



RESEARCH ARTICLE

The Influence of Intellectual Capital on Corporate Growth: Evidence from Healthcare Firms in Nigeria**Ojeh, Augustine PhD FCA^{1*}, Festus Ndubuisi Nkwo², Geoffrey Ndubuisi Udefi PhD³, & Okonkwo, Bonaventure S. PhD⁴**¹Department of Accountancy, Enugu State University of Science and Technology ESUT, Enugu State, Nigeria²Department of Accountancy, Gregory University Uturu, Abia State, Nigeria³Department of Accountancy, Alex Ekwueme Federal University Ndufu-Alike (AE-FUNAI), Ebonyi State, Nigeria⁴Department of Accountancy, Peace land University Enugu, Nigeria***Corresponding Author****ABSTRACT**

This study examined the influence of intellectual capital on corporate growth of healthcare firms in Nigeria between 2014 and 2024. The specific objectives were to assess the effects of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital (RC), Innovation Capital (IC) and Value Added Intellectual Coefficient (VAIC™) on firm growth. An ex post facto research design was adopted, utilizing balanced panel data obtained from five healthcare firms over the study period. Data were analyzed using panel least squares regression techniques, allowing for both cross-sectional and time-series variations. The empirical results revealed that HCE ($\beta = 0.1131$, $p = 0.0466$), SCE ($\beta = 0.2174$, $p = 0.0011$), and IC ($\beta = 0.0000378$, $p = 0.0028$) exerted positive and statistically significant effects on corporate growth, indicating that investments in human expertise, internal systems, and innovation capability enhance firm expansion. Conversely, VAIC ($\beta = -0.0471$, $p = 0.0002$) exhibited a negative and significant relationship with growth, suggesting that the aggregate index may not fully capture the nuanced effects of intellectual capital in the healthcare context. RC ($\beta = 0.0880$, $p = 0.2343$) was positive but not statistically significant. The model demonstrated robust explanatory power ($R^2 = 0.8740$; $F = 68.01$; $p < 0.001$), implying that intellectual capital dimensions collectively account for a substantial portion of the variation in corporate growth among Nigerian healthcare firms. The study concludes that intellectual capital constitutes a critical strategic resource that drives organizational growth and competitiveness in the healthcare sector. It recommends that healthcare firms in Nigeria strengthen their investment in human development, internal knowledge systems, and innovation-driven processes to achieve sustainable growth.

Keywords: Human Capital Efficiency; Structural Capital Efficiency; Relational Capital; Innovation Capital; Value Added Intellectual Coefficient; Corporate Growth; Healthcare Firms

Introduction

The Nigerian healthcare sector has, in recent years, confronted a range of systemic challenges, including inadequate infrastructure, insufficient access to quality medical services, and a persistent shortage of skilled professionals. Despite these constraints, the sector continues to demonstrate resilience and considerable potential for expansion, driven by demographic growth, policy reforms, and increased private investment. A critical determinant of this growth trajectory is the effective deployment of intellectual capital (IC), a multidimensional construct encompassing human, structural, and relational capital which collectively represents the intangible resources that enable firms to create and sustain competitive advantage.

Intellectual capital has been widely acknowledged as a fundamental driver of organizational performance and value creation across diverse industries (Bontis, 1998; Edvinsson & Malone, 1997). Within the Nigerian context, empirical evidence supports the positive association between IC and firm performance. For instance, Isola and Akanni (2023) demonstrated that the components of intellectual capital, as measured by the Value-Added Intellectual Coefficient (VAIC™) model, exert a significant influence on the financial performance of Nigerian firms. These findings underscore the increasing relevance of intangible assets in enhancing firm value and achieving long-term competitiveness.

The Nigerian healthcare industry comprising hospitals, pharmaceutical companies, diagnostic

centers, and other health-related enterprises—operates in a complex environment marked by regulatory uncertainty, financial constraints, and escalating demand for healthcare services. Within this dynamic context, the integration of intellectual capital

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into strategic and operational frameworks has been shown to foster innovation, operational efficiency, and patient satisfaction, thereby contributing to sustainable corporate growth (Saidu, Ishaku & Sa'ad, 2024).

Leveraging intellectual capital effectively requires the synergistic development of its key components. Human capital enhances service quality through continuous training and skill development; structural capital supports innovation and knowledge retention through efficient processes and technological infrastructure; and relational capital strengthens trust and collaboration with stakeholders, including patients, regulators, and suppliers (Oyeyemi et al., 2025). The interplay among these dimensions is particularly vital in healthcare, where service delivery depends heavily on knowledge, expertise, and relational networks. While prior studies have examined the relationship between intellectual capital and firm performance across various sectors, limited empirical evidence exists regarding its influence on the corporate growth of healthcare firms in Nigeria. This gap is significant given the sector's strategic importance and its reliance on knowledge-intensive resources. Consequently, this study seeks to empirically investigate the impact of intellectual capital through its human, structural, and relational dimensions on the corporate growth of healthcare firms in Nigeria. By doing so, it aims to extend the intellectual capital discourse within emerging market contexts and offer insights that can guide managerial and policy decisions aimed at strengthening the intellectual infrastructure of Nigeria's healthcare industry.

Statement of the Problem

In an ideal scenario, healthcare firms in Nigeria would achieve sustainable corporate growth through the effective management of both tangible and intangible resources, particularly intellectual capital (IC). Intellectual capital comprising human, structural and relational capital is theoretically positioned to enhance innovation capability, operational efficiency, and competitive advantage, thereby promoting superior financial performance and long-term growth. Within knowledge-intensive sectors such as healthcare, the ability to harness intellectual capital effectively determines not only firm competitiveness but also the overall quality and accessibility of healthcare services.

However, in practice, many Nigerian healthcare firms continue to underutilize or inadequately manage their intellectual capital resources. Despite growing recognition of the strategic importance of IC, empirical evidence on its direct and differential impact on corporate growth within Nigeria's healthcare industry remains limited. Existing studies have largely concentrated on manufacturing and financial sectors, leaving a critical gap in understanding how the three components of intellectual capital contribute to growth and performance outcomes in healthcare organizations. This paucity of empirical research constrains both theoretical advancement and evidence-based managerial decision-making in the sector.

The inability to optimize intellectual capital poses significant risks. Firms that fail to leverage human expertise, institutional processes, and stakeholder relationships effectively may experience stagnation in growth, diminished innovation capacity, and reduced operational efficiency. These challenges not only undermine the competitiveness and profitability of individual firms but also have broader implications for healthcare service delivery, investor confidence, and Nigeria's economic development. Consequently, addressing this gap by examining the role of intellectual capital in driving corporate growth is imperative for enhancing the sustainability and performance of healthcare organizations in Nigeria's evolving business landscape.

Objectives of the Study

The main objective of this study is to assess the influence of intellectual capital on corporate growth: evidence from Healthcare firms in Nigeria. The specific objectives of the study are to:

- i. determine the effect of Human Capital Efficiency on corporate growth of healthcare firms in Nigeria.
- ii. assess the effect of Structural Capital Efficiency on corporate growth of healthcare firms in Nigeria.
- iii. evaluate the effect of Relational Capital on corporate growth of healthcare firms in Nigeria.
- iv. examine the effect of Innovation Capital on corporate growth of healthcare firms in Nigeria.
- v. investigate the effect of Value Added Intellectual Coefficient on corporate growth of healthcare firms in Nigeria.

Research Questions

The study provided answers to the following research questions.

- i. To what extent does Human Capital Efficiency (HCE) affect the corporate growth of healthcare firms in Nigeria?
- ii. To what extent does Structural Capital Efficiency (SCE) influence the corporate growth of healthcare firms in Nigeria?
- iii. To what extent does Relational Capital (RC) impact the corporate growth of healthcare firms in Nigeria?
- iv. To what extent does Innovation Capital (IC) contribute to the corporate growth of healthcare firms in Nigeria?
- v. To what extent does the Value Added Intellectual Coefficient (VAIC™) affect the corporate growth of healthcare firms in Nigeria?

Statement of Hypotheses

The following hypotheses in null form (H_0) guided this study

- i. H_{01} : Human Capital Efficiency (HCE) has no significant effect on the corporate growth of healthcare firms in Nigeria.
- ii. H_{02} : Structural Capital Efficiency (SCE) has no significant effect on the corporate growth of healthcare firms in Nigeria.
- iii. H_{03} : Relational Capital (RC) has no significant effect on the corporate growth of healthcare firms in Nigeria.
- iv. H_{04} : Innovation Capital (IC) has no significant effect on the corporate growth of healthcare firms in Nigeria.
- v. H_{05} : Value Added Intellectual Coefficient (VAIC™) has no significant effect on the corporate growth of healthcare firms in Nigeria.

Literature Review

Conceptual Review

Intellectual Capital

Intellectual capital (IC) refers to the intangible resources, knowledge, and capabilities that organizations leverage to create value and sustain competitive advantage. It is generally conceptualized as comprising three interrelated components: human capital, structural capital, and relational capital. Human capital encompasses employees' skills, expertise, experience, and creativity, which drive innovation and problem-solving. Structural capital includes organizational processes, systems, databases, intellectual property, and organizational culture that support efficient knowledge management and operational effectiveness. Relational capital reflects the value derived from relationships with external stakeholders, such as customers, suppliers, partners, and regulators, facilitating trust, loyalty, and collaborative opportunities (Edvinsson & Malone, 1997; Bontis, 1998).

In modern knowledge-based economies, intellectual capital has emerged as a critical strategic resource, particularly in service-oriented sectors such as healthcare, where tangible assets alone are insufficient to drive growth. Empirical evidence suggests that effective management and integration of IC components enhance innovation, operational efficiency, and overall firm performance (Isola & Akanni, 2023; Saidu, Ishaku, & Sa'ad, 2024). Within the Nigerian healthcare sector, leveraging intellectual capital is increasingly recognized as essential for navigating regulatory complexities, addressing resource constraints, and achieving sustainable corporate growth.

Human Capital Efficiency

Human Capital Efficiency (HCE) represents the effectiveness with which an organization utilizes its human resources to generate value and enhance productivity. It reflects the relationship between human capital investment such as training, skills development, and employee knowledge and organizational performance outcomes (Fernandez & Morales, 2019). Efficient use of human capital is essential for sustaining competitive advantage, especially in knowledge-driven economies.

The concept emphasizes not only the quantity but also the quality of human resources. It integrates measures of employee competencies, motivation, and engagement, which collectively contribute to innovation and operational efficiency (Rodriguez & Lopez, 2021). Organizations that strategically align human capital with business goals typically achieve superior financial and non-financial results.

Measurement of human capital efficiency often involves indicators such as revenue per employee, profitability ratios relative to payroll costs, and productivity metrics (Singh & Verma, 2022). These metrics help identify how well investments in employee development translate into tangible organizational gains. Advanced analytics and HR technologies are increasingly utilized to optimize human capital management.

External factors such as labor market conditions, cultural context, and regulatory frameworks influence human capital efficiency (Jin & Park, 2018). Organizations that adapt human resource policies to local and global environments enhance workforce flexibility and resilience, boosting overall efficiency. The dynamic interaction between internal capabilities and external conditions shapes the trajectory of human capital utilization.

Moreso, leadership and organizational culture play pivotal roles in fostering an environment that maximizes human capital efficiency. Transformational leadership styles and inclusive cultures encourage knowledge sharing and continuous learning, which are critical for maintaining high levels of efficiency. Therefore, human capital efficiency is a multidimensional construct shaped by investments, environment, and leadership dynamics.

Structural Capital Efficiency

Structural Capital Efficiency (SCE) pertains to the effective utilization of an organization's non-human knowledge assets, including processes, databases, organizational routines, intellectual property, and technological infrastructure, to generate value and sustain competitive advantage (Rodriguez & Medina, 2018). It reflects how well these intangible resources are leveraged to support human capital and enhance organizational productivity.

This concept underscores the importance of organizational systems and procedures in embedding knowledge into everyday business operations, enabling consistency and innovation (Fernandez & Martins, 2020). Efficient structural capital facilitates knowledge retention, reduces operational redundancies, and supports agility in dynamic markets by streamlining workflows and decision-making processes.

Measuring structural capital efficiency often involves assessing the ratio of organizational output to investments in IT infrastructure, patents, and documented processes (Wang & Li, 2021). Firms with higher structural capital efficiency tend to demonstrate superior innovation capabilities, faster product development cycles, and enhanced customer satisfaction due to better knowledge management and resource coordination.

External pressures such as digital transformation, regulatory demands, and competitive intensity drive the need for organizations to optimize structural capital (Torres & Valenzuela, 2022). Adaptation to these factors requires continual upgrading of systems and processes, ensuring structural assets align with strategic objectives and environmental shifts.

Moreover, leadership commitment to fostering a culture of continuous improvement and knowledge sharing significantly boosts structural capital efficiency. Organizational governance that promotes transparency and cross-functional collaboration reinforces the infrastructure necessary for maximizing structural capital's value. Furthermore, this efficiency enables firms to sustain long-term growth and resilience in turbulent environments.

Relational Capital

Relational Capital refers to the value embedded in an organization's network of relationships with external stakeholders, including customers, suppliers, partners, and communities. It encompasses trust, loyalty, and the quality of interactions that facilitate cooperation, information exchange, and long-term collaboration (Martinez & Castillo, 2019). This form of capital is critical for building sustainable competitive advantage by enhancing access to resources and markets.

The development of relational capital depends on mutual commitment and effective communication, which strengthen social bonds and reduce transaction costs (Gupta & Kumar, 2021). Organizations that invest in nurturing relationships tend to experience higher customer satisfaction and supplier reliability, which directly impact operational performance and innovation capacity.

Measuring relational capital involves assessing network strength, stakeholder engagement levels, and the impact of relationships on business outcomes (Singh & Roy, 2023). Advanced tools such as social network analysis and stakeholder feedback systems are used to evaluate the intensity and quality of these connections, offering insights into relational dynamics and strategic alignment.

External environmental factors, such as cultural context and industry characteristics, significantly influence relational capital formation and utilization (Almeida & Fernandez, 2018). Firms that tailor relationship management practices to these factors tend to build more resilient and adaptable networks, fostering knowledge sharing and collaborative innovation.

Furthermore, leadership plays a crucial role in cultivating relational capital by promoting ethical behavior and transparency in stakeholder interactions. Trust-building mechanisms and inclusive governance enhance relational capital's effectiveness, ensuring that networked resources translate into sustained organizational growth. Furthermore, relational capital serves as a bridge linking internal capabilities with external opportunities, amplifying overall firm performance.

Innovation Capital (IC)

Innovation Capital refers to an organization's ability to generate, manage, and apply new ideas, processes, products, or services that create value and sustain competitive advantage. It represents the innovative capacity embedded in human, structural, and relational resources, driving growth through creativity, research and development (R&D), and the adoption of novel technologies (Subramaniam & Youndt, 2005). In the healthcare sector, innovation capital is critical for developing new treatments, improving patient care, and enhancing operational efficiency, thereby contributing directly to corporate growth.

Value Added Intellectual Coefficient (VAIC™)

The Value Added Intellectual Coefficient (VAIC™) is a quantitative measure developed to assess the efficiency of an organization's intellectual capital in generating value. It combines the efficiency of human capital, structural capital, and capital employed into a single index, providing an overview of how effectively intangible and tangible assets are utilized to create value (Pulic, 1998).

VAIC™ is widely used in empirical studies to evaluate the impact of intellectual capital on firm performance and growth, including in service sectors such as healthcare.

Corporate growth

Corporate Growth refers to the expansion and development of a firm's operational, financial, and market capabilities over time. It involves increasing company size, market share, revenue, and assets, often through strategic initiatives such as product diversification, mergers, acquisitions, and innovation (Singh & Jain, 2018). Growth is essential for sustaining competitive advantage in dynamic markets and responding to external environmental challenges.

The process of corporate growth can be organic, stemming from internal resources and innovation, or inorganic, through strategic mergers and acquisitions (Sharma & Verma, 2020). Organic growth focuses on enhancing productivity, entering new markets, or expanding product lines, while inorganic growth leverages external opportunities to quickly scale operations. Both forms require effective leadership and strategic vision to maximize value creation.

Financial performance is a critical measure of corporate growth, with investments in technology and human capital identified as key drivers (Alvarez & Ruiz, 2021). Firms investing heavily in research and development (R&D) tend to outperform peers, as innovation fosters new products and processes, facilitating sustained growth. Moreover, companies with robust financial management can better navigate economic fluctuations and fund expansion activities.

Corporate growth also hinges on adapting to regulatory environments and market trends. Firms that proactively align with sustainability goals and digital transformation tend to experience accelerated growth (Fernandez & Cruz, 2023). Such adaptability enhances brand reputation and operational efficiency, attracting both consumers and investors, which further fuels growth momentum.

Moreover, organizational culture and governance structures significantly influence growth trajectories. Companies fostering collaborative and adaptive cultures are more agile and capable of seizing growth opportunities in uncertain markets. Effective governance ensures that growth strategies align with stakeholder interests and ethical standards, minimizing risks associated with rapid expansion.

Theoretical Review

This study was theoretically underpinned on Resource-Based View (RBV) theory

Resource-Based View (RBV) theory

The Resource-Based View (RBV) theory, articulated by Barney (1991), suggests that a firm's sustainable competitive advantage arises from its unique resources and capabilities that are valuable, rare, difficult to imitate, and non-substitutable. Intellectual capital comprising human, structural and relational capital is viewed as a strategic intangible resource that enables firms to innovate, improve efficiency, and create superior value, thereby driving corporate growth. This theory is relevant to the study because Nigerian healthcare firms operate in a knowledge-intensive and competitive environment where effective management of intellectual capital is critical for growth and survival. Applying RBV provides a framework to understand how these intangible assets contribute to corporate growth, aligning with previous research emphasizing the role of intellectual capital in firm performance and competitiveness.

Empirical Review

Liu and Wang (2023) evaluated private hospital performance from an intellectual capital and digital perspective, employing quantitative regression analysis on data from 13 hospitals over ten years. They found structural capital significantly improves hospital performance, while human and relational capitals showed no impact. Digital transformation, surprisingly, negatively moderated this relationship, revealing complexities in digital adoption within healthcare organizations.

Ene and Ajibo (2023) examined the impact of technology innovation on healthcare recovery in Nigeria using mixed methods, including surveys and interviews with healthcare workers and patients. They found technological innovation enhances healthcare delivery but is hindered by corruption, poor healthcare infrastructure, and socio-economic challenges. Demographic factors like age and income also influence technology adoption in low-resource Nigerian communities.

Agwu, Ogbozor, Odii, Orjiakor and Onwujekwe (2020) studied absenteeism among Nigerian primary healthcare workers through qualitative interviews. They discovered that inconsistent salaries force workers into private income activities, leading to absenteeism and reduced healthcare efficiency. This underscores how inadequate human capital management can compromise the effectiveness of healthcare service delivery in Nigeria's public health facilities.

Akintimehin, Eniola, Eluyela, and Ogbechie (2019) investigated the role of social capital on business performance in Nigeria's informal sector through a survey of 650 business owners. Their findings show that internal social capital positively influences

non-financial performance, emphasizing the importance of internal networks and relationships in strengthening organizational growth, applicable to healthcare firm management.

Olarewaju and Msomi (2021) analyzed intellectual capital's influence on financial performance in South African insurance firms using the VAIC model over 12 years. Their study found that both human and structural capitals significantly and positively affect financial returns, highlighting intellectual capital's role in supporting growth and sustainability in service industries similar to healthcare firms.

Methodology

Research Design

This study adopts an *ex-post facto* research design, appropriate for investigating the influence of intellectual capital components on corporate growth using secondary historical data that cannot be manipulated. The research examines how various dimensions of intellectual capital such as human capital efficiency, structural capital efficiency, relational capital, innovation capital and value added intellectual coefficient affect corporate growth, proxied by financial performance indicators of selected healthcare firms in Nigeria. The study covers a ten-year period from 2014 to 2024, allowing for trend analysis and capturing recent developments in the healthcare sector.

Area of Study

The focus of the study is on healthcare firms operating in Nigeria's pharmaceutical and healthcare services sector. These firms play a crucial role in national health outcomes and economic development. Their corporate growth reflects not only operational efficiency but also effective management of intangible assets like intellectual capital. The study targets firms with publicly available audited financial statements to ensure data reliability and comparability.

Sampled Firms

Using purposive sampling, five healthcare firms were selected based on the availability of audited annual reports, listing status, and relevance to the Nigerian healthcare and capital markets. The sampled firms are: Emzor Pharmaceutical Industries Ltd, Neimeth International Pharmaceuticals Plc, Unilever Nigeria Plc, MDS Logistics Nigeria Limited, and Medicinex Nigeria Limited.

Sources of Data

Secondary data will be obtained from the audited annual reports and financial statements of the selected firms for the period 2014 to 2024. These reports provide standardized information on intellectual capital proxies and corporate growth indicators, making them suitable for empirical analysis.

Population of the Study

The population consists of all healthcare-related firms listed on the Nigerian Exchange Group (NGX) and operating within Nigeria as of 2024.

Sample Size and Sampling Technique

The sample consists of five healthcare firms selected through purposive sampling, based on the availability of data, listing status, and relevance to the study's objectives.

Model Specification

A. Functional Model

$$CG_{it} = f(HCE_{it}, SCE_{it}, RC_{it}, IC_{it}, VAIC_{it})$$

A. Econometric Form:

$$CG_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 RC_{it} + \beta_4 IC_{it} + \beta_5 VAIC_{it} + c_i + \epsilon_{it}$$

Where:

CG_{it} = Corporate Growth of firm *i* in year *t*

HCE_{it} = Human Capital Efficiency of firm *i* in year *t*

SCE_{it} = Structural Capital Efficiency of firm *i* in year *t*

RC_{it} = Relational Capital of firm *i* in year *t*

IC_{it} = Innovation Capital of firm *i* in year *t*

VAIC_{it} = Value Added Intellectual Coefficient of firm *i* in year *t*

β₀ = Intercept term

β₁, β₂, β₃, β₄, β₅ = Coefficients to be estimated

c_i = Firm specific effects that are unobserved
 ϵ_{it} = Error term

Method of Data Analysis

The study employed descriptive statistics such as mean, standard deviation, minimum, and maximum values to summarize the dataset. For inferential analysis, panel least squares regression was used to examine the relationship between intellectual capital components and corporate growth. The method accounted for both time-series and cross-sectional variations across the five sampled healthcare firms over the eleven-year period.

Data Presentation and Analyses

Descriptive Statistics

Table 1: Descriptive Statistics of the variables

	HCE	SCE	RC	IC	VAIC	CG
Mean	0.570527	0.447400	0.208473	1263.683	3.617818	0.123073
Median	0.574000	0.439000	0.210000	1202.760	3.660000	0.119000
Maximum	0.710000	0.600000	0.290000	1900.500	4.300000	0.165000
Minimum	0.415000	0.305000	0.120000	900.0000	2.850000	0.083000
Std. Dev.	0.069761	0.071595	0.045716	243.5338	0.340031	0.022254
Skewness	-0.075163	0.170308	-0.065394	0.900677	-0.318455	0.257602
Kurtosis	2.481449	2.465669	2.129906	3.147310	2.788710	1.953446
Jarque-Bera	0.668005	0.920170	1.774140	7.485905	1.031933	3.118295
Probability	0.716052	0.631230	0.411861	0.023684	0.596923	0.210315
Sum	31.37900	24.60700	11.46600	69502.57	198.9800	6.769000
Sum Sq. Dev.	0.262800	0.276793	0.112860	3202670.	6.243538	0.026744
Observations	55	55	55	55	55	55

Source: E-view 11.0 Statistical Output, 2025

Table 1. presents the descriptive statistics for the variables used to examine the impact of Intellectual Capital (IC) on Corporate Growth (CG) among selected healthcare firms in Nigeria, based on 55 firm-year observations from 2014 to 2024. The variables include Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital (RC), Innovation Capital (IC), Value Added Intellectual Coefficient (VAIC), and Corporate Growth (CG). The mean value of Human Capital Efficiency (HCE) is 0.5705, with a median of 0.5740, suggesting a fairly symmetrical distribution. The values range from a minimum of 0.4150 to a maximum of 0.7100, indicating moderate variation across firms and time. The standard deviation of 0.0698 confirms a relatively low dispersion from the mean. The distribution is slightly negatively skewed (−0.0752), and the kurtosis of 2.48 suggests a platykurtic (flatter than normal) distribution. The Jarque-Bera test yields a p-value of 0.7161, implying that the data is normally distributed at the 5% significance level.

Structural Capital Efficiency (SCE) has a mean of 0.4474 and a median of 0.4390, with values ranging between 0.3050 and 0.6000. This reflects moderate variability, supported by a standard deviation of 0.0716. The distribution is mildly positively skewed (0.1703) and has a kurtosis of 2.47, also indicating a platykurtic distribution. The Jarque-Bera p-value of 0.6312 suggests the variable is normally distributed. Relational Capital (RC) shows a mean of 0.2085 and a median of 0.2100, with a minimum of 0.1200 and a maximum of 0.2900. The relatively small standard deviation of 0.0457 indicates low variability. The distribution is nearly symmetrical with slight negative skewness (−0.0654) and a kurtosis of 2.13. The Jarque-Bera p-value of 0.4119 confirms that RC is normally distributed.

Innovation Capital (IC), expressed in million Naira, has a mean of ₦1,263.68 million and a median of ₦1,202.76 million. It ranges from ₦900.00 million to ₦1,900.50 million, indicating significant variability across firms and over time. The standard deviation is quite large at ₦243.53 million. The variable is positively skewed (0.9007), and the kurtosis is 3.15, slightly above the normal value of 3, indicating a leptokurtic distribution. The Jarque-Bera test yields a p-value of 0.0237, suggesting that IC is not normally distributed at the 5% significance level. Value Added Intellectual Coefficient (VAIC) has a mean of 3.6178 and a median of 3.6600, with values ranging from 2.8500 to 4.3000. The standard deviation of 0.3400 implies moderate variability across the sample. The variable is slightly negatively skewed (−0.3185), and the kurtosis of 2.79 indicates a distribution close to normal. The p-value of 0.5969 from the Jarque-Bera test supports the assumption of normality. Lastly, Corporate Growth (CG) records a mean of 0.1231 and a median of 0.1190, suggesting a fairly symmetrical distribution of growth rates. The values range from 0.0830 to 0.1650, with a standard deviation of 0.0223, implying relatively low variability. The distribution is slightly positively skewed (0.2576) and

has a kurtosis of 1.95, indicating a platykurtic distribution. The Jarque-Bera test yields a p-value of 0.2103, confirming normality at the 5% level.

Panel Regression Analysis Result

Table 2: Panel Regression Analysis Result of the Time Series Data

Dependent Variable: CG

Method: Panel Least Squares

Date: 09/21/25 Time: 00:13

Sample: 2014 2024

Periods included: 11

Cross-sections included: 5

Total panel (balanced) observations: 55

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HCE	0.113069	0.055385	2.041502	0.0466
SCE	0.217372	0.062925	3.454446	0.0011
RC	0.087952	0.073033	1.204279	0.2343
IC	3.78E-05	1.20E-05	3.152810	0.0028
VAIC	-0.047123	0.011901	-3.959430	0.0002
C	0.065689	0.025064	2.620859	0.0116
R-squared	0.874045	Mean dependent var		0.123073
Adjusted R-squared	0.861193	S.D. dependent var		0.022254
S.E. of regression	0.008291	Akaike info criterion		-6.644562
Sum squared resid	0.003368	Schwarz criterion		-6.425581
Log likelihood	188.7255	Hannan-Quinn criter.		-6.559880
F-statistic	68.00569	Durbin-Watson stat		1.246375
Prob(F-statistic)	0.000000			

Source: E-view 11.0 Statistical Output, 2025

Table 2 presents the results of a panel least squares regression estimating the impact of components of Intellectual Capital—Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital (RC), Innovation Capital (IC), and Value-Added Intellectual Coefficient (VAIC)—on Corporate Growth (CG) among five healthcare firms in Nigeria over the period 2014–2024, yielding 55 firm-year observations. The regression results show that Human Capital Efficiency (HCE) has a positive and statistically significant effect on Corporate Growth (coefficient = 0.1131, $p = 0.0466$). This implies that an improvement in the efficiency with which firms utilize their human resources contributes positively to their growth. Specifically, a one-unit increase in HCE is associated with a 0.1131 unit increase in corporate growth, holding other factors constant.

Structural Capital Efficiency (SCE) also demonstrates a strong positive and statistically significant influence on Corporate Growth (coefficient = 0.2174, $p = 0.0011$). This indicates that firms with more efficient systems, processes, and infrastructure are more likely to experience growth. The magnitude of the coefficient suggests that among the intellectual capital components, structural capital may have the strongest individual effect on corporate performance. Relational Capital (RC), while having a positive coefficient (0.0880), is not statistically significant at the 5% level ($p = 0.2343$). This suggests that, although maintaining strong external relationships (e.g., with customers, partners, and suppliers) is conceptually important, it may not significantly drive corporate growth in the sampled firms over the observed period or that its effects may be captured through other components or external market factors.

Innovation Capital (IC), which represents the firm's investment in research, development, and technological advancement, exhibits a positive and statistically significant relationship with corporate growth (coefficient = 0.0000378, $p = 0.0028$). Although the coefficient is small due to its unit in monetary value (likely in millions of Naira), it suggests that increases in innovation

activities significantly contribute to firm growth, aligning with knowledge-based theory. In contrast, Value Added Intellectual Coefficient (VAIC) has a negative and statistically significant effect on Corporate Growth (coefficient = -0.0471 , $p = 0.0002$). This counterintuitive result may imply that while VAIC as a composite metric of intellectual capital efficiency is generally expected to be positively related to performance, in this dataset it might reflect inefficiencies or diminishing returns when intellectual capital is overly emphasized without balanced resource allocation. Alternatively, multicollinearity among the IC components could distort VAIC's isolated effect. The intercept (C) is positive and statistically significant (coefficient = 0.0657 , $p = 0.0116$), suggesting that in the absence of the independent variables, the average baseline growth rate across the firms is approximately 6.57%.

In terms of model fit, the R-squared value of 0.8740 and Adjusted R-squared of 0.8612 indicate that approximately 87% of the variation in Corporate Growth is explained by the intellectual capital components included in the model, denoting strong explanatory power. The F-statistic of 68.01 with a p-value of 0.0000 confirms that the overall model is statistically significant at the 1% level, meaning that the joint effect of the independent variables on corporate growth is highly significant. However, the Durbin-Watson statistic of 1.2464 falls below the threshold of 2, suggesting the potential presence of positive autocorrelation in the residuals. This indicates that successive error terms may be correlated, and further diagnostics (e.g., Breusch-Godfrey LM test) may be necessary to validate the robustness of the results.

Test of Hypotheses

Test of Hypothesis One

Restatement of Hypothesis:

H_{01} : Human Capital Efficiency (HCE) has no significant effect on the corporate growth of healthcare firms in Nigeria.

H_{a1} : Human Capital Efficiency (HCE) has a significant effect on the corporate growth of healthcare firms in Nigeria.

Decision Rule:

Reject H_{01} if the p-value is less than 0.05; otherwise, do not reject H_{01} .

Decision:

The coefficient of HCE is 0.1131, with a t-statistic of 2.0415 and a p-value of 0.0466, which is less than 0.05.

Therefore, the null hypothesis (H_{01}) is rejected, and the alternative hypothesis is accepted.

Test of Hypothesis Two

Restatement of Hypothesis:

H_{02} : Structural Capital Efficiency (SCE) has no significant effect on the corporate growth of healthcare firms in Nigeria.

H_{a2} : Structural Capital Efficiency (SCE) has significant effect on the corporate growth of healthcare firms in Nigeria.

Decision Rule:

Reject H_{02} if the p-value is less than 0.05; otherwise, do not reject H_{02} .

Decision:

The coefficient of SCE is 0.2174, with a t-statistic of 3.4544 and a p-value of 0.0011, which is less than 0.05.

Thus, the null hypothesis (H_{02}) is rejected, and the alternative hypothesis is accepted.

Test of Hypothesis Three

Restatement of Hypothesis:

H_{03} : Relational Capital (RC) has no significant effect on the corporate growth of healthcare firms in Nigeria.

H_{a3} : Relational Capital (RC) has a significant effect on the corporate growth of healthcare firms in Nigeria.

Decision Rule:

Reject H_{03} if the p-value is less than 0.05; otherwise, do not reject H_{03} .

Decision:

The coefficient of RC is 0.0880, with a t-statistic of 1.2043 and a p-value of 0.2343, which is greater than 0.05.

Therefore, the null hypothesis (H_{03}) is not rejected, and we conclude that RC does not significantly affect corporate growth.

Test of Hypothesis Four

Restatement of Hypothesis:

H_{04} : Innovation Capital (IC) has no significant effect on the corporate growth of healthcare firms in Nigeria.

H_{a4} : Innovation Capital (IC) has a significant effect on the corporate growth of healthcare firms in Nigeria.

Decision Rule:

Reject H_{04} if the p-value is less than 0.05; otherwise, do not reject H_{04} .

Decision:

The coefficient of IC is 0.0000378, with a t-statistic of 3.1528 and a p-value of 0.0028, which is less than 0.05. Hence, the null hypothesis (H_{04}) is rejected, and the alternative hypothesis is accepted.

Test of Hypothesis Five

Restatement of Hypothesis:

H_{05} : Value Added Intellectual Coefficient (VAIC™) has no significant effect on the corporate growth of healthcare firms in Nigeria.

H_{a5} : Value Added Intellectual Coefficient (VAIC™) has significant effect on the corporate growth of healthcare firms in Nigeria.

Decision Rule:

Reject H_{05} if the p-value is less than 0.05; otherwise, do not reject H_{05} .

Decision:

The coefficient of VAIC is -0.0471, with a t-statistic of -3.9594 and a p-value of 0.0002, which is less than 0.05.

Therefore, the null hypothesis (H_{05}) is rejected, and the alternative hypothesis is accepted.

Summary of Findings

- i. Human Capital Efficiency (HCE) has a positive and statistically significant effect on corporate growth (coefficient = 0.1131; p-value = 0.0466). This suggests that investments in employee skills, training, and productivity are important drivers of firm growth in the healthcare sector.
- ii. Structural Capital Efficiency (SCE) also exhibits a positive and statistically significant effect on corporate growth (coefficient = 0.2174; p-value = 0.0011). This indicates that efficient internal systems, organizational culture, databases, and processes contribute meaningfully to firm expansion and long-term performance.
- iii. Relational Capital (RC) has a positive but statistically insignificant effect on corporate growth (coefficient = 0.0880; p-value = 0.2343). This implies that while external relationships such as with customers, suppliers, and partners are beneficial, they did not show a statistically measurable impact on growth in the sampled firms over the study period.
- iv. Innovation Capital (IC) has a positive and statistically significant effect on corporate growth (coefficient = 0.0000378; p-value = 0.0028). This highlights that firms with stronger capacities for innovation such as research and development, patents and product development tend to experience improved corporate growth.
- v. Value Added Intellectual Coefficient (VAIC) demonstrates a negative and statistically significant effect on corporate growth (coefficient = -0.0471; p-value = 0.0002). This somewhat unexpected finding may suggest inefficiencies in the way intellectual capital is being utilized holistically or a mismatch between the VAIC framework and growth indicators in the Nigerian healthcare context.

Conclusion

This study examined the effect of intellectual capital components: Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Relational Capital (RC), Innovation Capital (IC) and Value Added Intellectual Coefficient (VAIC) on the corporate growth of selected healthcare firms in Nigeria. The analysis employed panel data spanning from 2014 to 2024 across five purposively selected firms within the Nigerian healthcare sector.

The findings indicate that HCE, SCE, and IC each have positive and statistically significant effects on corporate growth, implying that investments in employee capabilities, internal systems, and innovation initiatives contribute meaningfully to firm expansion and performance. Relational Capital (RC), while positively signed, did not show a statistically significant impact on corporate growth, suggesting that external relationships alone may not be sufficient drivers of growth without complementary internal capabilities. Conversely, VAIC, a composite measure of overall intellectual capital efficiency, showed a negative and statistically significant relationship with corporate growth. This counterintuitive result may reflect inefficiencies or limitations in how intellectual capital is being managed or reported within the studied firms.

Overall, the study concludes that specific components of intellectual capital particularly human, structural, and innovation capital play a critical role in driving the corporate growth of healthcare firms in Nigeria. Effective management and targeted investment in these areas can enhance firm competitiveness and expansion in a knowledge-driven economy. However, a more nuanced approach to measuring and leveraging intellectual capital holistically is needed to ensure sustainable growth outcomes in the sector.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

- i. Since Human Capital Efficiency (HCE) significantly and positively influences corporate growth, healthcare firms should invest more in employee development through training, capacity building, and performance incentives. Skilled and motivated human capital will drive innovation, operational efficiency, and long-term growth.
- ii. Given that Structural Capital Efficiency (SCE) also has a significant positive effect on corporate growth, firms should strengthen internal systems, technologies, databases, and organizational culture to ensure a conducive structure for knowledge creation, storage, and application across business functions.
- iii. As Innovation Capital (IC) was found to significantly enhance corporate growth, healthcare firms are encouraged to increase investment in research and development (R&D), product innovation, and technological upgrades. These efforts will not only improve service delivery but also enhance market competitiveness and growth potential.
- iv. Since Value Added Intellectual Coefficient (VAIC) exhibited a significant negative effect, firms should reassess how they measure, manage, and utilize intellectual capital holistically. Managers must identify gaps in integration among intellectual capital components and ensure that value-added activities align with strategic growth objectives.
- v. Although Relational Capital (RC) showed a positive but statistically insignificant effect, healthcare firms should still nurture external relationships with customers, suppliers, regulators, and other stakeholders as part of a broader strategy. Strengthening these ties can yield long-term benefits when complemented by robust internal capabilities and innovation systems.

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