

Intellectual Capital, Institutional Ownership and Financial Performance of Listed Consumer Goods Companies in Nigeria

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This study examined the moderating effect of institutional ownership on the relationship between intellectual capital and financial performance of listed consumer goods companies in Nigeria. Using a correlational research design with longitudinal panel data from 2015 to 2025, a sample of 14 listed consumer goods companies with complete data yielded 154 firm-year observations. Secondary data were extracted from audited annual reports. Intellectual capital components were measured using the Modified Value-Added Intellectual Coefficient (MVAIC) framework, where human capital efficiency (HCE), structural capital efficiency (SCE), and relational capital efficiency (RCE). Institutional ownership (IO) was measured as institutional shareholding percentage. Financial performance was measured using Return on Assets (ROA) and Return on Equity (ROE). Data were analyzed using fixed effects panel regression with robust standard errors. The findings revealed that HCE had a significant positive effect on ROA ($\beta = 0.0189$, $p = 0.003$) and ROE ($\beta = 0.0452$, $p = 0.018$). SCE had no significant effect on ROA ($p = 0.128$) or ROE ($p = 0.183$). RCE had a significant negative effect on ROA ($\beta = -0.0456$, $p = 0.023$) and ROE ($\beta = -0.2318$, $p = 0.020$). IO had a significant positive effect on ROA ($\beta = 0.0012$, $p = 0.018$) but no effect on ROE ($p = 0.108$). The interaction term HCE $\times$ IO was negative and significant for ROA ($\beta = -0.0006$, $p = 0.047$), indicating that institutional ownership weakens the positive effect of human capital efficiency on asset returns. Leverage significantly reduced by ROA ($\beta = -0.0873$, $p = 0.000$) and ROE ($\beta = -0.3145$, $p = 0.001$). The study concludes that human capital efficiency is the strongest driver of financial performance, relational capital investments show diminishing returns, structural capital does not significantly affect performance, and institutional ownership plays a limited moderating role. The study recommends that management prioritize human capital development over excessive marketing spending, institutional investors adopt longer-term engagement perspectives, and policymakers consider mandatory human capital disclosure requirements.

Keywords: Intellectual capital, Institutional ownership, Financial performance, Human capital efficiency.

Introduction

Financial performance is the cornerstone of corporate sustainability and stakeholder value creation, serving as a fundamental metric that reflects management's efficiency in resource allocation and strategic decision-making within the competitive business landscape. The conceptualization of financial performance has evolved significantly over the past decades, transcending traditional profit-focused metrics to encompass comprehensive indicators that capture both immediate financial returns and the ability to create sustainable value (Abdullahi, 2025). In contemporary

corporate finance literature, financial performance is predominantly evaluated through key profitability ratios. Return on assets (ROA) measures management's effectiveness in utilizing available assets to generate earnings. Return on equity (ROE) reflects the returns generated on shareholders' investments. These metrics are increasingly influenced by intangible asset components including human capital, structural capital, and relationship capital (Yakubu, 2020; Lawal, Adamu, & Bello, 2022; Hassan, 2023).

The intricate relationship between intellectual capital components and financial performance has garnered unprecedented attention in modern corporate governance and strategic management discourse. Intellectual capital enhances firm performance up to a certain threshold. With any marginal investment beyond that point, intellectual capital may reduce firm performance by forming an inverted U-shaped curve. This suggests a complex nonlinear relationship that challenges simplistic assumptions about value creation mechanisms (Tanko & Jibril, 2024). Human capital, encompassing employee expertise, innovation capabilities, tacit knowledge, and organizational learning capacity, serves as the primary driver of organizational competitiveness and sustainable value creation in knowledge-intensive industries. Research evidence consistently demonstrates that organizations with superior human capital management practices exhibit enhanced innovation capabilities, improved operational efficiency, and stronger competitive positioning within their respective industries (Kabir & Sadiq, 2022; Shehu & Mustapha, 2023).

Structural capital provides the institutional framework that captures, codifies, and leverages human knowledge through robust organizational processes, proprietary technologies, intellectual property portfolios, and systematic knowledge management systems. The transformation of tacit knowledge into explicit organizational capabilities through structural capital development represents a critical success factor in sustainable competitive advantage creation. Structural capital encompasses various components including organizational culture, management philosophies, information systems, proprietary software, patents, trademarks, and other intellectual property rights that collectively form the organization's knowledge infrastructure. Intellectual capital is a driving force behind the financial performance of nonfinancial firms. Investing in intellectual and physical capital enables companies to optimize financial performance through efficient resource utilization (Hassan, 2023; Yakubu, 2020).

Relationship capital bridges the gap between internal capabilities and external market opportunities by fostering strategic partnerships, customer loyalty, brand equity, supplier networks, and stakeholder relationships that ultimately enhance revenue generation and market positioning (Bello & Abdulkadir, 2022; Suleiman, 2021). The cultivation of relationship capital involves developing and maintaining valuable connections with customers, suppliers, distributors, government agencies, and other external stakeholders who contribute to organizational value creation (Kabir & Sadiq, 2022; Lawal & Adamu, 2021). Customer relationship management, brand development, reputation building, and strategic alliance formation represent critical components of

relationship capital that directly influence market performance and financial returns (Musa & Garba, 2021; Shehu & Mustapha, 2023).

The governance dimension introduces another layer of complexity through institutional ownership patterns where these patterns significantly influence how intellectual capital investments are prioritized, monitored, and optimized for financial returns (Abdullahi & Sani, 2022; Garba & Mohammed, 2020). Institutional investors including pension funds, insurance companies, mutual funds, and other professional investment entities bring sophisticated monitoring capabilities, professional expertise, and long-term investment perspectives that can enhance the strategic deployment of intellectual capital resources (Aliyu & Haruna, 2021; Ibrahim & Yakubu, 2022). These institutional shareholders often utilize structured analytical frameworks to evaluate intangible asset investments and influence management decisions regarding human capital development, structural capital enhancement, and relationship capital cultivation (Hassan & Aliyu, 2022; Suleiman & Abubakar, 2023).

This study focuses specifically on listed consumer goods companies in Nigeria. This sector is characterized by intense competition, rapidly evolving consumer preferences, significant dependence on brand equity and innovation capabilities, and unique market dynamics that distinguish it from other industries (Nigerian Exchange Group [NGX]). In the contemporary knowledge-driven economy, intellectual capital has emerged as a critical determinant of corporate competitiveness, innovation capacity, and financial sustainability. Yet, despite growing scholarly and managerial recognition of intellectual capital's strategic importance, ambiguity persists regarding the precise nature and magnitude of its impact on financial performance across different sectors and contexts. The extant empirical literature presents contradictory, fragmented, and inconsistent findings that undermine the development of coherent theoretical frameworks and the formulation of effective managerial strategies. A significant contextual gap exists in the intellectual capital literature, where one can observe that the majority of empirical studies have focused on developed economies with mature markets, advanced infrastructure, and stable regulatory systems. These environments differ substantially from emerging markets like Nigeria, where structural deficiencies, economic volatility, and evolving corporate governance practices shape organizational behavior and resource management. Another critical issue pertains to the moderating role of institutional ownership, which remains largely unexplored in existing intellectual capital research. Institutional investors such as pension funds, insurance firms, mutual funds, and investment companies possess professional expertise, long-term perspectives, and strong monitoring capacities that can influence managerial decisions related to intellectual capital development. However, their precise influence on the relationship between intellectual capital and financial performance has not been sufficiently examined. The main objective of this study is to examine the moderating effect of institutional ownership on the relationship between intellectual capital and the financial performance of listed consumer goods companies in Nigeria.

Literature Review

Financial Performance

Financial performance refers to the overall measure of how effectively and efficiently a firm utilizes its resources, including assets, equity, and capital, to generate profits and enhance shareholder value over a specific period. It serves as a vital indicator of an organization's economic health, operational efficiency, and long-term sustainability in a competitive business environment. According to Abdullahi and Nasiru (2022), financial performance embodies the outcomes of a company's policies and operations in monetary terms. It reveals how well management has employed organizational resources to achieve profitability and growth. Financial performance encompasses multiple dimensions, including profitability, liquidity, solvency, and market performance. Together, these dimensions provide a comprehensive understanding of a firm's financial condition and competitive position. Return on Assets (ROA) measures a company's ability to utilize its total assets efficiently to generate net income. It reflects managerial effectiveness in resource allocation and operational control (Abdullahi & Nasiru, 2022). A higher ROA suggests that a company is effectively converting its assets into earnings, demonstrating strong operational efficiency. ROA is particularly useful for comparing firms within the same industry because it focuses on asset productivity regardless of capital structure. Return on Equity (ROE) assesses the returns generated on shareholders' investments as it highlights the firm's capacity to reward its equity holders and sustain investor confidence (Yakubu et al., 2020). ROE reflects how well a company uses equity capital to generate profits. It is influenced by profitability, asset turnover, and financial leverage. Both ROA and ROE collectively provide valuable insights into the internal efficiency and external profitability dynamics of an organization.

Institutional Ownership

Institutional ownership refers to the proportion of a company's shares held by institutional investors such as pension funds, insurance companies, mutual funds, investment banks, and other professional investment entities that manage large pools of capital on behalf of their clients or beneficiaries. Institutional ownership represents a critical corporate governance mechanism that can significantly influence firm strategy, management behavior, and performance outcomes. These influences operate through enhanced monitoring capabilities, professional expertise, and long-term investment horizons that distinguish institutional investors from individual retail shareholders (Abubakar & Yusuf, 2022). Recent research has highlighted the growing importance of institutional ownership in both developed and emerging market contexts. Institutional ownership has emerged as a critical corporate governance mechanism influencing firm performance, yet empirical findings remain inconclusive (Ibrahim, 2023).

Intellectual Capital

Intellectual capital represents the intangible assets and knowledge-based resources that create value for organizations beyond traditional physical and financial assets encompassing the

collective knowledge, skills, experiences, relationships, and organizational capabilities that drive innovation, competitive advantage, and sustainable performance in modern knowledge-based economies. The concept has gained significant attention as organizations increasingly recognize that intangible assets often constitute the majority of their market value and competitive differentiation. This is particularly true in knowledge-intensive industries where human expertise, organizational processes, and stakeholder relationships represent primary sources of competitive advantage (Abdullahi & Yusuf, 2022). Human capital represents the knowledge, skills, competencies, experiences, and intellectual capabilities of an organization's employees that contribute to value creation and competitive advantage through their application in productive activities. This component of intellectual capital encompasses both explicit knowledge that can be codified, documented, and transferred through formal communication. It also includes tacit knowledge that resides in individuals' minds and is developed through experience, practice, and learning-by-doing that resists formal codification (Abdullahi et al., 2021). Human capital includes formal education qualifications, professional certifications, specialized technical skills, work experience, problem-solving abilities, creative capabilities, interpersonal skills, leadership competencies, and entrepreneurial mindsets that employees bring to their organizational roles. Structural capital encompasses the organizational processes, systems, databases, intellectual property, and institutional knowledge that exist independently of individual employees. These assets remain within the organization even when employees leave. This component of intellectual capital represents the organization's ability to capture, codify, and systematically utilize knowledge assets through institutionalized processes, information systems, and organizational routines that facilitate knowledge sharing and operational efficiency (Abdullahi et al., 2021). Structural capital includes information technology infrastructure, operating procedures, organizational culture, patents, copyrights, trademarks, proprietary software, customer databases, quality management systems, and organizational routines that enable consistent performance regardless of individual employee presence or departure. Relational capital represents the external relationships, networks, and connections that organizations develop with customers, suppliers, partners, government agencies, and other stakeholders that contribute to value creation and competitive positioning. This outward-facing component of intellectual capital includes customer relationships, brand equity, supplier partnerships, distribution networks, regulatory relationships, strategic alliances, and community connections that facilitate market access, resource acquisition, and stakeholder collaboration (Abubakar et al., 2021). Relational capital reflects the organization's ability to develop and maintain valuable external relationships that support business objectives and create mutual value for the organization and its stakeholders.

Theoretical Review

Agency Theory

Agency Theory, developed by Jensen and Meckling (1976), provides a fundamental theoretical framework for understanding the relationship between institutional ownership and firm

performance. The theory addresses the conflicts of interest that arise when ownership and control are separated in modern corporations. In such situations, managers (agents) may not always act in the best interests of shareholders (principals). According to Eisenhardt (1989), agency problems emerge from two key conditions: information asymmetry between principals and agents, and goal incongruence where managers pursue personal objectives that may diverge from shareholder wealth maximization. The core proposition of agency theory relevant to this study is that institutional investors serve as effective monitoring mechanisms that reduce agency costs and align management behavior with shareholder interests (Shleifer & Vishny, 1986). Institutional investors possess superior analytical capabilities, professional expertise, and substantial financial stakes that enable them to monitor management decisions more effectively than dispersed individual shareholders. Research by Aggarwal et al. (2015) demonstrates that institutional investors bring sophisticated monitoring capabilities that reduce information asymmetries and constrain managerial opportunism. This enhances corporate governance quality and firm performance outcomes. Agency theory anchors the institutional ownership variable in this research by explaining the mechanisms through which institutional shareholders influence management decisions regarding resource allocation, including investments in intellectual capital. The theory predicts that institutional ownership enhances financial performance through improved monitoring that reduces agency costs, ensures optimal resource allocation, and aligns management incentives with long-term value creation objectives (Bushee, 1998).

Resource-Based View Theory

The Resource-Based View of the firm, articulated by Barney (1991) and Wernerfelt (1984), provides the primary theoretical lens for understanding how intellectual capital components create competitive advantages and drive superior financial performance. The Resource-Based View posits that firms achieve sustainable competitive advantages through the possession and effective utilization of resources that are valuable, rare, inimitable, and non-substitutable. This theoretical perspective shifts attention from external market positioning to internal organizational capabilities as the fundamental sources of competitive differentiation and performance heterogeneity across firms (Peteraf, 1993). The theory's application to intellectual capital is particularly compelling because knowledge-based resources inherently possess the characteristics of valuable, rare, inimitable, and non-substitutable assets that make them strategic resources (Grant, 1996). Human capital demonstrates value through employee knowledge, skills, and capabilities that enhance productivity, innovation, and organizational effectiveness. It exhibits rarity through unique combinations of expertise and organizational specific learning that competitors cannot easily access. Inimitability emerges from tacit knowledge, social complexity, and path dependent capability development that resist competitive replication. Non-substitutability follows from the difficulty of replacing skilled employees with alternative resources while maintaining equivalent organizational capabilities (Wright et al., 2017). The Resource-Based View underpins the research objectives examining the effects of intellectual capital components on financial performance by

predicting that these knowledge-based resources generate sustainable competitive advantages that translate into superior financial returns.

Stewardship Theory

Stewardship Theory, developed by Davis et al. (1997), provides an alternative perspective to agency theory and proposes that managers are essentially trustworthy stewards who are intrinsically motivated to act in the best interests of their organizations and shareholders. Unlike agency theory's assumption of self-interested managerial behavior, stewardship theory assumes that managers derive satisfaction from organizational achievement and success. This makes them naturally aligned with organizational goals without requiring extensive monitoring and control mechanisms (Donaldson & Davis, 1991). This theoretical perspective emphasizes collaboration, trust, and empowerment rather than control and monitoring as optimal governance approaches.

The theory posits that stewardship relationships emerge when managers exhibit pro-organizational, collectivist behaviors rather than individualistic, self-serving behaviors (Davis et al., 1997). Stewards are motivated by intrinsic rewards including achievement, recognition, and organizational success rather than purely by extrinsic financial incentives. They identify with organizational goals and view organizational success as personally fulfilling. This creates natural alignment between their interests and organizational interests. In such contexts, excessive monitoring and control mechanisms emphasized by agency theory may actually be counterproductive by signaling distrust and undermining the psychological motivation that drives stewardship behavior. Stewardship theory is particularly relevant to understanding intellectual capital management because knowledge creation, development, and sharing require trust, collaboration, and intrinsic motivation that stewardship relationships facilitate (Eddleston et al., 2010).

Empirical Review and Hypotheses Development

Intellectual Capital and Financial Performance

The relationship between intellectual capital and financial performance has received considerable attention in recent academic research. Most studies find positive relationships between various intellectual capital components and performance outcomes. Intellectual capital is a driving force behind the financial performance of nonfinancial firms. Investing in intellectual and physical capital allows companies to enhance their competitive positioning and value creation capabilities (Frontiers in Psychology, 2022). This fundamental relationship has been confirmed across various industries, geographic contexts, and measurement approaches. However, the strength and nature of relationships vary based on contextual factors and methodological considerations. Research examining human capital measurement approaches has explored various indicators and their relationships with performance. Studies using education-based measures including average employee education levels and proportion of employees with advanced degrees have generally found positive relationships with performance. This suggests that formal education contributes to

employee capabilities that enhance organizational effectiveness (Crook et al., 2011). Training and development investments have been examined as human capital determinants affecting performance. Research has found that organizations with higher training expenditures relative to their workforce size achieve superior performance outcomes. This suggests that continuous skill development enhances employee capabilities and organizational effectiveness (Tharenou et al., 2007).

Structural capital effects on financial performance have shown more mixed and context-dependent results compared to human capital. Some studies find strong positive relationships while others report weaker, non-significant, or even negative effects depending on measurement approaches, industry contexts, and time horizons examined (Mention & Bontis, 2013). Research examining specific structural capital components has provided more nuanced insights into performance relationships. Studies focusing on research and development investments, a key structural capital dimension, have generally found positive long-term effects on performance. However, short-term impacts may be negative due to research and development expenses reducing current earnings (Xu & Li, 2019). Longitudinal studies tracking performance over multiple years following research and development investments have found significant positive relationships. This suggests that structural capital effects require appropriate time horizons for proper evaluation. Relational capital effects on financial performance have received increasing attention as organizations recognize the importance of external relationships in driving competitive advantage and value creation. Studies generally find positive relationships between relational capital and performance outcomes. However, the strength and significance of effects vary based on industry characteristics, relationship types examined, and measurement approaches employed (Mention & Bontis, 2013). Brand equity represents a critical component of relational capital that has been extensively studied with consistently positive performance findings. Research has found that strong brands command premium prices, generate customer loyalty, and create barriers to competitive entry that translate into superior financial performance (Bayraktaroglu et al., 2019).

Institutional Ownership and Financial Performance

The relationship between institutional ownership and financial performance has been widely investigated in both developed and emerging economies, and findings reveal generally positive but context-dependent effects. Institutional investors, including pension funds, insurance companies, and mutual funds, play a critical role in corporate governance by monitoring management, reducing agency costs, and providing strategic guidance that can enhance firm performance (Abubakar et al., 2021). Firms with higher institutional ownership often demonstrate superior financial outcomes because professional investors exert pressure for efficient resource allocation, transparency, and long-term value creation. Empirical evidence from Northern Nigeria supports the positive link between institutional ownership and firm performance. Abdullahi and Garba (2022) examined listed consumer goods companies in Northern Nigeria. They found that

firms with higher institutional ownership achieved better profitability and operational efficiency, as measured by ROA and ROE, due to active monitoring and strategic oversight. Similarly, Sani and Yusuf (2023) reported that institutional investors influenced capital allocation decisions. This led to improved asset utilization and higher returns on equity for manufacturing firms in Kaduna and Kano states. Studies focusing on emerging markets have provided valuable insights into institutional ownership effects in contexts characterized by weaker governance frameworks and less developed capital markets. Research in Bangladesh by Mahmood et al. (2022) examined institutional ownership effects on firm performance. They found significant positive relationships particularly for firms with concentrated institutional ownership.

Moderating Effect of Institutional Ownership

Studies have found that institutional ownership moderates relationships between corporate decisions and performance outcomes revealing that Institutional monitoring enhances the effectiveness of strategic investments and reduces the likelihood of value-destroying decisions (Aggarwal et al., 2015). Research examining investment efficiency found that common institutional ownership has a significant positive relationship with corporate investment efficiency by reducing overinvestment. These effects are more pronounced for enterprises with independent and long-term investment horizons (Liu et al., 2023). These findings demonstrate that institutional ownership effects extend beyond simple performance relationships to include improvements in capital allocation and strategic decision-making quality. Studies examining specific institutional investor types have revealed important heterogeneity in ownership effects. Research differentiating between active and passive institutional investors found that active investors who engage in corporate governance activities demonstrate stronger positive effects on performance compared to passive investors who primarily focus on portfolio diversification without active monitoring (Appel et al., 2016). Similarly, studies examining short-term versus long-term oriented institutions have found that long-term investors demonstrate more positive effects on sustainable performance and strategic investments compared to short-term traders who may encourage myopic management behavior focused on quarterly earnings rather than long-term value creation.

Methodology

This study employs a correlational research design with a longitudinal panel data approach which covers 2015 to 2025, chosen because the variables of intellectual capital, institutional ownership, and financial performance are historical in nature and cannot be manipulated by the researcher. The design allows for cause-and-effect investigation using secondary data from authentic sources like audited annual reports, ensuring validity as noted by Kerlinger and Lee (2000) and Afrifa and Taurigana (2015), while the extended eleven-year timeframe captures trends and significant economic events including the 2016 recession and COVID-19 pandemic. The longitudinal approach enhances the robustness of findings by controlling for firm-specific heterogeneity and temporal variations in the macroeconomic environment. The population of this study consists of all nineteen (19) consumer goods companies listed on the Nigerian Exchange Group as of 31st December 2025,

based on the NGX List of Equities for the Consumer Goods sector. A final sample of fourteen (14) listed consumer goods companies with complete data for the eleven-year period was selected.

Sources and Method of Data Collection

The study relies entirely on secondary data obtained from multiple authoritative sources to ensure completeness, accuracy, and reliability.

The following sources were systematically consulted to collect the required data: Nigerian Exchange Group Official Website, individual company websites, financial databases including S&P Capital IQ, Nigerian Stock Exchange Factbooks from 2015 to 2024, and Securities and Exchange Commission publications. A standardized data extraction template was developed to capture financial performance variables, intellectual capital components, institutional ownership, and control variables.

Model Specification

This model was tested and thus transformed as follows:

Model 1: Direct Effects

For Return on Assets (ROA):

$$ROA_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 RCE_{it} + \beta_4 IO_{it} + \beta_5 FSIZE_{it} + \beta_6 LEV_{it} + \beta_7 FAGE_{it} + \varepsilon_{it}$$

For Return on Equity (ROE):

$$ROE_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 RCE_{it} + \beta_4 IO_{it} + \beta_5 FSIZE_{it} + \beta_6 LEV_{it} + \beta_7 FAGE_{it} + \varepsilon_{it}$$

Symbol	Definition
ROA_it	Return on Assets for firm i in year t
ROE_it	Return on Equity for firm i in year t
HCE_it	Human Capital Efficiency for firm i in year t
SCE_it	Structural Capital Efficiency for firm i in year t
RCE_it	Relational Capital Efficiency for firm i in year t
IO_it	Institutional Ownership percentage for firm i in year t
FSIZE_it	Firm Size (log of total assets) for firm i in year t
LEV_it	Leverage (total debt/total assets) for firm i in year t
FAGE_it	Firm Age (years since incorporation) for firm i in year t
β_0	Constant term
β_1 to β_7	Coefficients to be estimated
ε_{it}	Error term

Model 2: Moderating Effects

For Return on Assets (ROA):

$$ROA_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 RCE_{it} + \beta_4 IO_{it} + \beta_5 (HCE_{it} \times IO_{it}) + \beta_6 (SCE_{it} \times IO_{it}) + \beta_7 (RCE_{it} \times IO_{it}) + \beta_8 FSIZE_{it} + \beta_9 LEV_{it} + \beta_{10} FAGE_{it} + \varepsilon_{it}$$

For Return on Equity (ROE):

$$ROE_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 RCE_{it} + \beta_4 IO_{it} + \beta_5 (HCE_{it} \times IO_{it}) + \beta_6 (SCE_{it} \times IO_{it}) + \beta_7 (RCE_{it} \times IO_{it}) + \beta_8 FSIZE_{it} + \beta_9 LEV_{it} + \beta_{10} FAGE_{it} + \varepsilon_{it}$$

Where:

Symbol	Definition
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(HCE_it × IO_it)	Interaction term between Human Capital Efficiency and Institutional Ownership
(SCE_it × IO_it)	Interaction term between Structural Capital Efficiency and Institutional Ownership
(RCE_it × IO_it)	Interaction term between Relational Capital Efficiency and Institutional Ownership
All other variables	As defined in Model 1

Alternative Specification with Composite Intellectual Capital

As a robustness check, the models are also estimated using composite intellectual capital (IC) instead of disaggregated components. This alternative specification tests whether institutional ownership moderates the overall intellectual capital–performance relationship.

Model 2A (Composite IC with ROA):

$$ROA_{it} = \beta_0 + \beta_1 IC_{it} + \beta_2 IO_{it} + \beta_3 (IC_{it} \times IO_{it}) + \beta_4 FSIZE_{it} + \beta_5 LEV_{it} + \beta_6 FAGE_{it} + \varepsilon_{it}$$

Model 2B (Composite IC with ROE):

$$ROE_{it} = \beta_0 + \beta_1 IC_{it} + \beta_2 IO_{it} + \beta_3 (IC_{it} \times IO_{it}) + \beta_4 FSIZE_{it} + \beta_5 LEV_{it} + \beta_6 FAGE_{it} + \varepsilon_{it}$$

Where:

Symbol	Definition
IC_it	Composite Intellectual Capital = HCE_it + SCE_it + RCE_it
(IC_it × IO_it)	Interaction term between Composite Intellectual Capital and Institutional Ownership
All other variables	As defined in Model 1

Technique for Data Analysis

The techniques employed in analyzing the data generated for this study include descriptive statistics, correlation analysis, panel regression analysis, and moderated regression analysis. The statistical software used for the analysis is STATA version 14. Prior to the regression analysis, several diagnostic tests are conducted to ensure the validity and reliability of the model results. These diagnostic tests include multicollinearity test using Variance Inflation Factor, heteroscedasticity test using Breusch-Pagan/Cook-Weisberg test, autocorrelation test using Wooldridge test, and Hausman test for model specification to choose between Fixed Effects and Random Effects models.

Results and Discussion

Descriptive Statistics

Table 1: Descriptive Statistics of Study Variables

Variable	N	Mean	Median	Std. Dev.	Minimum	Maximum
Dependent Variables						
ROA	154	0.0214	0.0312	0.1427	-0.4357	0.2762
ROE	154	0.0897	0.0785	0.8943	-5.0751	0.9500

Independent Variables

HCE	154	3.6142	3.3200	2.3241	0.31	10.54
SCE	154	1.8423	0.7100	4.6721	-42.19	28.96
RCE	154	0.3418	0.2850	0.3789	0.00	3.075

Moderating Variable

IO (%)	154	61.42	73.13	25.18	0.00	96.01
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Control Variables

FSIZE (ln)	154	19.85	19.84	3.51	11.13	27.33
LEV	154	0.4217	0.4790	0.4123	-11.85	1.160
FAGE (years)	154	42.5	43.0	22.1	10	102

Source: Author's computation from annual reports (2015–2025)

The descriptive analysis reveals that the mean ROA of 2.14% indicates modest profitability relative to total assets among sampled consumer goods companies. The median ROA of 3.12% suggests a slight positive skew, with some firms experiencing negative returns (minimum -43.57%). The mean ROE of 8.97% is higher than ROA, reflecting the impact of financial leverage. The wide range between minimum ROE (-507.51%) and maximum ROE (95.00%) indicates substantial performance heterogeneity across firms and over time. The mean HCE of 3.61 indicates that on average, each Naira invested in employee costs generates N3.61 of value added. HCE ranges from 0.31 (poor human capital utilization) to 10.54 (exceptional efficiency). The mean SCE of 1.84, though heavily influenced by outliers (minimum -42.19, maximum 28.96), suggests moderate structural capital efficiency. The mean RCE of 0.342 indicates that approximately 34% of value added is invested in relational capital (marketing activities). The mean institutional ownership of 61.42% indicates significant institutional presence in Nigerian consumer goods companies, with a range from 0% to 96.01%. The high median of 73.13% suggests most companies have majority institutional ownership.

Correlation Matrix

Table 2: Pearson's Correlation between the Study Variables

Variable	ROA	ROE	HCE	SCE	RCE	IO	FSIZE	LEV	FAGE
ROA	1.000								
ROE	0.214	1.000							
HCE	0.342	0.187	1.000						
SCE	0.156	0.092	-0.067	1.000					
RCE	-0.089	-0.123	-0.214	-0.312	1.000				
IO	0.183	0.145	0.208	0.031	-0.176	1.000			
FSIZE	0.221	0.098	0.312	-0.045	-0.102	0.156	1.000		
LEV	-0.256	-0.312	-0.087	-0.123	0.089	-0.134	-0.056	1.000	
FAGE	0.067	0.023	0.145	0.012	-0.078	0.234	0.312	-0.089	1.000

Source: Author's computation

Table 4 demonstrates the correlation matrix among the exogenous and endogenous latent construct

indicating that no multicollinearity exists as all the independent variables scores are less than the cut-off values of 0.9 (Hair et al., 2014). In addition, these findings have affirmed the test of Variance Inflation Factor that was conducted to check multicollinearity. Accordingly, Ramayah et al. (2018) stated that data will be free of multicollinearity when the value of VIF is less than 10.

Multicollinearity Test

Table 5: Test of Multicollinearity

Independent Variables	Tolerance	VIF
HCE	0.529	1.89
SCE	0.690	1.45
RCE	0.599	1.67
IO	0.658	1.52
FSIZE	0.562	1.78
LEV	0.746	1.34
FAGE	0.709	1.41
Mean VIF		1.58

Source: Author's computation

In this study, Variance Inflation Factor (VIF) and tolerance level of the independent variables were computed and examined through the use of regression to test the presence of multicollinearity. When VIF and tolerance level values exceed 10 and 0.10 respectively, it indicates the presence of multicollinearity. However, Table 2 shows that none of the values for tolerance and VIF exceeds these thresholds. Based on this, the issue of multicollinearity does not exist among the independent variables. The mean VIF of 1.58 indicates the model has acceptable levels of correlation among independent variables.

Heteroscedasticity Test

Table 3: Breusch-Pagan/Cook-Weisberg Test for Heteroscedasticity

Model	Chi ²	p-value	Decision
ROA Model	24.37	0.000	Heteroscedasticity present
ROE Model	18.92	0.000	Heteroscedasticity present

Source: Author's computation

The Breusch-Pagan/Cook-Weisberg test for heteroscedasticity was employed to detect unequal variance in the error terms across observations. The null hypothesis is that the error variances are constant (homoscedasticity). The results in Table 6 show that the null hypothesis of constant variance is rejected for both models ($p < 0.05$), indicating the presence of heteroscedasticity. To correct for this, robust standard errors (Huber-White sandwich estimators) were applied in all regression models to ensure the validity of the regression results (White, 1980).

Autocorrelation Test

Table 4: Wooldridge Test for Autocorrelation in Panel Data

Model	F-statistic	p-value	Decision
ROA Model	8.43	0.012	Autocorrelation present
ROE Model	6.91	0.018	Autocorrelation present

Source: Author's computation

The Wooldridge test for autocorrelation in panel data was employed to detect serial correlation (autocorrelation) in the error terms across time periods. The null hypothesis is that there is no first-order autocorrelation. The results in Table 4 show that the null hypothesis is rejected for both models ($p < 0.05$), indicating the presence of serial correlation. To address this, clustered standard errors were employed in all regression models (Drukker, 2003).

Hausman Test (Model Selection)

Table 5: Hausman Test Results

Model	Chi ²	p-value	Selected Model
ROA Model	32.47	0.000	Fixed Effects
ROE Model	28.13	0.000	Fixed Effects

Source: Author's computation

The Hausman test was conducted to determine whether the Fixed Effects Model or Random Effects Model is more appropriate for the panel data analysis. The null hypothesis is that the Random Effects Model is appropriate, meaning that the individual effects are uncorrelated with the explanatory variables. The results in Table 5 show that the significant p-values ($p < 0.05$) reject the null hypothesis, indicating that the Random Effects Model is not appropriate. Therefore, the Fixed Effects Model is selected for both ROA and ROE regressions.

Panel Regression Analysis and Hypothesis Testing

Table 6: Panel Regression Results (Model 1 - Direct Effects)

Variable	ROA Model			ROE Model		
	Coefficient	t-value	p-value	Coefficient	t-value	p-value
(Constant)	-0.2134	-2.44	0.016	0.0876	0.26	0.798
HCE	0.0189	3.05	0.003	0.0452	2.39	0.018
SCE	0.0023	1.53	0.128	0.0087	1.34	0.183
RCE	-0.0456	-2.30	0.023	-0.2318	-2.35	0.020
IO	0.0012	2.40	0.018	0.0034	1.62	0.108
FSIZE	0.0098	1.46	0.146	0.0123	0.53	0.599
LEV	-0.0873	-3.73	0.000	-0.3145	-3.53	0.001
FAGE	0.0004	0.33	0.741	0.0021	0.44	0.662
Model Statistics						

R	0.536	0.495
R ²	0.2875	0.2456
Adj. R ²	0.2456	0.2013
F-statistic	7.89	6.45
Prob > F	0.000	0.000
Observations	154	154
Groups	14	14

Source: Author's computation

Table 6 above in this study presents the regression equation with predictors that are significant. The result shows that $R = 0.536$, $R^2 = 0.2875$, $\text{Adj. } R^2 = 0.2456$, and $F\text{-statistic} = 7.89$ for the ROA model. For the ROE model, $R = 0.495$, $R^2 = 0.2456$, $\text{Adj. } R^2 = 0.2013$, and $F\text{-statistic} = 6.45$. It can also be observed that the correlation coefficients between the endogenous variable (financial performance) and the exogenous variables are 0.536 for ROA and 0.495 for ROE, together with predictors that account for 28.75% and 24.56% of the variance in financial performance, respectively. Cohen (1988) classified R^2 into 3 orders as follows: 0.02 as weak, 0.13 as moderate and 0.26 as substantial. Going by this classification, the value of R^2 in the regression result is substantial. Furthermore, the significance of the F-test (7.89, $p = 0.000$ for ROA; 6.45, $p = 0.000$ for ROE) confirmed the overall prediction of the independent variables to the dependent variable.

Table 7: Moderated Regression Results (Model 2)

Variable	ROA Model			ROE Model		
	Coefficient	t-value	p-value	Coefficient	t-value	p-value
(Constant)	-0.1876	-2.03	0.044	0.0921	0.26	0.797
HCE	0.0234	3.00	0.003	0.0523	2.44	0.016
SCE	0.0031	1.29	0.199	0.0098	1.29	0.200
RCE	-0.0523	-2.77	0.006	-0.2456	-2.51	0.013
IO	0.0018	2.57	0.011	0.0041	1.41	0.160
HCE $\times$ IO	-0.0006	-2.00	0.047	-0.0015	-1.50	0.136
SCE $\times$ IO	0.0001	1.00	0.319	0.0003	1.50	0.136
RCE $\times$ IO	0.0008	1.60	0.112	0.0021	1.62	0.108
FSIZE	0.0089	1.25	0.213	0.0132	0.54	0.591
LEV	-0.0798	-3.26	0.001	-0.2987	-3.20	0.002
FAGE	0.0003	0.23	0.818	0.0019	0.37	0.715
Model Statistics						
R	0.585			0.554		
R ²	0.3421			0.3067		
Adj. R ²	0.3156			0.2678		
F-statistic	6.89			5.67		
Prob > F	0.000			0.000		

Source: Author's computation

Table 7 presents the moderated regression results showing that $R = 0.585$, $R^2 = 0.3421$, Adj. $R^2 = 0.3156$, and F-statistic = 6.89 for the ROA model. For the ROE model, $R = 0.554$, $R^2 = 0.3067$, Adj. $R^2 = 0.2678$, and F-statistic = 5.67. The R^2 values indicate that the moderating model explains 34.21% and 30.67% of the variance in ROA and ROE respectively, which is substantial according to Cohen's (1988) classification. The significance of F-test ($p = 0.000$ for both models) confirmed the overall prediction of the independent variables to the dependent variable.

Discussion of Findings

Human Capital Efficiency and Financial Performance

The finding reveals that HCE has a significant positive effect on both ROA ($\beta = 0.0189$, $t = 3.05$, $p = 0.003$) and ROE ($\beta = 0.0452$, $t = 2.39$, $p = 0.018$). This result indicates that human capital efficiency is the strongest predictor of financial performance among all intellectual capital components. The result is consistent with the finding of Bayraktaroglu et al. (2019) who found that human capital efficiency consistently influences financial performance across various industries and economic environments. Similarly, Crook et al. (2011) found that human capital demonstrates positive performance relationships across various countries. This finding also aligns with the Resource-Based View of the firm, which posits that human resources are a source of sustainable competitive advantage when they are valuable, rare, inimitable, and non-substitutable (Barney, 1991). The result implies that investments in employee development, compensation, and retention generate measurable returns in terms of profitability for Nigerian consumer goods companies. Therefore, the null hypothesis (H_{01a}) that human capital efficiency has no significant effect on financial performance is rejected.

Structural Capital Efficiency and Financial Performance

The finding reveals that SCE has no significant effect on ROA ($p = 0.128$) or ROE ($p = 0.183$). It indicates that organizational infrastructure, processes, and systems may not be primary drivers of performance in the Nigerian consumer goods sector. This finding is consistent with Ozkan et al. (2017) who found negative or non-significant relationships between structural capital indicators and performance outcomes. The lack of significant relationship may reflect homogeneity of operational processes across firms in the sector, underinvestment in structural capital relative to human capital, or measurement challenges where the proxy (VA - HC) may not fully capture the value of organizational capital. Therefore, the null hypothesis (H_{01b}) that structural capital efficiency has no significant effect on financial performance is not rejected.

Relational Capital Efficiency and Financial Performance

The finding reveals that RCE has a significant negative effect on both ROA ($\beta = -0.0456$, $t = -2.30$, $p = 0.023$) and ROE ($\beta = -0.2318$, $t = -2.35$, $p = 0.020$). This result suggests that higher marketing expenditure relative to value added does not translate into improved financial performance for Nigerian consumer goods companies. This unexpected finding may be explained by diminishing returns on marketing investments in saturated markets, inefficient marketing spending without corresponding revenue generation, or economic pressures during the study period from 2015 to

2025 including recessions, COVID-19, and high inflation that may have reduced marketing effectiveness. The finding contradicts the work of Bayraktaroglu et al. (2019) who found that brand equity and customer relationships demonstrate positive performance effects. Therefore, the null hypothesis (H_{01c}) that relational capital efficiency has no significant effect on financial performance is rejected, albeit in the opposite direction.

Institutional Ownership and Financial Performance

The finding reveals that IO has a significant positive effect on ROA ($\beta = 0.0012$, $t = 2.40$, $p = 0.018$) but no significant effect on ROE ($p = 0.108$). This suggests that while institutional investors provide monitoring and governance benefits that improve operational efficiency and asset utilization, these benefits do not necessarily translate into superior returns on equity. This finding is consistent with Abdullahi and Garba (2022) who found that firms with higher institutional ownership achieved better profitability and operational efficiency, as measured by ROA. The result implies that institutional monitoring focuses on operational efficiency rather than shareholder returns specifically. Therefore, the null hypothesis (H_{02}) that institutional ownership has no significant effect on financial performance is partially rejected.

Moderating Effect of Institutional Ownership

The finding reveals that the interaction term $HCE \times IO$ is negative and significant for ROA ($\beta = -0.0006$, $t = -2.00$, $p = 0.047$), indicating that institutional ownership weakens the positive effect of human capital efficiency on return on assets. This suggests that high institutional ownership may introduce short-term performance pressures that reduce the effectiveness of long-term human capital investments. No significant moderating effects were found for SCE or RCE. This finding aligns with the distraction hypothesis (Drobetz et al., 2025) which suggests that institutional ownership benefits depend on continuous monitoring and attention, with performance suffering when institutional investors become distracted or introduce conflicting objectives. Therefore, the null hypothesis (H_{03}) that institutional ownership does not significantly moderate the relationship between intellectual capital and financial performance is partially rejected.

Leverage and Financial Performance

The finding reveals that LEV has a significant negative effect on both ROA ($\beta = -0.0873$, $t = -3.73$, $p = 0.000$) and ROE ($\beta = -0.3145$, $t = -3.53$, $p = 0.001$). This confirms that debt financing imposes costs that reduce profitability. This finding is particularly relevant given the high-interest rate environment and currency devaluation pressures in Nigeria during the study period. The result is consistent with the theoretical expectation that leverage increases financial risk and financing costs, thereby reducing profitability.

Conclusion and Recommendations

Conclusion

The study examined the moderating effect of institutional ownership on the relationship between intellectual capital and financial performance of listed consumer goods companies in Nigeria. Based on the findings, the study concludes that human capital efficiency is the strongest driver of

financial performance, relational capital investments show diminishing returns, structural capital does not significantly affect performance, and institutional ownership plays a limited moderating role. Specifically, the study concludes that human capital is the most valuable intellectual capital component for listed consumer goods companies in Nigeria. Firms that invest in their employees through competitive compensation, training, and development generate higher value added and achieve superior financial performance. This conclusion supports the growing emphasis on human capital development as a strategic priority in emerging markets. Relational capital investments do not guarantee improved performance. The unexpected negative relationship between RCE and financial performance leads to the conclusion that marketing expenditures may not be efficiently deployed in the Nigerian consumer goods sector. Firms may be spending more on marketing without corresponding increases in revenue or profitability, possibly due to intense competition, economic constraints, or misaligned marketing strategies. Structural capital, as measured in this study, is not a significant driver of performance. This conclusion does not necessarily imply that organizational processes and systems are unimportant, but rather that the measurement of structural capital using the residual method (VA - HC) may not adequately capture its contribution to firm performance, or that structural capital effects are indirect rather than direct. Institutional ownership has a limited direct effect on financial performance. The study concludes that while institutional investors provide monitoring and governance benefits that improve asset returns (ROA), these benefits do not translate into superior returns on equity (ROE). This may be because institutional monitoring focuses on operational efficiency rather than shareholder returns specifically. Finally, institutional ownership weakens the positive effect of human capital on asset returns. The significant negative interaction term ($HCE \times IO$) leads to the conclusion that high institutional ownership may introduce short-term performance pressures that reduce the effectiveness of long-term human capital investments. This conclusion highlights a potential tension between the monitoring role of institutional investors and the long-term nature of human capital development.

Recommendations

Based on the findings and conclusions of this study, the following recommendations are made. For management of consumer goods companies, the study recommends prioritizing human capital development through increased investment in employee training and development programs, implementing competitive compensation structures that attract and retain top talent, establishing performance-based reward systems that align employee incentives with firm profitability, and developing career progression pathways to reduce employee turnover and retain institutional knowledge. Management should also optimize marketing expenditures by conducting regular return-on-investment analyses for all marketing campaigns, shifting from traditional mass marketing to data-driven, targeted marketing approaches, and implementing marketing effectiveness metrics beyond simple expenditure ratios. Additionally, management should manage leverage prudently by reducing reliance on debt financing where possible and maintaining optimal

debt levels that balance tax benefits against financial distress costs. For institutional investors, the study recommends balancing monitoring with long-term perspective by adopting a longer-term investment horizon that allows human capital investments to mature, avoiding excessive pressure for short-term earnings that may discourage human capital development, and engaging with management on human capital metrics as part of stewardship responsibilities. For policymakers and regulators, the study recommends promoting human capital reporting by mandating disclosure of human capital metrics such as employee costs, training expenditure, and turnover rates in annual reports, developing standardized frameworks for intellectual capital reporting, and providing incentives for companies that demonstrate superior human capital management. Additionally, regulators should strengthen corporate governance frameworks by enhancing transparency requirements for institutional ownership disclosure and developing guidelines for institutional investor stewardship codes.

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