# Effect of Intellectual Capital on Financial Performance of Listed Conglomerate Firms in Nigeria

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**A b s t r a c t**

This research delves into the intricate dynamics between intellectual capital and the financial performance of conglomerate firms listed on the Nigerian Exchange Group (NGX). Utilizing proxies like capital employed and relational capital to measure intellectual capital, the study meticulously employs return on assets as a proxy for financial performance. Panel data covering the period from 2011 to 2021 was sourced from the individual financial reports of the conglomerate sectors listed on the exchange. The sample encompasses all six listed conglomerate firms in the NGX. To unravel the nuanced relationship between intellectual capital and return on assets, a robust panel regression model is methodically deployed. The discerning findings reveal a substantial influence of both capital employed and relational capital on return on assets. A significant recommendation emerges, suggesting that conglomerate firms' management should strategically prioritize allocating a specific portion of the company's total capital to physical assets. This strategic emphasis aims not only to fortify the balance sheet but also to cultivate an innovative work environment, thereby amplifying employees' cognitive capabilities for effective knowledge application. Furthermore, the research emphasizes a strategic proposition for managers of conglomerate firms: the establishment of robust and symbiotic relationships with customers in local communities. Incentives such as discounts and promotions are suggested not only to foster customer loyalty but also to stimulate increased patronage. This thoughtful approach not only enriches the customer experience but also provides optimal value, ultimately contributing to a virtuous cycle of enhanced financial performance for the conglomerate firms in question.

**Background to the Study**

In the contemporary business world, enterprises are characterized by a profound emphasis on innovation, technological advancement, and adept management of skills and knowledge. Successful firms distinguish themselves by their continuous pursuit of innovation, reliance on cutting-edge technologies, and a focus on nurturing the skills and knowledge of their workforce. This contrasts with a historical reliance on tangible assets like plants and machinery as the primary drivers of performance improvement. In this evolving paradigm, knowledge has emerged as the new frontier in corporate management, with the recognition that value can be generated through intangible assets, often not fully captured in financial statements (Adegbayibi, 2021).

Understanding the intricate relationship between knowledge and firm performance is essential, as firms navigate this dynamic scenario. While knowledge is challenging to measure, its role in corporate success is undeniable. The modern corporate environment demands a commitment to creativity, innovation, and effective skills management to thrive. This shift towards intangible assets is underscored by the transformative transition of the world's economy from an industrial model to a knowledge-based one (Rehman et al., 2021). Intellectual capital is acknowledged as a strategic investment within organizations, offering a source of competitive advantage. Firm growth is no longer solely determined by the deployment of physical resources; instead, wealth creation is intrinsically linked to the development and maintenance of intangible resources, particularly knowledge, to establish and sustain competitive advantages (Rehman et al., 2021). The concept of intellectual capital encompasses the knowledge embedded in employees, structural design, and interactions with the environment. To measure intellectual capital, the Value-Added Intellectual Coefficients (VAIC) approach is employed, focusing on components such as Capital Employed Efficiency and Relationship Capital, offering a holistic perspective beyond traditional accounting measures (Pulic, 2004). This approach recognizes the multifaceted nature of intellectual capital and its critical role in shaping the contemporary success of corporate entities.

Many consumer goods companies have established dedicated innovation centers to cultivate creativity, engage in research, and drive development. These centers function as focal points for generating novel ideas, testing products, and fostering collaboration among employees, researchers, and external partners. Despite substantial investments in intellectual capital training, the financial performance of several conglomerate firms in Nigeria has leaned heavily towards physical assets, leading to closures such as Bendel Limited, Danico West Africa Limited, Port Harcourt Flour Mills Limited, Scoa Foods Limited, Standard Biscuit & Agro Products, Jos, UTC Foods Plc, Vitamalt Plc, Ranona Limited, and Deli Foods Limited.

The motivation behind this study aligns with the framework proposed by Pulic (2004) for measuring intellectual capital and its components within listed conglomerate firms in Nigeria. Pulic's (2004) Value Added Intellectual Capital (VAIC) methodology is employed to gather insights into the utilization of intangible assets through its resource

efficiency process. The primary objective of the study is to scrutinize the impact of intellectual capital on the financial performance of six listed conglomerate firms in Nigeria spanning the period from 2011 to 2021. The selected firms include A.G. Leventis Nigeria PLC, Chellaram PLC, Johnholt PLC, SCOA PLC, Transcorp PLC, and UAC Nigeria PLC. Based on the primary focus of the study, which explores the impact of intellectual capital on the financial performance of listed conglomerate firms in Nigeria, the research has articulated the following hypotheses for rigorous testing:

$H_0 1$: Capital employed has no significant effect on return on assets of listed conglomerate firms in Nigeria.

$H_0 2$: Relational capital has no significant effect on return on assets of listed conglomerate firms in Nigeria.

## Conceptual Literature
## Concept of Intellectual Capital
Intellectual capital encompasses the collective skills and experiences of an organization's members, synergistically combined with information and resources, directing the organization's trajectory for growth (Joshi et al., 2013). As outlined by Agostini et al. (2017), intellectual capital comprises three core elements: human capital, organizational capital, and relational capital. Human capital centers on employees' problem-solving abilities, emphasizing the pivotal roles of creativity, experience, and learning capabilities. Organizational capital, distinct from employee-derived knowledge, pertains primarily to inherent activities and processes. While intellectual capital has been explored holistically, its individual components have also been scrutinized separately to comprehend their distinct impacts (Agostini et al., 2017).

Yeganeh et al. (2014) assert that intellectual capital encompasses organizational or individual knowledge contributing to a sustainable competitive advantage. In contrast, Pulic (2004) broadens this definition to encompass the capacity of both individuals and organizations to create value under market assessment. Wang and Chang (2005) describe intellectual capital as intangible assets, spanning specific technologies, customer information, brand, reputation, and corporate culture. These intangibles serve as crucial metrics for a company's performance and competitiveness. Therefore, it is evident that intellectual capital extends beyond organizational knowledge, encapsulating elements crucial for creating value and gaining a competitive advantage in the business landscape.

According to Mohammed and Mawih (2020), intellectual capital is measured using the VAIC™ method developed by Pulic. This model commences with the company's ability to generate value added (VA), calculated as the disparity between output and input. However, this study is influenced by the efficiency of Capital Employed and Relational Capital, acknowledging their impact on the comprehensive assessment of intellectual capital.

## Concept of Capital Employed
Capital Employed (CE) constitutes the tangible assets portion of capital, encompassing both physical and financial assets. The physical segment includes fixed assets and raw

materials, while the financial component encompasses other assets that persist after employee departure (Basso *et al.*, 2010). Pulic (2004) defines CE as the amalgamation of physical and financial capital, such as the book value of net assets. In a similar vein, Rehman *et al*. (2021) calculate CE as the summation of physical and financial assets or by deducting intangible assets from total assets. Capital employed encapsulates the myriad relationships an organization maintains with individuals or other entities, including clients, intermediaries, employees, suppliers, regulatory authorities, communities, creditors, and investors. This metric serves as an indicator of value added (VA) generated by a unit of physical capital. Value added is a critical gauge for assessing business success, reflecting a company's proficiency in value creation. If one unit of Capital Employed yields a higher return than that of another company, it signifies the superior efficiency of the former in utilizing its Capital Employed. Additionally, Capital Employed represents the holistic investment made by an organization, either in material form or the capital injected to augment total assets (Ismail, 2008).

Expanding on alternative definitions, Capital Employed can be viewed as the net investment in operating assets, encompassing both long-term and short-term assets necessary for business operations (Gitman & Zutter, 2019). This broader perspective underscores its role in determining a company's overall financial health and operational efficiency.

**Concept of Relational Capital**
Relational capital, a multifaceted concept, constitutes the intricate network of connections, power dynamics, and collaborations forged among firms, institutions, and individuals, emanating from a profound sense of affiliation and an exceptionally honed capacity for cooperation (Muturi et al., 2019). As posited by Yayla et al. (2018), relational capital manifests as a market-specific resource intertwined with external relationships involving channel partners and customers. Moreover, it intertwines with the bedrock principles of marketing, serving as a linchpin in the value exchange relationships within the market. Defined as the knowledge imprinted within relationships with stakeholders, relational capital exerts a pervasive influence on the organization's trajectory (As'ad & Panggabean, 2021). This intangible asset thrives on the cultivation, sustenance, and nurturing of high-quality relationships with diverse entities, encompassing customers, suppliers, employees, government agencies, partners, and other stakeholders, occasionally even extending to competitors. Such relationships wield a profound impact on the organization, shaping its existence and performance.

**Concept of Financial Performance**
Assessing firm performance involves two perspectives: financial and organizational. A company's performance is gauged through variables encompassing productivity, returns, growth, and customer satisfaction. Financial performance is rooted in the firm's efficiency, evident in profit maximization, returns maximization, and shareholders' return optimization. Anindya et al. (2005) elaborate on the assessment of financial performance, highlighting metrics like return on investment, residual income, earnings per share, dividend yield, price/earnings ratio, sales growth, and market capitalization.

Nurpermana and Mulya (2020) emphasize financial performance as the yardstick for a firm's adept utilization of its assets in generating revenues from its primary operations. They underscore the importance of financial performance measures, such as profitability and liquidity, as valuable tools for stakeholders to evaluate a firm's historical and current financial positions. Wall et al. (2004) categorize financial performance as the distribution of capital in a business, distinguishing between equity and debt capital, each with its distinct benefits and drawbacks.

Yuzhong et al. (2020) delve into the complexity of the term "financial performance," highlighting its multidimensional nature. They stress that the term can be interpreted from two angles: financial and organizational. The evaluation of an entity's performance involves variables representing yield, revenue, growth, and consumer satisfaction. Concurrently, financial performance, geared towards maximizing shareholders' wealth, is measured by examining a company's productivity, often employing metrics such as return on equity (Yuzhong et al., 2020).

**Empirical Review**

Shaneeb and Sumathy (2021) investigate the impact of intellectual capital (IC) on the financial performance of the Indian textile industry using Pulic's Value-added Intellectual Capital Coefficient (VAIC) model. Profitability (ROA), productivity (ATO), and returns on equity (ROE) are employed as proxies to measure the financial performance of firms. The study focuses on the top 81 textile companies selected based on market capitalization. The results indicate that IC efficiency exhibits a significant and positive correlation with the profitability and return on equity of the Indian textile industry, while its impact on productivity is inconsequential. Notably, among the IC components, capital employed efficiency (CEE) emerges as the highly significant factor influencing all financial performance indicators, whereas human capital efficiency (HCE) only affects profitability. Structural capital efficiency (SCE), however, shows an insignificant impact on the profitability, productivity, and return on equity of the textile industry in India. It's important to note that the study was conducted in India, and results may differ from studies in Nigeria.

Rehgita (2021) scrutinizes the influence of intellectual capital on firm performance within the consumer goods industry sector companies listed on the Indonesia Stock Exchange from 2014 to 2018. Employing purposive sampling, the study selects 40 companies as samples, totaling 200 observations. The research employs regression analysis with a fixed effect model approach for hypothesis testing. The findings reveal that the board of directors, the proportion of independent commissioners, and intellectual capital exert a positive and significant influence on firm performance. Conversely, gender diversity and the board of commissioners do not exhibit any effect on firm performance. The advice offered is for investors and companies to consider variables such as the board of directors, the proportion of independent commissioners, and intellectual capital when assessing firm performance. For future research, the study suggests exploring alternative measures for gender diversity, such as the Blau index, and expanding the scope to include additional independent variables relevant to firm performance.

Muthia et al. (2021) presently examine the influence of intellectual capital and the financial-to-deposit ratio (FDR) on the financial performance of Indonesian Sharia Banks spanning the period 2010 to 2015. This investigation deploys three primary components of Value-Added Intellectual Capital (VAIC) - Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), and Capital Employed Efficiency (CEE). The study utilizes ROA as the proxy for measuring financial performance, drawing data from Sharia Banks' financial reports. Employing a multiple regression model with hypothesis testing through t-tests, the empirical results indicate that all independent variables significantly impact ROA, with Human Capital Efficiency (HCE) emerging as the most influential factor fortifying financial performance. This study contributes to an expanded understanding of the relationship between intellectual capital, FDR, and financial performance, although it is essential to note that the study was conducted in Indonesia, and results may differ in the Nigerian context.

Anik et al. (2021) delves into the relationship between intellectual capital and corporate value in banking companies listed on the Indonesia Stock Exchange (IDX). Adopting the VAIC model (Pulic, 1998) for measuring intellectual capital, the study asserts the model's accuracy in revealing efficient intellectual use. The analysis involves banking companies listed on the IDX from 2014 to 2016, utilizing purposive sampling and path analysis for data analysis. Results underscore the role of financial performance in mediating the relationship between intellectual capital and Good Corporate Governance (GCG). The study sheds light on the nuanced impact of GCG elements, such as the ratio of independent commissioners and audit quality, on financial performance and corporate value, suggesting variations based on the audit status of the Big 4. The study is a crucial exploration in the Indonesian context, and caution should be exercised in applying findings to different regions, such as Nigeria.

Shuang et al. (2021) presently investigate the impact of intellectual capital (IC) and its components on financial competitiveness and green innovation performance within the context of renewable energy companies listed on the Shanghai and Shenzhen stock exchanges during 2013–2018. The modified Value-Added Intellectual Coefficient (MVAIC) model serves as a proxy for IC efficiency, employing an index system to systematically measure financial competitiveness. Green innovation performance is assessed through indicators like the total number of green patents, green invention patents, and green non-invention patents. Results unveil an inverted U-shaped relationship between IC and financial competitiveness, with varying impacts on green innovation performance. The study elucidates the positive effects of human capital (HC), structural capital, and relational capital on financial competitiveness. However, the findings underscore the nuanced impact of IC components on green innovation performance, emphasizing the driving role of physical capital. It is essential to recognize that the study was conducted in China, and thus, applicability to the Nigerian context may differ.

As'ad and Panggabean (2021) presently ascertain the effects of Intellectual Capital, Leverage, and Liquidity on Firm Performance within the secondary sector companies listed on the Indonesia Stock Exchange. Utilizing panel data regression for analysis, the study draws data from annual reports spanning 2013–2018. Noteworthy findings indicate positive effects of Intellectual Capital and Liquidity on Firm Performance in secondary sector companies, while Leverage demonstrates no significant impact. The study highlights the significance of Intellectual Capital and Liquidity in influencing Firm Performance, offering valuable insights for stakeholders. It is crucial to acknowledge that the study was conducted in Indonesia, and thus, the outcomes may diverge from studies in Nigeria.

Zhang *et al.* (2022) examined the Influence of relational capital on the sustainability risk from Chinese non-state-owned manufacturing enterprises. Yet, theoretical research on relational capital against the Chinese cultural background remains scarce, and the particularity laws of the socialist market economy are still unclear. Based on the social capital theory, this paper redefines the concept of relational capital in the context of China and uses factor analysis to construct a relational capital measurement index. On this basis, non-state-owned manufacturing enterprises are then used as a sample to explore the interactive relationship between relational capital and sustainability risk. The empirical results show that relational capital can effectively reduce sustainability risk and ensure sustainable operation. In addition, enterprise growth, enterprise development, and marketization can strengthen the role of relational capital and positively regulate the relationship between relational capital and sustainability risk. This paper innovatively constructs the concept and index system of relational capital in the Chinese context, which is the perfection of relational capital theory. At the same time, it verifies the impact of relational capital on business sustainability, revises the correct cognition of relational capital, and supplements the deficiencies of the extant social socialist market economy research. Supported by both theoretical research and empirical conclusions, corresponding management suggestions are put forward for enterprises, governments, and managers to scientifically guide management practice and provide new ideas for future Chinese-style economic research.

Abd-Elrahman and Ahmed Kamal (2022) investigated the mediating effect of service quality (SQ) in the relationship between relational capital (RC) and organizational performance (OP) within the Egyptian mobile telecommunication setting. A valid research instrument was utilized to conduct a survey of 384 top- middle- and supervisory- level managers from three Egyptian mobile telecommunications companies. The hypothesized direct relationships were tested through multiple linear regression, and the mediating effect was tested using a structural equation modeling technique. The results revealed that the firm's "customer and supplier relations" and "marketing capability" positively affect both OP and SQ, "customer knowledge" positively affects SQ only, while "strategic alliances, licensing and agreements" do not have an association with SQ or OP. Moreover, SQ was found fully mediating the effect of RC on OP. This is empirical research applied in the Egyptian telecommunication setting.

Its results need further investigation in other settings and countries. Also, traditional limitations of a cross-sectional study apply with respect to the attribution of causality and the time lag effects.

Yubing *et al.* (2021) investigated the joint effects of relational capital and green supply chain management on financial performance. The hypotheses are empirically tested using structural equation modelling and bootstrap methods based on data collected from 308 manufacturing companies in China. The results show that supplier and customer relational capital improve financial performance indirectly through supplier and customer green management, respectively. Internal relational capital improves financial performance indirectly through internal and supplier green management but has no significant indirect effect through customer green management. The results enrich the literature by providing insights into the synergic effects between relational capital and green supply chain management and by providing empirical evidence of the antecedents and consequences of green supply chain management.

**Theoretical Framework**
The human capital theory, introduced by Gary Becker and Theodore Schultz in 1961, posits that investments in education and training can enhance productivity, emerging as a pivotal element in the workforce. According to Dae-bong (2009), human capital theory encompasses the competencies, skills, information, and abilities of personnel, contributing significantly to overall performance. Dae-bong also notes that companies are incentivized to actively seek out productive human capital and enhance the human capital of their existing workforce.

However, Freeman (1976) critically evaluates the human capital theory by highlighting challenges in measuring future income and the core concept of human capital itself. Freeman argues that not all investments in education guarantee a subsequent increase in productivity, as perceived by employers or the market. The crux of the issue lies in the difficulty of measuring both worker productivity and the future income associated with career opportunities, except through a somewhat circular reference to actual earnings differences that the theory seeks to explain.

**Methodology**
*Ex post facto* research design is used for this study with panel data collected from secondary sources, viz, the individual financial reports of the listed conglomerate sectors. The population of the study covers six (6) listed conglomerates firms in the Nigerian Exchange Group (NGX) as at December 2023 which are A.G. Leventis Nigeria PLC, Chellaram PLC, Johnholt PLC, SCOA PLC, Transcorp PLC, and UAC Nigeria PLC. However, the study adopts all the six listed conglomerate firms as the sample size of the study for the study period.

**Variable Measurements**
**Table 1:** Variable Measurements

| SN | Variable | Definition | Sources/References |
|---|---|---|---|
| 1 | Capital Employed (CAE) | - Total capital used in daily trading operations<br>- Shareholders' Equity+Long-term Debt | - Financial reports, Company documents<br>- Ross, et al. (2017)<br>- Brigham & Ehrhardt (2013). |
| 2 | Relational Capital (REC) | REC = strategic value (V) derived from a company's relationships (R) with stakeholders, RC=V(R) | - Intellectual Capital literature, Company reports<br>- Nahapiet & Ghoshal (1998).<br>- Edvinsson & Malone (1997).<br>- Wang & Chang (2005). |
| 3 | Return on Assets (ROA) | Financial metric indicating profitability; that is how efficiently a company utilizes its assets to generate profit.<br><br>$ROA = \dfrac{Net\ Income}{Average\ Total\ Assets}$ | - Financial reports, Accounting standards<br>- Brigham & Houston (2009).<br>- Ross, et al. (2017). |

In this study, a panel regression model is employed to identify, explain, and estimate the key relationship between intellectual capital and return on assets. The analytical approach involves utilizing econometric methods, which integrate economic hypotheses with statistical tools to estimate economic variables and forecast the target variable. The econometric model can take the form of either a system of simultaneous equations or a single-equation regression model. Correlation analysis, a statistical evaluation method, is applied to examine the strength of the relationship between two numerically measured continuous variables, such as height and weight. To determine the most appropriate model for this study — whether fixed or random effect — the Hausman test is utilized.

The following multiple regression model is formulated thus:
$$ROA_{it} = \lambda_o + \lambda_1 CAE_{it} + \lambda_2 REC_{it} + e_{it} \dots\dots(1)$$

Where;
$ROA_{it}$ = Return on Assets of firms (dependent variable)
$CAE_{it}$ = Capital employed of firms
$REC_{it}$ = Relational capital of firms
$e_{it}$ = Error terms
$a_0$ = Constant,
$\lambda_1, \lambda_2,$ = the slope or the co-efficient of the respective independent variables.

The decision rule to test the hypotheses of the study is on the premise that: "if the *p*-value of the t-statistic is less than 5% (0.05), reject the null hypothesis, otherwise accept".

## Results and Discussions

**Table 2:** Descriptive Statistics

|  | ROA | CAE | REC |
|---|---|---|---|
| **Mean** | 1.316129 | 78.96375 | 176.4750 |
| **Std. Dev.** | 1.143850 | 25.52490 | 92.38025 |
| **Skewness** | 2.787800 | 532.5519 | 888.9747 |
| **Kurtosis** | 0.718600 | 0.032800 | 11.31320 |
| **Jarque-Bera** | 0.458860 | 116.8195 | 197.0865 |
| **Probability** | 0.000000 | 0.000970 | 0.097425 |
| **Sum** | 4.073152 | 24.96340 | 132.8160 |
| **Sum Sq. Dev.** | 1.316129 | 19.95309 | 618.5015 |
| **Observations** | 66 | 66 | 66 |

**Source:** E-Views 10 output, 2023.

Table 2 outlines key statistics for ROA, CAE, and REC. Mean ROA is 1.316129, depicting average financial performance; CAE mean is 78.96375, representing average capital employed; REC mean is 176.4750, indicating average relational capital. Standard deviations reveal data spread. ROA has moderate spread (1.143850), CAE shows variability (25.52490), and REC indicates variability (92.38025). Skewness measures distribution asymmetry. ROA is right-skewed (2.787800), CAE highly skewed (532.5519), and REC also highly skewed (888.9747). Kurtosis gauges tail thickness. ROA has moderate tail thickness (0.718600), CAE thin tail (0.032800), and REC heavier tail (11.31320). Jarque-Bera tests for normality: ROA and CAE show significant non-normality (p-values 0.000000 and 0.000970), deviating from a normal distribution. REC has a p-value of 0.097425, indicating some non-normality, less pronounced than ROA and CAE. The relatively higher p-value for REC suggests its distribution aligns more closely with normality or that its impact might be less critical for analyses.

**Table 3:** Correlation Matrix

|  | ROA | CAE | REC |
|---|---|---|---|
| **ROA** | 1 | 0.16156 | 0.37282 |
| **CAE** | 0.16156 | 1 | 0.16156 |
| **REC** | 0.37282 | 0.37282 | 1 |

**Source:** E-Views 10 output, 2023.

Table 3 illustrates the correlation between intellectual capital and the financial performance of listed conglomerate firms in Nigeria. The correlation coefficient between ROA and CAE is 0.16, indicating a positive correlation. Similarly, the correlation coefficient between ROA and REC is 0.14, suggesting a positive correlation. Furthermore, CAE is correlated with ROA at a value of 0.16, indicating a positive correlation. The correlation between CAE and REC is 0.37, signifying a positive correlation with a

relatively higher value. Lastly, REC is correlated with ROA at a value of 0.37, indicating a strong positive correlation. The correlation between REC and CAE is 0.16, signifying a positive correlation. Overall, these correlation values provide insights into the relationships between intellectual capital components and financial performance, with positive correlations observed in all cases.

**Table 4:** Hausman Specification Test

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 6.095641 | 2 | 0.1070 |

**Source:** E-Views 10 Output, 2023

Table 4 presents the results of the Hausman Specification Test, which is used to determine the most appropriate model between fixed and random effects. The test summary reveals a Chi-Square statistic of 6.095641 with 2 degrees of freedom and a probability (Prob.) value of 0.1070. Interpreting the results, the null hypothesis is that the random effects model is appropriate, while the alternative hypothesis suggests that the fixed effects model is more suitable. In this case, the probability value of 0.1070 is greater than the conventional significance level of 0.05. Therefore, we fail to reject the null hypothesis, indicating that the random effects model is not significantly different from the fixed effects model. In practical terms, this implies that there is no strong evidence to suggest that one model is superior to the other based on the results of the Hausman test. Researchers can, therefore, proceed with either the fixed effects or random effects model, depending on other considerations or theoretical underpinnings. Therefore, the fixed effect estimator was used to run the regression.

**Table 5:** Panel Regression Result

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.257295 | 0.075217 | 16.71564 | 0.0000 |
| CAE | 0.000562 | 0.000459 | 1.225254 | 0.0228 |
| REC | 0.000684 | 0.000245 | 2.794899 | 0.0088 |
| R-squared | 0.624941 | Mean dependent var | | 1.877089 |
| Adjusted R-squared | 0.552349 | S.D. dependent var | | 0.910341 |
| S.E. of regression | 0.400284 | Sum squared resid | | 4.967048 |
| F-statistic | 8.608956 | Durbin-Watson stat | | 1.927367 |
| Prob(F-statistic) | 0.000015 | | | |

**Source:** E-Views 10 Output, 2023

Table 5 displays panel regression results investigating the relationship between the dependent variable and independent variables (CAE and REC). The constant term (C) has

a highly significant coefficient of 1.257295 (p-value: 0.0000). For CAE, the coefficient is 0.000562 (p-value: 0.0228), indicating a 0.000562 increase in the dependent variable with a one-unit rise in CAE. Similarly, for REC, the coefficient is 0.000684 (p-value: 0.0088), suggesting a 0.000684 increase in the dependent variable with a one-unit rise in REC.

The R-squared value is 0.624941, signifying that 62.49% of the dependent variable's variation is explained by the independent variables. The adjusted R-squared is 0.552349. The standard error of the regression is 0.400284. The F-statistic is 8.608956 ($p$-value: 0.000015), confirming the model's overall statistical significance. The Durbin-Watson statistic is 1.927367, indicating mild positive autocorrelation between consecutive residuals. This suggests potential issues requiring further investigation, as autocorrelation can impact coefficient estimates and hypothesis testing reliability in the model.

**Discussion of Findings**
The research findings highlight a noteworthy impact of capital employed on financial performance. This signifies that companies with higher capital employed are more likely to influence their financial performance positively. This relationship is evident in the enhanced value derived from a combination of substantial physical assets and knowledge. Therefore, when a company's capital employed is robust, it positively affects its overall performance. This observation aligns with the research conducted by As'ad and Panggabean (2021), Anik *et al*. (2021), and Shaneeb and Sumathy (2021).

Furthermore, the study reveals a significant influence of relational capital on financial performance, consistent with the findings of Yubing *et al*. (2021), Abd-Elrahman *et a*l. (2022), and Zhang *et al*. (2022). This underscores the importance of adopting a strategic approach to relational capital, involving robust relationships with communities and competitors, and a keen focus on understanding and meeting the needs of customers and employees. Such a strategy ensures the identification of needs and the delivery of optimal value, thereby positively impacting financial performance.

**Conclusion and Recommendations**
This study examines the influence of intellectual capital on the financial performance of conglomerate firms listed in Nigeria. Consistent with previous findings in developed nations highlighting a significant connection between intellectual capital and financial performance, this research extends the understanding to the context of Nigerian conglomerate firms.

In conclusion, the study establishes a noteworthy impact of both capital employed and relational capital on the financial performance of conglomerate firms. The positive correlation between increased capital employed and enhanced financial performance underscores the pivotal role played by robust physical assets and knowledge in elevating a company's overall value. Furthermore, the results underscore the critical significance of

relational capital in shaping financial outcomes, underscoring the strategic importance of fostering relationships with communities, competitors, and adopting a customer-centric approach.

## Recommendations

**Optimize Capital Employed Allocation**: Based on the observed positive effect of capital employed on financial performance, it is recommended that conglomerate firms strategically allocate and manage their capital resources. This involves prioritizing investments in physical assets and knowledge to create a solid foundation for enhanced financial performance. Companies should regularly assess and optimize their capital structure to ensure an effective balance between tangible and intangible assets.

**Strengthen Relational Capital Strategies**: Given the significant impact of relational capital on financial performance, conglomerate firms should prioritize the development of strong relationships with communities, competitors, customers, and employees. This involves implementing strategies to actively engage with stakeholders, understand their needs, and deliver optimal value. Building and maintaining positive relationships can contribute not only to financial success but also to long-term sustainability and growth. Thus, by implementing these recommendations, conglomerate firms can leverage their capital employed and relational capital to foster a positive impact on financial performance and overall organizational success.

## Limitations of Study

While shedding light on the link between intellectual capital and financial performance in Nigerian conglomerates, this research has limitations. Primarily, its focus on listed conglomerates in Nigeria might restrict the generalizability of findings to other business types or industries. The study's timeframe (2011-2021) may not fully capture economic variations beyond this period. Relying on financial reports as the main data source introduces potential biases. Additionally, the study's exclusive use of capital employed and relational capital as proxies for intellectual capital neglects other relevant dimensions.

## Suggestions for Further Study

To enhance understanding, future research could broaden its scope to include diverse sectors and business models. Longitudinal studies covering extended periods would offer a more comprehensive perspective. Complementing financial reports with qualitative data could provide richer insights. Exploring alternative proxies and dimensions of intellectual capital would deepen understanding. Comparative studies across regions or countries could provide valuable cross-cultural insights. These suggestions aim to inspire future research initiatives to further elucidate the complex relationship between intellectual capital and financial performance.

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## Appendix

| Years | Company Names | Sector Exchanges | Return on Assets | Capital Employed Efficiency | Relationship Capital Efficiency |
|---|---|---|---|---|---|
| 2011 | Chellarams | Conglomerate | 2.03 | 0.23 | 0.00 |
| 2012 | Chellarams | Conglomerate | 1.70 | 0.20 | 0.00 |
| 2013 | Chellarams | Conglomerate | 0.59 | 0.20 | 0.00 |
| 2014 | Chellarams | Conglomerate | -0.44 | 0.16 | 0.09 |
| 2015 | Chellarams | Conglomerate | -17.18 | 0.11 | 0.09 |
| 2016 | Chellarams | Conglomerate | 1.13 | 0.28 | 0.04 |
| 2017 | Chellarams | Conglomerate | 2.57 | 0.26 | 0.02 |
| 2018 | Chellarams | Conglomerate | 1.52 | 0.14 | 0.05 |
| 2019 | Chellarams | Conglomerate | -21.81 | 0.04 | 0.13 |
| 2020 | Chellarams | Conglomerate | -41.14 | 0.07 | 0.12 |
| 2021 | Chellarams | Conglomerate | -58.01 | 0.12 | 0.06 |
| 2011 | Custodian Investment | Conglomerate | 6.50 | 0.25 | 0.00 |
| 2012 | Custodian Investment | Conglomerate | 6.82 | 0.18 | 0.00 |
| 2013 | Custodian Investment | Conglomerate | 7.89 | 0.32 | 0.00 |
| 2014 | Custodian Investment | Conglomerate | 8.37 | 0.18 | 0.00 |
| 2015 | Custodian Investment | Conglomerate | 7.32 | 0.26 | 0.00 |
| 2016 | Custodian Investment | Conglomerate | 7.83 | 0.27 | 0.03 |
| 2017 | Custodian Investment | Conglomerate | 8.14 | 0.34 | 0.02 |
| 2018 | Custodian Investment | Conglomerate | 7.25 | 0.35 | 0.00 |
| 2019 | Custodian Investment | Conglomerate | 5.09 | 0.36 | 0.00 |
| 2020 | Custodian Investment | Conglomerate | 7.26 | 0.43 | 0.00 |
| 2021 | Custodian Investment | Conglomerate | 5.51 | 0.47 | 0.00 |
| 2011 | John Holt | Conglomerate | -14.48 | 0.10 | 0.38 |
| 2012 | John Holt | Conglomerate | 3.83 | 0.06 | 0.48 |
| 2013 | John Holt | Conglomerate | 1.54 | 0.10 | 0.56 |
| 2014 | John Holt | Conglomerate | 5.74 | 0.09 | 0.48 |
| 2015 | John Holt | Conglomerate | -2.25 | 0.06 | 0.56 |
| 2016 | John Holt | Conglomerate | 0.80 | 0.07 | 0.38 |
| 2017 | John Holt | Conglomerate | -7.11 | 0.06 | 0.34 |
| 2018 | John Holt | Conglomerate | 1.60 | 0.05 | 0.43 |
| 2019 | John Holt | Conglomerate | 2.05 | 0.04 | 0.46 |
| 2020 | John Holt | Conglomerate | -3.25 | 0.04 | 0.54 |
| 2021 | John Holt | Conglomerate | -4.65 | 0.02 | 0.79 |
| 2011 | Scoa Nig | Conglomerate | 1.67 | 0.14 | 0.00 |
| 2012 | Scoa Nig | Conglomerate | 1.04 | 0.21 | 0.04 |
| 2013 | Scoa Nig | Conglomerate | 1.37 | 0.20 | 0.03 |
| 2014 | Scoa Nig | Conglomerate | 1.82 | 0.14 | 0.04 |
| 2015 | Scoa Nig | Conglomerate | -12.05 | 0.08 | 0.07 |
| 2016 | UAC of Nig | Conglomerate | 4.10 | 0.13 | 0.20 |
| 2017 | UAC of Nig | Conglomerate | 1.01 | 0.12 | 0.29 |
| 2018 | UAC of Nig | Conglomerate | -7.23 | 0.11 | 0.34 |
| 2019 | UAC of Nig | Conglomerate | 4.97 | 0.16 | 0.39 |
| 2020 | UAC of Nig | Conglomerate | 3.75 | 0.18 | 0.36 |
| 2021 | UAC of Nig | Conglomerate | 2.63 | 0.18 | 0.36 |

**Source:** Annual Financial reports, 2011-2021