specific empirical evidence on the effect of intellectual capital disclosure and sustainability reporting on the firm value of listed industrial goods companies in Nigeria. This gap limits the development of effective disclosure policies, weakens investor confidence, and constrains the strategic use of non-financial reporting as a tool for enhancing sustainable value creation in Nigeria's capital market (Eccles et al., 2014; Dumay et al., 2019). This study therefore seeks to fill this gap by providing systematic empirical evidence on the extent to which intellectual capital disclosure and sustainability reporting influence firm value within the Nigerian industrial goods sector.

Hypotheses

To empirically examine these relationships, the following null hypotheses were formulated:

H₀₁: Intellectual capital disclosure has no significant effect on the firm value of listed industrial goods companies in Nigeria.

H₀₂: Sustainability reporting has no significant effect on the firm value of listed industrial goods companies in Nigeria.

LITERATURE REVIEW

Concept of Firm Value

Kasibi, Fauzan, Rian, and Tarmidi (2023) define firm value as the output of investor reactions determined by the present value of expected future cash flows, highlighting that risk factors influence these cash flows and therefore the perceived worth of the firm. Similarly, Zuli (2023) describes firm value as a market-based indicator of a company's capacity to generate long-term shareholder wealth, emphasizing that market sentiment and governance quality significantly shape this valuation. In the Nigerian context, Akpor, et al. (2024) conceptualize firm value in terms of equity market value relative to book value, commonly measured using proxies such as the price-to-book ratio (PBV) and Tobin's Q, indicating that market perceptions are closely linked to reported financial metrics.

Sixpence, Adeyeye, and Rajaram (2021), in a South African study, distinguish between enterprise value, which accounts for both equity and debt, and market capitalization, representing equity value alone, and they show that operating earnings are a critical determinant of market-assessed firm value. Nur Wahyuni and Gani (2022) similarly link firm value to profitability, growth, and leverage, suggesting that these financial characteristics shape how markets assess a firm's worth. Alwan and Risman (2024) describe firm value as the total worth of a company as determined by financial metrics and market perceptions, emphasizing its connection to the potential for generating future cash flows. Collectively, these studies illustrate that firm value is multidimensional, encompassing expected cash flows, profitability, growth prospects, leverage, governance quality, and investor perceptions, and that it can be measured through various proxies such as market capitalization, Tobin's Q, price-to-book ratio, or enterprise value.

Concept of Intellectual Capital Disclosure

There is no generally accepted definition of the term intellectual capital. A lot of definition has been advanced for the concept of intellectual capital. Intellectual capital is viewed differently from the perception of the writers of financial literatures. But the most embracing and broad definition is the one given by Chen, Cheng and Hwang (2005). According to him, intellectual capital is a collection of all informational resources a company has at its disposal that can be used to drive profits, gain new customers, create new products or otherwise improve the business. It is the sum of all employees' expertise, organizational processes and other intangibles that contribute to a company's bottom line. Intellectual capital however is the employees' capabilities in a work place; organization. The use of employees' knowledge, experience, competence, talents, skills, techniques to increase production quantity and quality which will create competitive advantage and above all increase corporate profitability.

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Concept of Sustainability Reporting

Sustainability reporting has evolved into a crucial means for companies to disclose their performance in environmental, social, and governance (ESG) areas. Scholars have offered various definitions of sustainability reporting, reflecting its significance in corporate transparency and accountability. Gray et al. (1995) define sustainability reporting as the process through which companies disclose information about their environmental, social, and economic impacts. The Global Reporting Initiative (GRI, 2002) offers a widely accepted definition, describing sustainability reporting as a process through which companies publicly disclose their performance in key areas such as environmental conservation, social development, and ethical governance.

Kolk (2003) provides a more nuanced definition, emphasizing that sustainability reporting is a company's disclosure of its strategies, policies, and practices related to corporate social responsibility (CSR). Adams (2004) expands the definition further by focusing on the integration of sustainability reporting within a company's overall strategy and governance structure. She contends that sustainability reporting is not just about disclosing corporate performance in environmental and social areas but also about embedding these disclosures into the company's broader organizational culture. In the work of Hassel et al. (2005), sustainability reporting is defined as a voluntary corporate disclosure that includes not only environmental impact but also broader social issues such as labour practices, community relations, and governance. Moser and Martin (2012) view sustainability reporting as a mechanism through which companies communicate their commitment to sustainable practices, addressing environmental, social, and governance issues.

EMPIRICAL REVIEW

Intellectual Capital and Firm Value

Keter et al. (2024) examined the role of intellectual capital disclosure (ICD) in mediating the relationship between financial performance and firm value. The sample consists of 39 firms listed on the Nairobi Securities Exchange (NSE) in Kenya. They represent 67% of firms listed on NSE during the period (2010–2022). Data were extracted from individual companies' audited annual reports. The study hypotheses were tested on a fixed and random effects model with the aid of the Stata student version. The results reveal that financial performance has a positive and significant effect on firm value. Furthermore, financial performance has a negative effect on ICD. Finally, ICD was found to have a mediating effect on the relationship between financial performance and firm value. The results confirm that intellectual capital disclosure is an important mediator in the relationship between financial performance and firm value; firm managers should use ICD as a winning edge. Additionally, firms with high intellectual capital are likely to engage in voluntary disclosure to legitimize their success.

Meiliana et al. (2024) examined the effect of intangible assets, on corporate financial performance and financial distress. Intangible assets in this study are explained by human capital efficiency (HCE), relational capital efficiency (RCE), structural capital efficiency (SCE), and capital employed efficiency (CEE). The measurement model often used is the extended value-added intellectual coefficient plus (EVAIC+) model by Ulum (2017), which is a model developed from a comparison of Edvinsson's (1997) and Pulic's (2000) models. Financial performance is measured by firm value with price to book value (PBV) proxy, and financial distress with Altman Z-score. This study was conducted using secondary data and sample selection using purposive sampling with samples being listed manufacturing companies in Indonesia, Singapore, Malaysia, Thailand, the Philippines and South Korea, Japan, and China Stock Exchanges for the period 2011–2021. The results of the study on Model 1 found that HCE, RCE, and CEE have a positive effect and significance and SCE have a negative effect and significance on firm value. Model 2 found that HCE, RCE, and CEE have a positive effect and SCE have a negative effect and significant on financial distress. The results of this study can be used as a reference for companies to be able to manage intangible assets, especially intellectual capital disclosure.

Anik and Umi (2024) examined the relationship between intellectual capital and corporate value. Intellectual capital is an intangible asset in an organization, including human capital, structural capital, and relational capital. This review aims to provide a comprehensive overview of existing empirical research, theories, and findings related to the impact of intellectual capital on company value. The study used a systematic strategy to identify relevant articles from academic databases and specialized journals. The selected studies are analyzed and synthesized to identify common themes and patterns. The findings show a positive relationship between intellectual capital and firm value, with research consistently showing that intellectual capital contributes to improved financial performance, market value, and competitive advantage. Various measurement and evaluation methods, such as scorecards, valuation techniques, and intellectual property management, have assessed the impact of intellectual capital. The review also highlights the importance of effective management and leveraging intellectual capital for long-term organizational success. However, the literature review identified several research gaps, including the need for more longitudinal studies, industry-specific investigations, and further exploration of how intellectual capital translates into corporate value. Overall, this review

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contributes to understanding how intellectual capital drives corporate value and provides insights for researchers, practitioners, and policymakers looking to leverage intangible assets for sustainable competitive advantage.

Social Sustainability Reporting and Firm Value

Taylor and Williams (2022) explored the impact of social sustainability reporting on firm value in the European market, focusing on firms in the retail and consumer goods industries. The study covered a period from 2013 to 2021, analyzing 120 firms listed on the Euronext Stock Exchange. The authors used regression analysis to assess the relationship between social sustainability disclosures and firm performance, using both market-based measures like Tobin's Q and accounting-based measures like return on assets (ROA). Their findings showed that social sustainability reporting, particularly with respect to ethical sourcing, labor standards, and community outreach programs, had a positive impact on firm value. The study emphasized that consumers increasingly consider social issues when making purchasing decisions, and firms that report transparently on these issues can differentiate themselves in competitive markets. The effect of SSR on firm value was more prominent in firms that had well-established reputations in sustainability practices. Newer firms or those that lacked consistent reporting on social issues did not experience the same level of market valuation increase.

Ng and Wang (2021) examined the role of social sustainability reporting in the relationship between corporate governance and firm value in the Asian Pacific region. Their study analyzed data from 100 firms listed across major stock exchanges in Asia from 2014 to 2020, focusing on social issues such as labour rights, gender equality, and community relations. The study found that firms that reported comprehensively on social sustainability issues, particularly labour practices and diversity initiatives, had higher market values compared to firms with limited or no disclosures. The results suggested that social sustainability reporting, when integrated with good corporate governance practices, could increase investor trust and enhance firm value. Social sustainability reporting also contributed to a positive corporate reputation, which helped firms attract socially conscious investors. The authors cautioned that social sustainability reports often lacked standardization, which might affect the comparability of disclosures and, consequently, the market's response.

Green and Sharma (2021) studied the effect of social sustainability reporting on firm value with a focus on employee welfare and community engagement. Their study, spanning from 2015 to 2020, focused on firms in the manufacturing and technology sectors in the UK. They used a combination of panel data regression and content analysis to examine the content of sustainability reports, with an emphasis on social factors such as employee health and safety, community investments, and diversity and inclusion practices. Their results revealed a positive association between comprehensive social sustainability reporting and firm value. Firms that provided detailed disclosures about employee welfare and diversity initiatives experienced an uptick in stock performance and market valuation. The study highlighted that such reporting was especially valued by institutional investors, who often prioritize long-term sustainability over short-term financial gains. A limitation of this study was the potential bias introduced by content analysis, as the researchers manually assessed the quality of sustainability reports. The study also focused only on UK-based companies, limiting its generalizability.

Zhang and Lee (2020) investigated the effect of social sustainability reporting on firm value in the context of the Chinese market. Their study covered the period from 2012 to 2019, focusing on 150 Chinese companies listed on the Shanghai Stock Exchange. The authors employed a quantitative approach using structural equation modeling (SEM) to assess the influence of social sustainability disclosures on firm value. The results revealed a positive relationship between SSR and firm value, especially in industries with high employee turnover rates and those that have a significant impact on local communities. The research emphasized the importance of corporate social responsibility (CSR) as a component of social sustainability, noting that firms with transparent CSR programs were perceived more favourably by investors, leading to higher valuations. A limitation of the study is its focus on the Chinese market, where social sustainability practices may differ significantly from those in Western countries. The study did not address the potential role of government regulations and their influence on social sustainability practices in China.

THEORETICAL FRAMEWORK

Signaling Theory

Signaling theory, originally introduced by Spence (1973) in the context of labor markets, has become a widely used framework in accounting and finance research to explain voluntary disclosure practices and their impact on firm value. At its core, the theory posits that when information asymmetry exists between two parties such as corporate managers and external investors one party (the "informed" party) can convey credible information or signals to the other party to reduce uncertainty and influence perceptions. In the corporate context, managers are assumed to possess superior knowledge about a firm's resources, strategies, and prospects, while investors rely on disclosed information to make valuation and investment decisions. Voluntary disclosures,

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such as intellectual capital reports or sustainability information, act as signals that communicate a firm's underlying quality, future potential, and strategic intentions to the market (Connelly, Certo, Ireland, & Reutzel, 2011).

The relevance of signaling theory to this study is particularly strong because both intellectual capital disclosure and sustainability reporting serve as mechanisms through which firms communicate information beyond traditional financial statements. Intellectual capital disclosure, which includes reporting on human capital (skills, knowledge, expertise), structural capital (processes, technology, patents), and relational capital (customer and supplier networks), signals to investors that a firm possesses intangible assets that can drive innovation, efficiency, and long-term growth (Bontis, 2001; Guthrie & Petty, 2000). By voluntarily disclosing such information, firms can differentiate themselves from competitors with similar financial profiles, thereby potentially enhancing investor confidence and firm valuation (Nimtrakoon, 2015).

Similarly, sustainability reporting functions as a strategic signal to investors regarding the firm's commitment to environmental, social, and governance (ESG) practices. According to signaling theory, firms with high-quality ESG practices are likely to voluntarily disclose such information to signal superior governance, risk management, and long-term viability, which in turn can positively influence their market value (Eccles, Ioannou, & Serafeim, 2014; Friede, Busch, & Bassen, 2015). In emerging markets like Nigeria, where information asymmetry is pronounced and regulatory enforcement is weaker, such voluntary disclosure becomes even more critical, as investors rely heavily on credible signals to assess the sustainability of a firm's business model and future prospects (Uwuigbe, Eluyela, & Lawal, 2018).

Several empirical studies have applied signaling theory to examine the impact of non-financial disclosures on firm value. For example, Nimtrakoon (2015) found that intellectual capital disclosure in ASEAN countries was positively associated with market valuation, supporting the idea that investors interpret such disclosures as signals of future growth potential. Similarly, Lawal, Eluyela, and Akomolafe (2020) reported that sustainability reporting among Nigerian industrial firms positively influenced firm value, consistent with the notion that ESG disclosures signal sound management and lower operational risk to the market. Connelly et al. (2011) emphasize that the effectiveness of these signals depends on their credibility, as firms must provide verifiable, detailed, and consistent information to influence investor perceptions meaningfully.

The applicability of signaling theory to the Nigerian industrial goods sector is particularly compelling. Industrial goods companies are often resource-intensive and reliant on intangible assets such as skilled personnel, proprietary processes, and strong customer relationships. By leveraging voluntary disclosure mechanisms, these firms can reduce investor uncertainty, differentiate themselves from competitors, and potentially increase firm valuation. Sustainability reporting further complements this by signaling a firm's commitment to environmental stewardship, social responsibility, and governance quality factors increasingly valued by investors globally (Eccles et al., 2014; Uwuigbe et al., 2018).

Signaling theory provides a strong conceptual basis for understanding why intellectual capital disclosure and sustainability reporting may affect firm value. The theory explains the mechanism through which firms use voluntary disclosures to reduce information asymmetry, enhance market perceptions, and create value. Empirical studies both globally and within Nigeria support the theory's relevance, indicating that credible and well-structured non-financial disclosures can act as strategic signals that positively influence investors' valuation of firms.

METHODOLOGY

This study employed an ex-post facto research design to examine the effect of intellectual capital disclosure and sustainability reporting influence on value of listed industrial goods companies in Nigeria. The population of the study comprise of all thirteen (13) industrial goods companies that were listed on the Nigerian Exchange Group (NGX) during the study period spanning from 2016 to 2025. The study relied exclusively on secondary data to examine the effect of intellectual capital disclosure and sustainability reporting influence on value of listed industrial goods companies in Nigeria. Inferential analysis was carried out using panel regression models,

Model Specification

$$FV = f(ICD, SR)$$

$$FV_{it} = \beta_{0it} + \beta_1 ICD_{it} + \beta_2 SR_{it} + e_{it}$$

Where:

FV = Firm value

ICD = Intellectual Capital Disclosure

SR = Sustainability Reporting

β_0 = Intercept

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β_{1-4} = Coefficient of the independent variables

e = Error term

i = company i

t = time t

Table 1: Measurement of Variables

Variable	Measurement Technique	Source
Firm Value (FV)	Measured using Tobin's Q, calculated as the market value of equity plus book value of debt divided by total assets	Tobin (1969); Chung & Pruitt (1994)
Intellectual Capital Disclosure (ICD)	Measured using a disclosure checklist covering human capital, structural capital, and relational capital items; scored as 1 if disclosed and 0 otherwise, divided by total items	Guthrie & Petty (2000); Bontis (2003)
Sustainability Reporting (SR)	Measured using a sustainability disclosure checklist based on GRI Standards; disclosure index computed as total items disclosed divided by total checklist items	Global Reporting Initiative (GRI, 2021); Ioannou & Serafeim (2017)

Source: Researcher's Compilation, 2026

RESULTS AND DISCUSSION OF FINDINGS

Table 2: Descriptive Statistics

	Mean	Maxi	Mini	Std.Dev.	Skew	Kurt	J-Bera	Prob	Obs
FV	0.446281	0.511280	0.377853	0.026605	-0.17317	2.772803	0.929364	0.628335	130
ICD	0.023976	0.077671	0.000124	0.024167	0.704920	1.980384	16.39769	0.000275	130
SR	0.402658	0.750000	0.083333	0.133296	0.077624	2.668998	0.724015	0.696277	130

Source: Eviews Output, 2026

Table 2 presents the descriptive statistics for firm value (FV), intellectual capital disclosure (ICD), and sustainability reporting (SR). The mean FV of 0.446, with a narrow range and low standard deviation of 0.0266, indicates moderate and relatively stable firm values across listed industrial goods companies. The slight negative skewness and kurtosis close to 3, supported by a non-significant Jarque-Bera statistic, confirm that FV is approximately normally distributed and suitable for regression analysis. ICD records a very low mean of 0.024, showing that firms disclose limited intellectual capital information. Its moderate standard deviation and positive skewness indicate that most firms report minimally, while few disclose extensively. The platykurtic distribution and significant Jarque-Bera statistic suggest that ICD deviates from normality, reflecting uneven voluntary disclosure practices. SR has a mean of 0.403, indicating moderate sustainability reporting, with reasonable dispersion across firms. Its near-zero skewness, kurtosis close to normal, and insignificant Jarque-Bera statistic confirm approximate normality. Overall, FV and SR display stable and near-normal distributions, while ICD is low, skewed, and non-normal, implying that intellectual capital disclosure practices vary widely and may influence subsequent regression results.

Table 3: Correlation Matrix

Correlation Probability		
	FV	ICD
ICD	-0.190000 0.0304	
SR	0.564134 0.0000	0.152547 0.0832

Source: Eviews Output, 2026

Table 3 presents the correlation matrix showing the relationships between firm value (FV), intellectual capital disclosure (ICD), and sustainability reporting (SR). The correlation between FV and ICD is -0.190 with a probability value of 0.0304, indicating a weak but statistically significant negative relationship at the 5 percent level. This suggests that higher levels of intellectual capital disclosure are slightly associated with lower firm value, implying that investors may not yet fully appreciate or trust such disclosures

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in the Nigerian industrial goods sector, possibly due to concerns about credibility or additional reporting costs. The correlation between FV and SR is 0.564 with a probability value of 0.0000, showing a moderate to strong positive and highly significant relationship. This indicates that firms with higher levels of sustainability reporting tend to have higher firm value, supporting the argument that sustainability disclosure serves as a positive signal to investors by reducing information asymmetry and enhancing perceptions of transparency and long-term performance (Spence, 1973; Eccles et al., 2014).

The correlation between ICD and SR is 0.153 with a probability value of 0.0832, reflecting a weak and statistically insignificant positive relationship. This implies that firms engaging in intellectual capital disclosure are only marginally more likely to report on sustainability issues, suggesting that the two disclosure practices are not strongly linked. Overall, the correlation results indicate that sustainability reporting is more strongly valued by investors than intellectual capital disclosure, providing initial evidence that SR plays a more influential role in determining firm value in this context.

Table 4: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	2.771545	2	0.2501

Source: Eviews Output, 2026

Table 4 presents the results of the Hausman test conducted to determine the most appropriate panel estimation technique for the study. The test statistic is 2.772 with 2 degrees of freedom and a probability value of 0.2501. The null hypothesis of the Hausman test assumes that the random effects model is appropriate, meaning that the unobserved firm-specific effects are not correlated with the explanatory variables. The alternative hypothesis supports the fixed effects model, which assumes such correlation exists. Since the probability value exceeds the 5 percent significance level, the null hypothesis cannot be rejected.

This result indicates that the random effects model is more suitable for the analysis. It implies that firm-specific characteristics not directly captured in the model do not significantly bias the relationship between intellectual capital disclosure (ICD), sustainability reporting (SR), and firm value (FV). Consequently, the random effects approach is appropriate as it efficiently incorporates both cross-sectional and time-series variations, allowing for more robust and generalizable estimates of the effects of ICD and SR on firm value.

Table 5 Regression Results

Dependent Variable: FV				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ICD	-0.250101	0.065185	-3.836806	0.0002
SR	0.086394	0.016430	5.258316	0.0000
C	0.417490	0.007744	53.90994	0.0000
R-squared	0.216084			
Adjusted R-squared	0.203739			
F-statistic	17.50358	Durbin-Watson stat		1.375746
Prob(F-statistic)	0.000000			

Source: Eviews Output, 2026

The regression results presented examine the effect of intellectual capital disclosure (ICD) and sustainability reporting (SR) on firm value (FV) among listed industrial goods companies in Nigeria. The dependent variable is firm value, measured as a market-based indicator, while ICD and SR serve as independent variables. The coefficient for intellectual capital disclosure (ICD) is -0.250 with a t-statistic of -3.837 and a probability value of 0.0002. This indicates that ICD has a statistically significant negative effect on firm value at the 1 percent significance level. The negative coefficient suggests that, within this sample, higher levels of intellectual capital disclosure are associated with a decrease in firm value. This finding may appear counterintuitive, as theory often predicts that disclosure of intangible resources should signal firm quality to investors (Spence, 1973; Bontis, 2001). However, in the context of Nigerian industrial goods companies, the negative relationship could reflect investor skepticism or uncertainty regarding the quality and credibility of voluntary intellectual capital disclosures. Firms with higher ICD might also face higher reporting costs, or investors may perceive detailed disclosures as an indication that firms are attempting to compensate for underlying weaknesses in financial performance, leading to a temporary decrease in market valuation. This aligns with earlier studies in emerging markets

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that have documented mixed or negative market responses to voluntary intellectual capital disclosures when reporting quality is perceived as low or inconsistent (Akinwale & Abiola, 2021; Onyekwelu & Emeh, 2020).

In contrast, sustainability reporting (SR) shows a positive and statistically significant effect on firm value. The coefficient of SR is 0.086 with a t-statistic of 5.258 and a probability value of 0.0000, indicating a robust positive association at the 1 percent significance level. This result suggests that firms with higher sustainability reporting enjoy higher firm value, supporting the signaling hypothesis that ESG disclosures convey credible information about a firm's long-term viability and governance quality (Eccles, Ioannou, & Serafeim, 2014; Lawal, Eluyela, & Akomolafe, 2020). Investors appear to reward firms that demonstrate commitment to environmental, social, and governance practices, reflecting the increasing importance of sustainability considerations in capital market valuation in Nigeria.

The model explains approximately 21.6 percent of the variation in firm value, as indicated by the R-squared of 0.216 and the adjusted R-squared of 0.204. While this suggests that other factors also contribute to firm value, the explanatory power is reasonable given that firm value is influenced by a wide range of financial, operational, and market variables beyond non-financial disclosures. The F-statistic of 17.504 with a probability of 0.000 indicates that the model is statistically significant overall, meaning that the independent variables collectively have a significant effect on firm value. The Durbin-Watson statistic of 1.376 suggests the presence of some positive autocorrelation in the residuals, which should be considered in interpretation but does not necessarily invalidate the results.

The regression results provide clear evidence that sustainability reporting positively influences firm value, consistent with signaling theory and global empirical findings (Eccles et al., 2014; Uwuigbe, Eluyela, & Lawal, 2018). In contrast, intellectual capital disclosure has a significant negative effect, highlighting potential challenges in the credibility, consistency, or market interpretation of voluntary IC disclosures in the Nigerian industrial goods sector. These findings suggest that while investors increasingly value ESG information as a signal of long-term performance, intellectual capital disclosure may not yet be effectively communicated or fully incorporated into market valuation in this context.

Table 6: Variance Inflation Factors

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
ICD	0.005899	2.039331	1.023825
SR	0.000194	10.43884	1.023825
C	3.50E-05	10.48714	NA

Source: Eviews Output, 2026

Table 6 presents the results of the multicollinearity diagnostic using Variance Inflation Factors (VIF). Multicollinearity arises when independent variables are highly correlated, which can inflate standard errors and weaken the reliability of regression estimates. For intellectual capital disclosure (ICD), the uncentered VIF is 2.039 and the centered VIF is 1.024, while for sustainability reporting (SR), the uncentered VIF is 10.439 and the centered VIF is 1.024. The constant term has no centered VIF, which is expected, and its uncentered VIF is 10.487.

The centered VIF is the relevant indicator for assessing multicollinearity. Based on the commonly accepted threshold that values above 10 indicate serious multicollinearity and values below 5 are acceptable (Hair et al., 2019), the centered VIFs of approximately 1.024 for both ICD and SR confirm that multicollinearity is not a concern in this model. This implies that the independent variables are not excessively correlated and that their individual effects on firm value can be reliably estimated. The relatively high uncentered VIF values are typical in models with a constant and do not undermine the validity of the results.

Table 7: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey

Null hypothesis: Homoskedasticity

F-statistic	1.801904	Prob. F(2,127)	0.1692
Obs*R-squared	3.587147	Prob. Chi-Square(2)	0.1664
Scaled explained SS	3.996019	Prob. Chi-Square(2)	0.1356

Source: Eviews Output, 2026

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Table 7 presents the results of the Breusch-Pagan-Godfrey heteroskedasticity test conducted to determine whether the variance of the regression residuals is constant. The null hypothesis assumes homoskedasticity, implying that the error variance does not change systematically with the explanatory variables, while the alternative hypothesis suggests the presence of heteroskedasticity. The test results show an F-statistic of 1.802 with a probability value of 0.1692, an Obs*R-squared statistic of 3.587 with a probability of 0.1664, and a scaled explained sum of squares statistic of 3.996 with a probability of 0.1356. Since all probability values exceed the 5 percent significance level, the null hypothesis cannot be rejected, indicating the absence of heteroskedasticity.

This finding implies that the variance of the error terms is constant across observations, satisfying a key assumption of ordinary least squares regression. The absence of heteroskedasticity is important because it ensures that the standard errors are not biased, thereby making the reported t-statistics and significance levels for intellectual capital disclosure (ICD) and sustainability reporting (SR) reliable. Combined with earlier diagnostic tests, including the Hausman test and the VIF analysis, this result confirms the robustness of the regression model and strengthens confidence in the validity of the estimated effects of ICD and SR on firm value among listed industrial goods companies in Nigeria.

CONCLUSION AND RECOMMENDATIONS

This study examined the effects of intellectual capital disclosure (ICD) and sustainability reporting (SR) on the firm value (FV) of listed industrial goods companies in Nigeria. Using panel data and random effects regression analysis, the study found that sustainability reporting has a significant positive effect on firm value, while intellectual capital disclosure exhibits a significant negative relationship. The descriptive statistics revealed that firms generally engage moderately in sustainability reporting, whereas intellectual capital disclosure remains low and unevenly practiced. Correlation analysis confirmed a strong positive relationship between SR and FV, whereas ICD was weakly negatively correlated with FV, highlighting differences in how these non-financial disclosures are perceived by investors in the Nigerian industrial goods sector. Diagnostic tests, including the Hausman test, Variance Inflation Factor (VIF) analysis, and the Breusch-Pagan-Godfrey heteroskedasticity test, demonstrated that the regression model is statistically appropriate, free from serious multicollinearity, and satisfies the assumption of homoskedastic residuals.

The findings suggest that sustainability reporting is an effective signal of firm quality and long-term strategic orientation, consistent with signaling theory. Firms that engage in transparent ESG reporting are likely to enhance investor confidence, attract capital, and improve market valuation. Conversely, the negative relationship between intellectual capital disclosure and firm value indicates that investors may not yet fully recognize or trust the signals conveyed through voluntary intellectual capital reports. This may be due to the limited quality, consistency, or comprehensiveness of disclosure practices in the Nigerian context, which can reduce the perceived credibility of the information and, consequently, its impact on firm valuation.

Based on these findings, several recommendations emerge. First, listed industrial goods companies should prioritize sustainability reporting as a strategic tool for enhancing firm value. Firms should adopt internationally recognized frameworks, such as the Global Reporting Initiative (GRI) or IFRS Sustainability Standards, to improve the credibility, comparability, and comprehensiveness of ESG disclosures. Second, companies should improve the quality and reliability of intellectual capital disclosure. This could involve standardized reporting of human, structural, and relational capital, regular internal audits of intangible assets, and clear explanations of how these assets contribute to long-term performance. Enhancing the credibility of ICD may strengthen its perceived value among investors and support positive market responses.

Additionally, regulators and the Nigerian Exchange Group should continue to develop and enforce guidelines for both intellectual capital and sustainability reporting. Providing incentives for high-quality voluntary disclosures, such as recognition awards or preferential listing considerations, may encourage firms to adopt best practices. Investor education programs can also help improve market understanding of the importance of intangible asset disclosure, enabling the market to better price the value of intellectual capital.

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