

# Intellectual Capital and Corporate Performance of Listed Non-Financial Firms in Nigeria

*Ismail Albassan<sup>1</sup>, Halima S. Muhammed<sup>2</sup>*

*Received: 19.03.2025*

*Accepted: 29.07.2025*

*Published: 25.08.2025*

**Abstract.** Intellectual capital plays a pivotal role in disclosing business resources, thereby assisting in determining a business's actual financial position and in making effective business decisions. This research explored how intellectual capital affects corporate performance by examining samples of listed non-financial companies in Nigeria for the 2015-2024 period. The study used human capital, structural capital, and relational capital as proxies for intellectual capital to assess their impact on company performance. Performance was measured using the return on total assets (RETA). The research employed an ex post facto design, utilising secondary data and purposive sampling to select a sample of 80 firms. Data were analysed using regression analysis. The findings indicate that human capital had a positive but statistically insignificant effect on return on total assets.

In contrast, structural and relational capital had significant positive effects on the return on total assets of the selected firms. The study concluded that relational and structural capital play a vital role in enhancing the performance of listed non-financial companies in Nigeria. Based on these findings, the study recommends that managers should focus more on investing in structural and relational capital as they positively influence financial performance. It also suggests that, despite its insignificant direct effect, human capital should not be overlooked, as the firm's other resources cannot function optimally without the creativity, abilities, and innovative capacities of its employees. This study empirically establishes the relative importance of structural and relational capital in enhancing firm performance in Nigeria's non-financial sector, offering actionable insights for managers and policymakers in emerging economies.

**Keywords:** human capital, intellectual capital, relational capital, return on assets, structural capital.

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<sup>1</sup> Dr. Ismail Albassan

PhD, Lecturer, Department of Accounting, Federal College of Education (Technical), Gombe, Nigeria, Email: alhassan1412@gmail.com, <https://orcid.org/0000-0003-0038-3841>

<sup>2</sup> Dr. Halima S. Muhammed

PhD, Lecturer, Department of Accounting, Federal University of Kashere, Nigeria

## INTRODUCTION

The financial reports of businesses are intended to accurately reflect their true financial positions during the reporting period. These financial statements are created in accordance with International Financial Reporting Standards (IFRS), which establish the criteria for measuring, recognising, and disclosing all items in the financial statements. However, some accounting scholars have raised concerns about how certain intangible assets are treated, particularly those that do not meet the recognition criteria outlined by accounting standards (AbdulRahman & Abubakar, 2023). This research is grounded in the resource-based theory of the firm, which links firm performance to intellectual capital. For an item to be recognised as an asset, it must first satisfy the definition criteria, even before being classified as an intangible asset. The control and cost measurement criteria can be challenging for some intangible assets, especially human capital, which often leads to these assets being expensed, even if they are likely to provide future economic benefits to the company. Intangible value drivers that fail to meet the recognition criteria are excluded from the financial statements, regardless of their importance or impact on users' decisions (Dancaková, 2024). The key focus of International Accounting Standard (IAS) 38, Intangible Assets, is the treatment of specific intangible assets, including research and development costs. Intellectual capital (IC), like intangible assets, is viewed as an organisation's knowledge base. In today's knowledge-driven economy, knowledge plays a central role in enhancing performance and securing a sustainable competitive advantage (Essien & Aniekan, 2022). National wealth growth is now largely fueled by intellectual assets, and the knowledge base within firms has become crucial for their profitability, stability, and sustainability (Oyokeh, 2024). When a firm acquires knowledge that can generate business value, it qualifies as intellectual capital. IC consists of three components: human capital (human resources), structural capital (organisational capital), and relational capital (customer

capital/relationships). Human capital (HC) refers to employees' knowledge and skills, their productivity, and their contributions to the organisation. It encompasses workers' skills, abilities, tacit knowledge, and experience. Structural capital (SC) refers to the knowledge owned by an organisation that is independent of its employees (Halim, 2024). This includes intangible assets such as patents, concepts, models, and administrative systems that structure and support the organisation's operations (Sveiby, 2024). Relational capital (RC) refers to the value created through external relationships, particularly with customers and suppliers (Sveiby, 2024). He noted that relational capital is built on maintaining and developing strong relationships with external parties that influence the company. Corporate performance is assessed using indicators that help management determine whether the company is achieving its goals both quantitatively and qualitatively. This measurement is essential for organisations, as it impacts their success or failure. Organisational performance depends not only on tangible resources but also on the management of intangible resources, such as knowledge and intellectual capital. IC has become crucial for sustaining competitive advantage, fostering innovation, improving organisational performance, shareholder value, and achieving company goals (Saleem et al., 2024). This research is grounded in the resource-based theory of the firm, which links firm performance directly to its available resources. The theory suggests that a firm's success depends on both tangible and intangible resources. There are four characteristics that resources must have to ensure a sustained competitive advantage: they must be valuable, rare, difficult to imitate, and supported by the organisation. In industries with resource scarcity, management must effectively handle both tangible and intangible assets to enhance performance. Non-financial firms make up a significant portion of Nigeria's economy, and the disclosure of information about intellectual capital and other intangible assets is key to financial reporting, as it influences firm value and performance. While it is well known that firms

with strong intellectual capital perform better, few empirical studies have examined the impact of intellectual capital in developing economies such as Nigeria. Furthermore, the growing discrepancy between the market value and book value of non-financial firms in Nigeria has prompted interest in investigating the missing value in financial statements. Non-financial firms in Nigeria rely heavily on intellectual capital for their operations. Moreover, much of the research on intellectual capital and corporate performance in Nigeria has focused on other sectors, such as ICT, breweries, and banking (Ali et al., 2022), while some studies have been purely theoretical, lacking empirical analysis. Examining the impact of intellectual capital on organisational performance remains a topic of interest for both companies and regulators. Prior studies have produced mixed results regarding the effect of intellectual capital on corporate performance. For instance, studies by Jikhan et al. (2023), Al-Musali and Ismail (2016), and Umar and Dandago (2023) found a positive relationship. In contrast, others, such as Abdelmohsen and Gehan (2020), Alavi and Leidner (2001), and Eka et al. (2018), found negative results. This study explores the impact of intellectual capital on the performance of listed non-financial firms in Nigeria.

## LITERATURE REVIEW

### Conceptual Framework

#### *Intellectual Capital*

Intellectual capital refers to the intangible assets that an organisation possesses, which can be acquired, generated, assimilated, processed, and effectively implemented to achieve higher innovation, productivity, and competitiveness, even though they are not directly shown in financial reports. Additionally, these assets generate future value, which helps in sustaining competitive advantages (Suciati et al., 2025). The concept of intellectual capital (IC) builds on and enhances a firm's strategic and operational understanding of its core competencies. Over the past decade, IC has become one of the most widely acknowledged management frameworks.

Its comprehensive approach highlights the role of knowledge used and activated within organisations, as well as the impact of knowledge-based resources on their performance. The primary goal of IC is to offer companies guidelines for developing and measuring the contribution of their key capabilities, managing their growth, and ultimately discovering the most efficient way to create value, considering the unique nature of their key capabilities and the effects stemming from their interactions.

Defining intellectual capital, categorising its components, managing its strategic and operational aspects, and assessing its core elements form a unified theoretical framework that reflects the holistic approach of this concept in enhancing a firm's value. From a theoretical perspective, the IC concept largely relies on the resource-based view (RBV) of firms and its variation—dynamic and core capabilities. The RBV's central idea, the concept of strategic resources, is similar to the traditional notion of strategic factors of production. IC emphasises that organisations create value through various linkages and interactions among all relevant resources, both within the organisation and externally. Therefore, external resources, built on strong, deep connections with stakeholders, are just as vital as internal resources. Stakeholders include shareholders, employees, customers, suppliers, lenders, the government, and society, all of whom are considered partners in the value-creation process. Consequently, from an IC perspective, a firm's performance should be assessed from the standpoint of its stakeholders, meaning that performance is viewed as the overall wealth generated by the firm before it is distributed to stakeholders, rather than just the accounting profit allocated to shareholders. Since accounting profit measures only returns to shareholders, value added (VA) provides a more accurate reflection of the wealth created by stakeholders, which is then distributed among them (Riahi-Belkaoui, 2003). Intellectual capital encompasses human capital, structural capital, and relational capital.

### ***Intellectual Capital Management and Its Role in Sustainable Business***

Intellectual capital has become a crucial driver of long-term organisational sustainability. In a business environment shaped by rapid technological change, shifting societal expectations, and an increasing emphasis on environmental and social responsibility, effective management of intellectual capital enables organisations to create durable competitive advantages while meeting broader sustainability and ESG goals.

Sveiby (2024) noted that sustainable business practices require companies to adopt long-term perspectives, integrate stakeholder interests, and innovate continuously. Intellectual capital directly supports these goals:

- Human capital (skills, creativity, knowledge, values) promotes a culture of sustainability, enabling employees to innovate eco-efficient solutions or adopt responsible behaviours.
- Structural capital (processes, databases, patents, digital systems) embeds sustainability into organisational routines, such as energy-efficient operations, knowledge-sharing platforms, or sustainability performance dashboards.
- Relational capital (customer trust, partnerships, networks) strengthens collaboration across value chains to co-develop green technologies, reduce environmental impacts, or support social well-being.

Through well-managed intellectual capital, sustainability becomes integrated into organisational capabilities rather than treated as compliance or marketing.

### ***Intellectual Capital and ESG Considerations***

Environmental, Social, and Governance (ESG) frameworks highlight the need for responsible business practices beyond financial metrics. Intellectual capital provides the intangible infrastructure necessary to operationalise ESG commitments (Sarumaha et. al., 2024):

#### **Environmental (E)**

- Human capital fosters environmentally conscious behaviours and innovative problem-solving.
- Structural capital supports sustainable processes, such as circular production systems or digital tools that track emissions.
- Relational capital encourages collaboration with suppliers and communities to improve environmental outcomes.

#### **Social (S)**

- Human capital management — training, diversity programs, employee well-being — directly influences social performance.
- Good structural capital establishes strong HR systems, ethical codes, and learning platforms that promote inclusivity.
- Relational capital enhances social value creation through partnerships with NGOs, community organisations, and educational institutions.

#### **Governance (G)**

- Intellectual capital contributes to transparent governance frameworks, risk management systems, and ethical decision-making models.
- Knowledge-sharing and digital reporting systems (structural capital) strengthen compliance and accountability.
- Trust-based relationships with stakeholders support responsible leadership and reputational resilience.

Thus, ESG performance is deeply rooted in how organisations develop, protect, and leverage their intellectual capital.

Sthembisio Msomi et. al. (2025) revealed that by integrating intellectual capital management with sustainability strategies, organisations:

- Build adaptability in rapidly changing environments.
- Drive innovation that aligns with environmental and social needs.
- Strengthen trust with stakeholders to enhance long-term value.

- Create a culture that supports ethical, responsible, and future-oriented decision-making.

In an era where intangible assets increasingly define corporate value, intellectual capital serves as both the engine of sustainable growth and the link between internal capabilities and external ESG expectations. Intellectual capital management is, therefore, not only a technical or operational necessity—it is a strategic mechanism that binds sustainability, ESG, and societal goals together. By nurturing their human, structural, and relational capital, organisations can make significant contributions to SDG 8 and SDG 9, while strengthening their own resilience, innovative capacity, and long-term competitiveness.

### **Organisational Performance**

Organisational performance refers to the indicators that help management determine whether the desired outcomes are being achieved, both quantitatively and qualitatively. With this insight, organisations can identify and implement strategies to enhance their performance. Consequently, performance measurement becomes a critical component for any organisation, as it can significantly influence a company's success or failure. It's also important to assess not only the impact of physical assets but also the impact of intangible resources—specifically, intellectual capital. Organisational performance emerges from managerial processes and the achievement of set organisational objectives. Another perspective defines organisational performance as the execution of roles assigned to employees by the organisation (Keter et al., 2024). It encompasses nearly all objectives related to competitiveness and operational excellence and is closely linked to cost-efficiency, adaptability, speed, dependability, and quality.

Additionally, organisational performance is a comprehensive concept that encompasses all elements of organisational achievement and strategic practices. It reflects how well an organisation acquires and utilises resources to maintain a competitive edge. Therefore, companies need to adopt performance

assessment systems that extend beyond traditional financial metrics (Angela & Gusti Agung Musa Budidarma, 2024). In this context, performance is measured using return on total assets (RETA), which evaluates a firm's profitability by indicating how effectively it generates earnings from shareholders' investments and the value it delivers to those investments.

### ***Human Capital (HC) and Organisational Performance***

Human capital refers to the collective knowledge, productivity, and overall contributions that individuals bring to an organisation. It can also be described as "the capacity to operate effectively in a range of situations to generate both physical and intangible resources" (Sveiby, 2024). At its core, human capital consists of employees who generate knowledge through innate abilities, formal education, competence, and personal attitudes (Roos & Ross, 1997). It encompasses the full spectrum of workers' expertise, capabilities, implicit knowledge, and professional experience. Additionally, Chen et al. (2005) emphasised that key elements of human capital include employee competence, dedication, commitment, and motivation. Workers utilise their tacit knowledge, along with these traits, to add value to their organisations. According to Madugba (2023), human capital is also a driver of innovation and strategic transformation, positively influencing a company's performance. It imparts a distinct identity to an organisation by representing its human dimension—shared intelligence, know-how, and expertise. Abdelmohsen and Gehan (2020) examined the influence of intellectual capital on the financial outcomes of companies in Bahrain's financial and service sectors over the 2013–2017 period. Their findings indicated that, within the financial sector, all intellectual capital components (human, customer, and structural capital) were positively associated with firm performance, except for labour costs, a subcategory of human capital. Based on these findings, the following hypothesis was proposed:

**HO<sub>1</sub>:** Human capital has no significant effect on the financial performance of listed non-financial firms in Nigeria.

***Structural Capital (SC) and Organisational Performance***

As noted by Sveiby (2024), structural capital (SC) encompasses elements such as patents, frameworks, models, computer systems, and administrative infrastructure. SC is defined as the organisational knowledge that exists independently of individual employees. In this regard, it consists of intangible assets that support and guide the company's operations. Roos and Roos (1997) described SC as the knowledge that remains within an organisation after employees leave. Examples of SC include the organisation's ability to learn, maintain documentation services, utilise information technologies broadly, and demonstrate operational adaptability. Additionally, Duho and Onuma (2019) characterised SC as encompassing all non-human repositories of knowledge, such as databases, organisational structures, process guidelines, strategies, and standard procedures.

Singh (2024) conducted a survey involving 60 managers from the Indian technology industry to assess how intellectual capital (IC) influences firm performance. The findings revealed that customer capital (CC) had the most significant positive impact, followed by human capital (HC) and then SC. Various prior studies have employed different indicators to represent SC. For example, Xu and Liu (2020) utilised research and development expenses, while Singh (2024) measured SC using total intangible assets and capital investments. According to OECD (2008), SC is a non-physical asset that holds economic value, is intangible, and can be retained or traded by an organisation. Based on this understanding, the present study has chosen the total value of non-physical assets as the representative measure of SC. Furthermore, Monther (2025) argued that a firm's ability to exhibit the features of strategic assets stems from its inclusion of intangible resources, which can substantially influence

organisational performance. Therefore, the following hypothesis was formulated:

**HO<sub>2</sub>:** Structural capital has no significant effect on the financial performance of selected non-financial firms in Nigeria.

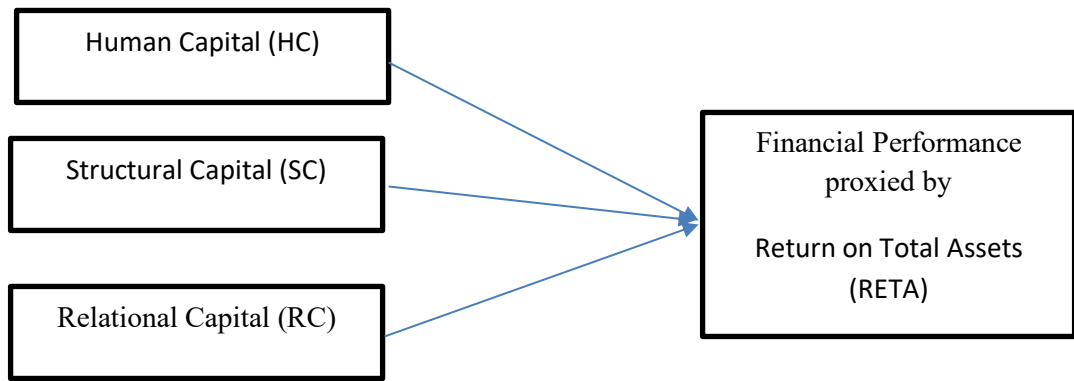
***Relational Capital (RC) and Organisational Performance***

Relational capital represents a component of intellectual capital that facilitates value creation through a company's external relationships. It encompasses the firm's interactions with both suppliers and customers (Sveiby, 2024). In line with this, Alavi and Leidner (2001) emphasised that relational capital hinges on cultivating and sustaining high-quality relationships with other organisations, individuals, or entities that can impact the business. According to Amrizah and Rashidah (2023), "RC is an organisation's capability to generate value in its relationships with external stakeholders." When businesses invest in relational capital, they often benefit in several ways, such as enhanced customer and brand loyalty, increased customer satisfaction, a stronger market image and reputation, better negotiation leverage, and the formation of strategic partnerships and alliances. Tsui et al. (2024) highlighted that engagement between companies and their external environment—through marketing channels, networks in government and industry, supplier and customer relations, loyalty, intermediaries or partners, and even competitors—enhances the process of value generation. Based on these insights, the following hypothesis was proposed:

**HO<sub>3</sub>:** Relational capital has no significant effect on the financial performance of listed non-financial firms in Nigeria.

***A conceptual framework***

This study uses financial performance, proxied by Return on Total Assets (RETA), as the dependent variable, while intellectual capital (proxied by Human Capital (HC), Structural Capital (SC), and Relational Capital (RC)) is the independent variable. The following diagram shows the relationships between IC components and the financial performance.



**Figure 1:** Conceptual framework of the Study

### Theoretical Background

#### *Resource-Based Theory by Barney (1991)*

According to the Resource-Based Theory (RBT), a firm's success is intrinsically linked to the resources it controls. The strategic trajectory of any organisation is shaped by both its tangible and intangible resources. famously proposed four essential attributes that resources must possess to contribute to long-term competitive advantage. These include the ability to capitalise on opportunities and neutralise threats, their rarity within the industry, the impossibility of competitors replicating them, and the absence of viable substitutes. From the perspective of Al-Musali and Ismail (2016), intellectual capital (IC) qualifies as a strategic resource under RBT, enabling firms to leverage it for sustained competitive advantage. Forms of IC — such as patents, organisational frameworks, data, customer relationships, and brand value — possess the attributes to impact financial and market outcomes. When this is the case, IC could justifiably be treated as an asset, in contrast to the positions taken by the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB). Effective management of such resources by firm leadership is expected to lead to value creation for shareholders.

#### **Empirical Review**

Several empirical studies have explored the relationship between intellectual capital and organisational performance. Madugba (2023) studied the impact of IC components — human, structural, and relational capital — on organisational outcomes, using data from 294 employees in Jordanian airlines. Data analysis

through SPSS revealed that all IC components positively influenced performance. Similarly, Danish et al. (2021) investigated the roles of innovative culture and trust in shaping IC and how IC, in turn, affects performance, with the performance measurement system serving as a mediator. Targeting aviation personnel in Pakistan, data were collected via structured questionnaires and analysed with SEM in AMOS v22. Results suggested that fostering trust and innovation enhances non-financial outcomes through IC. Duho and Onumah (2019) focused on the Ghanaian banking sector and assessed the influence of IC on economic value added. Using data from annual reports over 2015–2018, and analysed with OLS regression, findings indicated that human, structural, and capital employed efficiencies significantly improved economic value added. They advocated for stricter policies to enhance IC development.

Sumiati et al. (2024) assessed whether human, structural, and relational capital improved organisational performance in medium-sized manufacturing firms in Mexico. Surveying 309 CEOs and using statistical tools such as SPSS, AMOS, and SmartPLS, their findings confirmed a positive impact of all three IC dimensions on performance, with competitive advantage mediating the relationships. Oyokeh (2024) examined the effect of IC on value creation in Nigerian banks over 2013–2023. Although the findings suggested that IC components had no significant direct effect on bank performance, they maintained that IC remains vital for value generation and urged firms to disclose it in their financial reports.

Abdelmohsen and Gehan (2020) analysed the role of ICs in the financial performance of companies in Bahrain's financial and service sectors over 2013–2017. Using canonical correlation analysis on 145 firm-year data points, they found that IC was positively correlated with performance in both sectors. However, some human capital subcomponents, such as labour costs, had negative effects. Structural capital had the least impact, while human capital emerged as the most influential. Narwal and Yadav (2017) explored IC disclosure among Malaysian firms and its effect on market capitalisation. Analysing 185 companies using descriptive and content analysis, they found that 69% disclosed IC in reports, and that human and relational capital disclosures significantly enhanced market capitalisation.

Eka et al. (2018) examined the impact of IC on the financial performance of Indonesian listed firms from 2010 to 2015. Using panel data analysed via E-views 9, they discovered a strong positive effect of IC on profitability metrics such as NPM, ROE, and AAT, as well as on market value. Xu and Liu (2020) investigated IC's effects on Korean manufacturing firms between 2013 and 2018 using an improved VAIC model. Their findings indicated physical capital as the key performance driver, with human capital positively contributing to performance, while structural capital had no significant impact. Innovation and relational capital even negatively affected profitability.

In another study, Keter et al. (2024) assessed IC's influence on Turkish real estate companies listed on the Istanbul Stock Exchange from 2004–2015. Using the VAIC method and OLS regression, results showed structural capital had a significant positive relationship with market value, ROE, and EPS before the financial crisis. However, human capital was negatively associated with ROA and ROE, suggesting weak IC reliance in the sector. In Nigeria, Oyokeh (2024) examined the effect of IC on pharmaceutical firms and found that human capital positively influenced market value, whereas customer capital negatively

affected market value. Narwal and Yadav (2017) also evaluated IC's role in Indian real estate, finding it positively impacted profitability but not productivity.

Collectively, these studies show that while many were conducted outside Nigeria (e.g., Narwal & Yadav, 2017; Singh, 2024; Sumiati et al., 2024; Xu & Liu, 2020), findings are mixed. Some report positive results (Essien & Aniekan, 2022; Xu & Liu, 2020), others negative (Lai, 2013; Alavi & Leidner, 2001), and some indicate no clear relationship. This inconsistency and geographical gap motivated the current study.

## **METHODOLOGY**

As noted by Uford (2017), research design involves selecting an appropriate approach to guide the study. For this research, the ex post facto research design was deemed the most suitable. This design was selected because it relies on historical data, and the researcher did not intend to influence the data in any way. The population for this study comprises non-financial firms listed on the Nigerian Exchange Group over the 10 years from 2015 to 2024. By the end of 2024, there were 105 non-financial companies listed on the Nigerian Exchange Group, with the distribution as follows: Agriculture - 4; Conglomerate - 5; Consumer Goods Sector - 22; Construction and Real Estate - 7; Healthcare Sector - 10; ICT - 8; Industrial Goods Sector - 13; Natural Resources - 5; Oil and Gas - 12; and Services - 23. A purposive sample of 80 companies was selected based on specific criteria. The study employed secondary data collection methods, as these are easy to verify and authenticate. Analytical software, including Stata version 16 and Microsoft Excel, was used for data analysis. The secondary data were analysed using descriptive statistics, correlation, and regression analysis. Descriptive statistics were applied to examine the data's characteristics, including the mean, maximum, minimum, and standard deviation, and to assess normality. Correlation analysis was used to explore relationships among variables and detect multicollinearity. The Hausman test was

conducted to determine whether the RE estimator is statistically different from the FE estimator. The result revealed that the FE and RE estimates did not differ significantly; therefore, Random Effects was used.

### Variable measurements

Table 3.1 below presents the study's variables and their measurement.

**Table 1** Measurement of the components of intellectual capital (IC)

Human Capital (HC)		Structural Capital (SC)		Relational Capital (RC)	
HC Metrics	Measurement/ Proxies	SC Metrics	Measurement/ Proxies	RC Metrics	Measurement/ Proxies
Employee satisfaction	Employee satisfaction survey scores	Patent and intellectual property metrics	Revenue generated from Patent property	Customer satisfaction surveys	Customer retention
Training and development metrics	Number of skills acquisition programs attended	IT infrastructure metrics	Number of IT investments made	Market metrics	Customer acquisition costs
Turnover rates	Employee retention and turnover rates	Process efficiency metrics	Track process cycle time	Partnership metrics	Number of collaborations and successful alliance
Productivity metrics	Number of output per employee	Innovation metrics	Number of innovations made	Social media metrics	Frequency of social media engagement and online presence
Talent acquisition metrics	Track time-to-hire experts in year	Knowledge management metrics	knowledge documentations made and their accessibility	Supplier and stakeholder metrics	Frequency of stakeholder and community engagement

Source: Authors' Compilation (2025)

### Model Specification

This study adapted the model specified by Xu & Lui (2020), which was modified to examine the relationship between the

dependent variable and the various determinants included in the study. The econometric form of the model is represented as follows:

$$RETA_{it} = \beta_0 + \beta_1 CH_{it} + \beta_2 CS_{it} + \beta_3 RC_{it} + \beta_4 NPTM_{it} + \mu_{it}$$

Where:

- RETA = Return on Asset
- HC = Human Capital
- SC = Structural Capital
- CE = Relational Capital
- NPTM = Net Profit Margin
- $\beta_0$  = Constant
- $\beta_1$ -  $\beta_4$  = Slope Coefficients

- $\mu$  = Stochastic disturbance
- $i$  =  $i^{\text{th}}$  firm
- $t$  = time period

## DATA ANALYSIS AND DISCUSSION OF RESULTS

### Data Analysis

**Table 2:** Descriptive Statistics

Variable	Obs	Mean	Std. Dev	Min	Max
<b>RETA</b>	800	1.8329	15.1433	-1.1746	21.7448
<b>HC</b>	800	4.1209	5.1987	-15.6397	43.3146
<b>SC</b>	800	0.6593	1.1236	-18.5393	16.6809
<b>RE</b>	800	0.2452	0.2519	-1.1225	5.7734
<b>NPTM</b>	800	-11.5493	453.8152	-328.2345	723.124

Source: Stata Output version 19

Table 2 summarises the descriptive statistics for this study. The table reveals that the average return on assets (RETA), the dependent variable, was 1.83, with a standard deviation of 15.14 and a range of -1.17 to 21.74. Additionally, the average value for human capital (HC) was 4.12, with a standard deviation of 5.19, and the range was -15.63 to 43.31. The

average structural capital (SC) was 0.65, with a standard deviation of 1.12, ranging from -18.53 to 16.68. The data also indicate that, on average, relational capital (re) stood at 0.24, with a standard deviation of 0.25 and a range of -1.12 to 5.77. For the control variable, net profit margin (NPTM) had a mean of -11.54 and a standard deviation of 453.82.

**Table 3:** Correlation Analysis Result

	RETA	HC	SC	RE	NPTM
RETA	1.00				
HC	0.47	1.00			
SC	0.28	0.61	1.00		
RE	0.43	0.41	0.22	1.00	
NPTM	0.72	0.42	0.19	0.44	1.00

Source: Stata Output version 19

The Spearman rank correlation analysis in Table 3 indicates positive relationships between human capital (0.47), structural capital (0.28), relational capital (0.43), and the control variable, net profit after tax margin (0.72), with the dependent variable, return on assets. All these correlations are considered weak, suggesting

that multicollinearity is unlikely in the estimated model. To further ensure that multicollinearity is not present among the variables, the researcher also conducted a more thorough check using the Variance Inflation Factor (VIF) test.

**Table 4:** Regression Result

Variables	Coefficient	Standard Error	T-Stat.	P value
<b>C</b>	-3.42	0.038	3.560	{0.027} **
<b>HC</b>	0.04	0.040	5.030	{0.653}
<b>SC</b>	0.42	0.038	4.350	{0.032} **
<b>RE</b>	10.44	0.035	3.990	{0.025} ***
<b>NPTM</b>	0.50	0.154	10.040	0.40 {0.000} ***

<b>F-statistics</b>	35.73			(0.00) ***
<b>R- Squared</b>	0.39			
<b>VIF Test</b>	1.34			
<b>Het Test</b>	84.64			(0.000) ***

*Note:* (1) bracket {} are p-values (2) \*\*, \*\*\*, imply statistical significance at 5% and 1% levels respectively  
*Source:* Stata Output version 19

From Table 4, the regression results reveal an R-squared of 0.39, indicating that approximately 39% of the systematic variation in non-financial firms' performance, as measured by return on assets, over the period of interest can be explained by the independent and control variables in the model. This suggests that return on assets in Nigeria cannot be fully explained by human and control variables alone. The remaining unexplained portion of the return on assets can be attributed to the exclusion of other independent variables that could impact firm performance but were omitted due to the scope of this study. These factors, however, are included in the error term. Furthermore, the F-statistic of 35.73 and its corresponding P-value of 0.00 indicate that the overall regression model is statistically significant at the 1% level. This suggests that the regression model is valid and suitable for making statistical inferences.

## DISCUSSION

### Discussion of Findings

#### Human Capital and Performance of Selected Listed Non-financial Firms in Nigeria

The results from the robust regression in Table 4 show that human capital (0.04 {0.653}) has a positive but statistically insignificant effect on firms' performance as measured by return on assets. Therefore, the null hypothesis (that human capital does not significantly affect the financial performance of listed non-financial firms in Nigeria) should be accepted. This suggests that improvements in human capital efficiency within non-financial firms in Nigeria do not lead to significant increases in their financial performance. This finding is consistent with previous empirical research

indicating that human capital efficiency is not a major driver of financial performance (Abdelmohsen & Gehan, 2020; Narwal & Yadav, 2017; Essien & Aniekan, 2022). However, the results diverge from earlier studies reporting a significant negative impact of human capital efficiency on financial performance (Saleem et al., 2024; Umar & Dandago, 2023) and also from those suggesting a positive effect (Eka et al., 2018; Sthembiso Msomi et al., 2025).

#### Structural Capital and Performance of Selected Listed Non-financial Firms in Nigeria

The results from the robust regression in Table 4 show that structural capital efficiency (0.42 {0.032}) has a positive and significant effect on firm performance, as indicated by return on assets. Consequently, the null hypothesis (that structural capital efficiency does not significantly affect financial performance in listed non-financial firms in Nigeria) should be rejected. This suggests that enhancing structural capital efficiency significantly improves the financial performance of Nigerian non-financial firms during the study period. This finding aligns with previous research highlighting structural capital efficiency as a crucial factor driving financial performance (Angela & Gusti Agung Musa Budidarma, 2024; Xu & Liu, 2020). This finding aligns with the Resource-Based Theory (RBT), which holds that a firm's success is fundamentally linked to the resources it controls. The strategic trajectory of any organisation is shaped by both its tangible and intangible resources. In contrast, the results do not support earlier studies indicating that customer capital efficiency negatively impacts financial performance (Duho & Onuma, 2019).

## **Relational Capital and Performance of Selected Listed Non-financial Firms in Nigeria**

The robust regression results show that relational capital efficiency (10.44 {0.025}) has a positive and significant impact on firm performance, as measured by return on assets. As a result, the null hypothesis (that relational capital does not significantly affect the financial performance of listed non-financial firms in Nigeria) should be rejected. This indicates that an increase in relational capital efficiency significantly enhances the financial performance of non-financial firms in Nigeria during the study period. This finding is consistent with prior studies emphasising relational capital efficiency as an important driver of financial performance (Abdelmohsen & Gehan, 2020; Chiang et al., 2011; Monther, 2025). Additionally, the results do not align with research suggesting that structural capital efficiency negatively impacts financial performance (Eka et al., 2018; Narwal & Yadav, 2017).

## **CONCLUSION**

Based on the study's findings, it is concluded that relational and structural capital efficiency significantly improve the financial performance of listed non-financial firms in Nigeria. The results also indicate that, in the Nigerian non-financial sector, many companies still rely heavily on physical capital. In contrast, human capital is treated primarily as an expense because it does not meet the measurement and recognition criteria set out in international financial reporting standards. From a resource-based view, a firm's diverse resource architecture is a critical source of income, and its valuable, rare, inimitable, and non-transferable attributes can foster a competitive advantage. The study reveals that Intellectual capital plays a significant role in driving business success. It encompasses the intangible assets that contribute to a company's value and competitiveness. Intellectual capital fosters innovation, leading to new products, services, and processes that

drive growth. Furthermore, Unique intellectual capital can differentiate a company from competitors, creating a sustainable competitive advantage and contributing to value creation for stakeholders, including customers, employees, and shareholders. Therefore, Intellectual capital provides insights and knowledge that inform strategic decisions, thereby enhancing a company's reputation and brand value.

## **5.3 Recommendations**

Given these findings, the study recommends that managers invest more in enhancing structural and relational capital, as these resources appear to substantially improve firms' financial performance. Although human capital has an insignificant effect, it remains crucial to focus on this area, as the other firm resources cannot function optimally without the creativity and innovative capabilities of human capital. Based on the findings of the study, businesses should adopt the following practical recommendations:

- i. Invest in employee development by providing training and development opportunities to enhance employee skills and knowledge.
- ii. Foster a culture of innovation by encouraging experimentation, creativity, and risk-taking to drive innovation.
- iii. Protect intellectual property by registering patents, trademarks, and copyrights to protect intellectual assets.
- iv. Build strategic partnerships by collaborating with partners to access new markets, technologies, and expertise.
- v. Align intellectual capital with business strategy to ensure it supports business objectives and the competitive strategy.
- vi. Monitoring and adjustment through regular review and modification of intellectual capital strategies to respond to changing market conditions.

vii. Foster a culture of knowledge sharing by encouraging collaboration across the organisation.

### **Research Limitations**

Although this is a comprehensive and robust research in its context, it has the following limitations:

i. The researchers limit the scope to the listed non-financial firms in Nigeria, thereby overlooking non-listed firms, financial firms, and firms outside Nigeria.

ii. The researchers used only secondary data in conducting the study.

iii. The researchers did not use the whole population of the listed Non-financial firms under study.

### **Prospects for Further Research**

Given the research limitations, it is therefore suggested that prospective researchers in this area consider focusing on non-listed firms, financial firms, and firms outside Nigeria. They should also consider using both primary and secondary data to enhance the robustness of the research findings. Different methodologies can also be adopted to promote the vigour of the study.

## **REFERENCES**

Abdelmohsen, M. D. & Gehan, D. (2020). The impact of intellectual capital on a firm's financial performance: empirical evidence from Bahrain. *Investment Management and Financial Innovations*, vol. 17(4), 189–201. [https://doi.org/10.21511/imfi.17\(4\).2020.18](https://doi.org/10.21511/imfi.17(4).2020.18)

AbdulRahman, S. B., & Abubakar, A. (2023). *Impact of intellectual capital on financial performance of listed oil and gas firms in Nigeria*. *FUDMA Journal of Accounting and Finance Research*, 1(2), 88–101. <https://doi.org/10.33003/fujaftr-2023.v1i2.43.88-101>

Ali, S., Murtaza, G., Hedvicakova, M., Jiang, J., & Naeem, M. (2022). *Intellectual capital and financial performance: A comparative study (Pakistan & India, 2010–2020)*. *Frontiers in Psychology*, 13, Article 967820. <https://doi.org/10.3389/fpsyg.2022.967820>

Al-Musali, M., & Ismail, K. (2016). Cross-country comparison of intellectual capital performance and its impact on financial performance of commercial banks in GCC countries. *International Journal of Islamic and Middle Eastern Finance and Management*, 9(4), 512–531. <https://doi.org/10.1108/IMEFM-03-2015-0029>

Amrizah, K. & Rashidah, A. R. (2023). Intellectual capital profiles: Empirical evidence of Malaysian companies. *International Review of Business Research Papers*, 9(6), 83–101. [https://www.researchgate.net/profile/Amrizah-Kamaluddin/publication/299451724\\_Intellectual](https://www.researchgate.net/profile/Amrizah-Kamaluddin/publication/299451724_Intellectual)

[\\_Capital\\_Profiles\\_Empirical\\_Evidence\\_of\\_Malaysian\\_Companies/links/56f8a8c608ae95e8b6d3659a/Intellectual-Capital-Profiles-Empirical-Evidence-of-Malaysian-Companies.pdf](https://doi.org/10.21511/imfi.17(4).2020.18)

Chiang, H., Han, T. & Chuang, J. (2011). The relationship between high-commitment HRM, knowledge-sharing behaviour, and its mediators. *International Journal of Manpower*, 32, 604–622 <https://doi.org/10.1108/01437721111158224>

Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance, *Journal of Intellectual Capital*, 6(2), 159–176. <https://doi.org/10.1108/14691930510592771>

Angela, C., & Gusti Agung Musa Budidarma, I. (2024). The effect of intellectual capital towards firm's financial performance, with moderating effect of firm reputation. *Dinasti International Journal of Economics, Finance & Accounting*, 5(3), 1798–1805. <https://doi.org/10.38035/dijefa.v5i3.3172>

Dancaková, D. (2024). The impact of value-added intellectual capital on financial performance: Evidence from European public firms. *Risks*, 12(10), Article 151. <https://doi.org/10.3390/risks12100151>

Duho, K. C., & Onumah, J. M. (2019). The Determinants of intellectual capital performance of banks in Ghana: An empirical approach. 4th International Research Conference of the College

of Humanities 1-2 November 2018. Accra, Ghana: University Ghana.  
<https://doi.org/10.31219/osf.io/d8cwz>

Eka, C., Mirna, I. & Mulia, S. (2018). Effects of intellectual capital to financial performance and value of companies listed in Indonesia stock exchange. *Account and Financial Management Journal*, 3(2), 1323–1330.  
<https://everant.org/index.php/afmj/article/view/83>

Halim, K. (2024). The importance of intellectual capital in driving firm performance. *Accounting Analysis Journal*, 12(3), 190–198.  
<https://doi.org/10.15294/aaj.v12i3.75257>

Jikhan, F. C., Muftiadi, A., & Alexandri, M. B. (2023). The Effect of Intellectual Capital on Firm Performance: A State of the Art. *Jurnal Ilmiah Akuntansi dan Bisnis*, 18(2), 322–341.  
<https://doi.org/10.24843/JIAB.2023.v18.i02.p09>

Keter, C. K. S., Cheboi, J. Y., & Kosgel, D. (2024). Financial performance, intellectual capital disclosure and firm value: The winning edge. *Cogent Business & Management*, 11(1).  
<https://doi.org/10.1080/23311975.2024.2302468>

Madugba, J. U., (2023). *Intellectual capital value addition and the efficient assets management of listed manufacturing firms in Nigeria*. *Folia Oeconomica Stetinensia*, 23(2), 241–260.  
<https://doi.org/10.2478/fofi-2023-0029>

Monther, E. (2025). The Impact of Intellectual Capital in Enhancing Corporate Performance: Evidence from Public Companies in MENA. *Asian Journal of Economics, Business and Accounting*, 25(8), 153–167.  
<https://doi.org/10.9734/ajeba/2025/v25i81923>

Sthembisio Msomi, T., Magret Olarewaju, O., & Sibanda, M. (2025). Nexus of Intellectual capital efficiency components and firm value in listed Sub-Saharan Africa insurance companies: A static and dynamic approach. *Insurance Markets and Companies*, 16(2), 124–140.  
[http://dx.doi.org/10.21511/ins.16\(2\).2025.10](http://dx.doi.org/10.21511/ins.16(2).2025.10)

Narwal, R. K., & Yadav, N. (2017). The impact of intellectual capital on the Indian real estate sector's profitability and productivity. *Journal of Commerce and Accounting*, 6(1), 45–53.

Oyokeh, U. (2024). Effect of intellectual capital on sustainable growth: Evidence from firms

listed on Nigerian Exchange. *Journal of Finance and Accounting*, 11(2), 38–48.  
<https://doi.org/10.11648/j.jfa.20231102.11>

Riahi-Belkaoui, A. (2003). Intellectual capital and firm performance of US multinational firms. *Journal of Intellectual Capital*, 4(2). 215–26.  
<https://doi.org/10.1108/14691930310472839>

Roos, G. & Roos, J. (1997). Measuring your company's intellectual performance. *Long Range Planning*, 30(3), 413–426.  
[https://doi.org/10.1016/S0024-6301\(97\)00022-8](https://doi.org/10.1016/S0024-6301(97)00022-8)

Saleem, Q., Ahmed, B., & Ahmad, T. (2024). The role of intellectual capital in firm's financial performance in Pakistan. *Journal of Development and Social Sciences*, 5(3), 54–63.  
[https://doi.org/10.47205/jdss.2024\(5-III\)06](https://doi.org/10.47205/jdss.2024(5-III)06)

Sarumaha, M. K., Lumban Gaol, M. B., & Hutapea, H. D. (2024). The effect of intellectual capital on financial performance in energy sector companies listed on the Indonesian Stock Exchange (IDX) in 2020–2022. *Jurnal Ekuilnomi*, 6(1), 29–38. <https://doi.org/10.36985/yrshf07>

Singh, R. D. (2024). The impact of intellectual capital on financial performance: An empirical investigation of Indian technology industry. *Journal of Management Research and Analysis*, 11(2), 123–130.  
<https://doi.org/10.18231/j.jmra.2024.021>

Sumiati, W., Wijayanti, R., & Wati, C. R. (2024). Intellectual capital influence on firm value: Does financial health performance have mediating effect? Evidence from manufacturing companies in Indonesia (2016–2020). *International Journal of Religion*, 5(10).  
<https://doi.org/10.61707/scpn4053>

Sveiby, K.-E. (2024). *Method of measuring intangible assets*. [www.sveiby.com/articles/IntangibleMethods.htm](http://www.sveiby.com/articles/IntangibleMethods.htm).  
<https://harisportal.hanken.fi/sv/publications/methods-for-measuring-intangible-assets/>

Suciati, R., Rialmi, Z., & Herachwati, N. (2025). Intellectual Capital's Influence on Financial Performance: Mediating and Moderating Factors in Indonesia's Real Estate Sector. *Journal of Posthumanism*, 5(3), 1174–1190.  
<https://doi.org/10.63332/joph.v5i3.882>

Essien, S. P., & Aniekan, U. O. (2022). Intellectual Capital and Corporate Performance of

Listed Non-Finance Firms in Nigeria. AKSU Journal of Administration and Corporate Governance, 2(4), 42–56. [https://aksujacog.org.ng/articles/22/11/intellectual-capital-and-corporate-performance-of-listed-non-finance-firms-in-nigeria/aksujacog\\_02\\_04\\_04.pdf](https://aksujacog.org.ng/articles/22/11/intellectual-capital-and-corporate-performance-of-listed-non-finance-firms-in-nigeria/aksujacog_02_04_04.pdf)

Lai, W. (2013). Interoperability of implicit and explicit firm-level knowledge accumulation. *Journal of Strategy and Management*, 6(3), 229–241. <https://doi.org/10.1108/JSMA-08-2012-0042>

Umar, A., & Dandago, K. I. (2023). *The knowledge economy: How intellectual capital drives financial performance of non-financial service firms in Nigeria*.

FUDMA Journal of Accounting and Finance Research, 1(2), 113–122. <https://doi.org/10.33003/fujaf-2023.v1i2.42.113-122>

Xu, J., & Liu, F. (2020). The Impact of intellectual capital on firm performance: A modified and extended vaic model. *Journal of Competitiveness*, 12(1), 161–176. <https://doi.org/10.7441/joc.2020.01.10>

Alavi, M., & Leidner, D. E. (2001). *Review: Knowledge Management and Knowledge Management Systems: Conceptual Foundations And Research Issues*1,2. *MIS Quarterly*, 25(1), 107–136. <https://doi.org/10.2307/3250961>