

EFFECT OF INTELLECTUAL CAPITAL ON THE FINANCIAL PERFORMANCE OF NIGERIAN LISTED CONGLOMERATE FIRMS

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ABSTRACT

Managers must constantly understand the significance of accounting in the economy for economic units' decision-making since financial reports are regarded as an indicator of investors' decision-making regarding traditional organizational performance measures. However, conventional annual financial statements only partially convey the value of intangible assets in the knowledge era, where intellectual capital accounts for a significant portion of a product's worth. This study evaluates the intellectual capital and financial performance of listed conglomerates firms in Nigeria. The population was five quoted conglomerate firms in Nigeria with a sample of the same for ten years from 2010-2019. Ordinary regression analysis with the aid of Eview was adopted to establish the cause-effect of intellectual capital and financial performance. Results reveal how human capital efficiency positively but insignificant impact on the financial performance (ROA) of listed conglomerates firms in Nigeria; structural capital efficiency has a negative significant effect on the financial performance (ROA) of listed conglomerates firms in Nigeria; capital employed efficiency has negative and insignificant impact on financial performance (ROA) of listed conglomerates firms in Nigeria with a p-value greater than a 5% level of confidence hence, The study recommends that Conglomerates firms should implement regulations that improve and advance their staff members' proficiency in the field of training and development; an improvement in both usage and investment in human capital for improved performance of listed conglomerate firms in Nigeria; judicious use and efficient investment in both structural capital and capital employed for optimal performance of listed conglomerate firms in Nigeria.

Keywords: Knowledge era, Intellectual capital, human capital, structural capital, capital employed

INTRODUCTION

One of an organization's most important assets nowadays is intellectual capital. Modern company is all about managing its human and structural components. Knowledge management, which emerged during the information revolution, was a response to the recent realization noting intellectual capital as organization's greatest valuable asset and should be properly managed.

According to Manzari *et al* (2012), one of an organization's most important assets nowadays is intellectual capital. Modern company is all about managing its human and structural components. Knowledge management, which emerged during the information revolution, was a response to the late realization noting intellectual capital as organization's precious asset and should be properly managed. The most important resource for generating economic gain is increasingly intellectual capital. Property, plant, and equipment are examples of tangible assets that are still crucial to the production of goods and services. But as the worth of intangible, knowledge-based assets have grown over time, their proportional significance has diminished (Luthy, 1998).

Since the concept of production emerged, knowledge Since the growth of knowledge-technology-based industries and the rise in the number of goods and services produced in these sectors, an asset that has always existed and been felt but cannot be seen or felt because it lacks a physical quality cannot be adequately conveyed using traditional organization assessment methods. This asset has been recognized as a result of the growing disparity between an organization's nominal and market values (Funda *et al.*, 2010).

In the contemporary business world knowledge is currently one of the most crucial economic and strategic resources, dominating the market and possibly the only source of competitive advantage (Ramezan, 2011; Gavius & Russ, 2009). An important aspect of a knowledge-based society is intellectual capital (Bukh *et al.*, 2001). The basic step in transforming from a conventional business to a knowledge-based business is for organizations to note their expertise, which is known as intellectual capital (IC) (Montequin *et al.*, 2006). The lack of financial and physical capital was thought to be the primary factor contributing to the developing countries' backwardness until the early 1950s. However, it is now stated that rapid growth and development in these nations do not always follow the infusion of substantial amounts of financial and physical resources. Instead, nations with strong organizational structures, effective administrative systems, and highly skilled human capital can draw in their own financial and material resources to spur economic growth (Fetras & Beigi, 2010).

When organizations keyed into the knowledge era, organizations realized the need to effectively and efficiently make use of their three kinds of capital (physical (tangible), financial and intellectual capital) to have an edge over their competitors (Wall, 2005; Andriessen, 2004). Organizations that require better performance and continuous improvement can achieve that both by building fresh intellectual capital and by using their existing possession (Bartholomew, 2008). Financial performance metrics, which are derived from transactional and historical data, indicate a company's profitability, solvency, liquidity, productivity, and market strength. These measures do not account for shifts in values or intangibles produced within. There is a growing belief that non-financial metrics that address issues like customer satisfaction and operational efficiency, for instance, should be used in place of or in addition to financial performance metrics when making strategic decisions (Waterhouse & Svendsen, 1998).

Organizational performance in the knowledge era is the outcome of technological advancement, innovation, and the caliber of human, structural, and relational factors—all of which are significantly impacted by investments in knowledge education, research, and development—rather than macroeconomic policies, net tangible assets, or financial balance. For traditional organizations, Managers must always understand the significance of accounting in economics for economic units' decision-making, as financial reports are regarded as an indicator of investors' decision-making. However, in the knowledge era, where intellectual capital accounts for a significant portion of a product's value, conventional annual financial statements only report a portion of the value of intangible assets; therefore, calling for more realistic reporting; capturing intellectual capital as an asset and how such asset has influenced the organization. This study considered intellectual capital and financial performance from emerging economies. Intellectual capital is a proxy for human capital, structural capital, and capital employed while financial performance is a proxy using return on asset (ROA).

REVIEW OF RELATED LITERATURE

Concept of Intellectual Capital

Intellectual capital has received great attention from researchers. The definition of intellectual capital that is most frequently employed is “knowledge that is of value to an organization. Customer, structural, and human capital are its primary components. According to this concept, intellectual capital is produced through the management of knowledge or the totality of what is understood (Bassi & Laurie, 1997). Funda *et al*(2010) posit the term "intellectual capital" refers to the entirety of intangible assets, including knowledge, knowledge systems, patents, copyrights, and license agreements, that are made up of knowledge, skills, experience, and information and that impact a company's current and future success as well as its position in relation to other businesses.

Intellectual capital serves as the major driver of the value difference between the market value and book value of many organizations (Beattie & Thomson, 2007; Bozbura *et al.*, 2007; Mouritsen *et al.*, 2001; Wall *et al.*, 2004; Yang & Lin, 2009). As stated by Bozbura *et al.* (2007), Joia (2007), Hsu & Fang (2009), Tai & Chen (2009), Lu *et al.* (2010), Randezen (2011), Montequín *et al.* (2006), Bontis (1998), Kim & Kumar (2008), Wall (2005), Bozbura *et al.* (2007), Lee (2010), Peppard & Rylander (2001), Chen (2009), Bozbura & Beskese (2007) intellectual capital has become essential for keeping an edge, superior organizational performance, core differentiator operator, organizational success, enhancing shareholder value, and improving new product development performance.

Human Capital

These are the company's intangible assets, which are its employees' intellectual prowess, inventiveness, and originality. Human capital is important in knowledge-based enterprises since it is the main cost of the production process (Nuryaman, 2015). Human capital is defined as the knowledge that employees acquire as he/she exits the organization. It encompasses people's experiences, talents, and knowledge; some of this knowledge might be individual-specific, while others might be generic. Human capital is important in knowledge-based enterprises since it is the main cost of the production process. This covers each employee's or manager's unique skills, abilities, communications, and knowledge and experience. (Okoye *et al.*, 2014). When an individual invests a significant amount of their time and skills in activities that foster innovation, human capital is created and utilized. Human capital can increase in two ways: either when people' knowledge is primarily utilized by the company or when their contributions to the business go beyond their level of expertise. (Stewart,1997).

Chen *et al* (2005) opine that human capital is workers' ability to change the firm through innovation or by judicious use of existing. According to Mertins and Will (2008), Professional competency, human capital includes leadership skills, employee motivation, and social competency.

Structural Capital

Structural capital is the accumulated knowledge acquired that is left with the firm after working hour. It includes the organizational cultures, standards, systems, procedures; data bases and so on (Omojolaibi *et al*, 2019). They may be legally protected, legally owned by the firm and become Intellectual Property Rights under a separate title. It is the knowledge that the organization adheres to. The business owns this asset, which can be multiplied and exchanged for other assets. Innovations, inventions, publications, and business ventures are all part of the capital structure. It includes people's experiences, skills, and knowledge, some of which may be unique to each person and some of which may be general. This comprises the distinct talents, abilities, communications, knowledge, and experience of each management or employee (Stewart 1997).

Chen-Goh (2005) explained structural capital as an employee's actions that assist the business and their continued presence after they leave. Van and Mark (1999) review that Structural capital is made up of capital innovations, which are organizational innovations that result in new goods and services, as well as capital processes, which include engineering, systems, processes, and equipment that belong to the company. According to Mertin and Wills (2008), structural capital involves business culture, IT and explicit knowledge, internal collaboration and knowledge sharing, production innovation, process optimization, and innovation.

Capital Employed

The sum capital held by a firm's current and non-current assets, financed by long-term obligations (loan capital) and stockholder funds (equity capital), is known as capital employed. However, if assessed in terms of assets, it equals non-current assets plus working capital (Businessdictionary.com). The company's ability and capacity to organize resources in the likes of a capital asset are reflected in the capital employed. (Soewarno & Tjahjadi, 2020). Pulic (2004) posits that a corporation may yield a greater return per unit of capital employed.

Financial Performance

According to Fatihudin *et al* (2018), Based on a variety of indicators, such as the capital adequacy ratio, liquidity, leverage, solvency, and profitability, financial performance is the health of the company's finances throughout a given time period, including how money is collected and used. When it is well recognized that the company can effectively manage and control its resources that is known as financial performance (IAI, 2016). Financial performance is the capacity of an organization to generate new resources from its day-to-day activities over a given time frame (Bora, 2008). It involves boosting wealth and profit for shareholders, which are two of a business's primary objectives (Pandey, 2005).

One way to gauge an organization's present state and future prospects is to look at its financial performance. The features of the items being researched and the goals of the study determine which ratios are appropriate, even though there are many indicators that can be used to estimate financial success. (Nhunge *et al*, 2021). The accomplishment of organizational objectives is represented by the

financial performance dimension calculation. (Chashim & Fadaee, 2016). "In terms of maximizing the owners' wealth" is one way to characterize financial performance. (Borba, 2005).

Theoretical Framework

Resource Base Theory

Resource-based theory (RBT) was originally offered by Penrose (2009) as a model for judicious management of businesses' resources, diversification plans, and chances for productivity. To buttress and tackle how a firm might achieve goals and strategic characteristics, Penrose was the first to suggest viewing a company as a well-coordinated collection of resources (Penrose, 2009). RBT offers a model for highlighting and projecting the core elements of competitive advantage and organizational success. From a more macro viewpoint, RBT concentrated on the firm's performance in response to the prior managerial interest in the industry structure.

RBT focuses on internal organization resources rather than externally driven ways to examine an internally driven approach to understanding the success or failure of leveraging organizational operations (Kozlenkova, *et al*, 2014). It seeks to provide more insight on corporate resources that are not easily imitated yet have the potential to provide long-term competitive advantage (Barney, 1991).

To clarify how firm-based resources generate a sustainable competitive edge and the reasons why certain businesses may continuously beat others by growing more competitive, the RBT is predicated on two basic assumptions. (Helfat & Peteraf, 2003). First, the resource bundles that businesses own are not all the same. (Helfat & Peteraf, 2003). One of the pillars of RBT is the diversity of resources and competencies among a population of firms, which determines each firm's competitive edge. According to the theory of resource heterogeneity, a business may be better able to complete particular tasks and obtain a competitive advantage if it possesses unique resources in a particular situation. Second, the intricacies of resource exchange across businesses could lead to persistent resource disparities (the presumption of resource immobility).

However, the traditional RBT does not go into detail about how and why certain businesses can obtain a competitive edge in situations of rapid and unpredictable change. (Adner & Helfat, 2003). According to the emergence of a more comprehensive RBT approach, businesses can obtain a competitive advantage by employing essential assets, learning, skill development, and the steady accumulation of both material and immaterial assets to create new potential capabilities. Resources are assets in RBT. business processes, capabilities, firm traits, knowledge, information, etc. that a corporation regulates to learn and implement initiatives meant to increase effectiveness and efficiency (Barney, 1991).

Empirical Review

Alharbi (2023) examines the link and changes that take place between firm performance (FP) and intellectual capital (IC). Ordinary least squares (OLS) statistics were employed to analyze the data that was obtained through various sources. Between 2017 and 2021, information was gathered from 30 Saudi Arabian businesses. According to the data, IC efficiency is considerable, however, favorably correlated with ROE and ROA. The study also shows how human capital, structural capital, and physical capital are related, highlighting their importance and supporting the resource dependency theory. and Daher (2023)

measured how intellectual capital affect small business performance as seen by Amman's finance companies. The relationship of all aspects of intellectual capital on small business performance, the influence of all aspects of intellectual capital on learning and development, the implication of all aspects of intellectual capital on internal operations, and the existence of an implication of all types of intellectual capital on customer satisfaction were the most significant findings of the study. Asutay and Ubaidillah (2023) explore the performance of Islamic banks (IBs) in terms of (IC) and investigate how IBs' profitability and productivity are affected by IC. The empirical results show that IC significantly improves IBs' financial performance metrics, particularly profitability.

Tran et al (2022) examined how intellectual capital affects business performance while taking corporate social responsibility into account as a moderator. The study looks at the separate and combined effects of corporate social responsibility and intellectual capital on business success in Vietnam using a sample of 60 companies that were listed on the Ho Chi Minh Stock Exchange between 2011 and 2020. It makes use of the generalized method of moments. The results show that there are both independent and joint impacts. Additionally, the findings imply that the two essential elements of intellectual capital influencing company performance are structural capital efficiency and capital employed efficiency. It's interesting to note that the combined effects of CSR and intellectual capital on business performance have also been verified. Essien and Aniekan (2022) investigated the effect of intellectual capital on corporate performance by drawing samples of listed non-finance organizations in Nigeria between the periods of 2012-2021. The results showed that human capital has a positive insignificant effect on the return on total assets while structural and relational capital has a significant positive effect on the return on total assets of the selected non-finance firms.

Shairi *et al* (2021) analyzed how the success of listed technology firms on Bursa Malaysia's main market is affected by their intellectual capital. 32 firms provided useable data for the study, which spans seven years from 2013 to 2019 and yields 224 observations for analysis. The empirical results show a mixed relationship between ROA and the efficiency of MVAIC components, but a positive and substantial association between MVAIC and ROA. ROA is positively and significantly correlated with two components: HCE and CEE. Although considerable, SCE has a negative correlation with ROA. However, the relationship between RCE and ROA is negligible. Tom-West *et al* (2021) determine the performance of listed information, communication, and technology (ICT) enterprises in Nigeria in terms of Intellectual Capital (IC) and its correlation with Economic Value Added (EVA) for the years 2010–2019. Utilizing information derived from a sample of eight (8) ICT businesses that were quoted. According to the empirical findings, there is a significant positive correlation between Economic Valued Added and Human Capital Efficiency (HCE) at $P < 0.05$, Structural Capital Efficiency (SCE) and Economic Valued Added at $P < 0.05$, and Capital Employed Efficiency (CEE) and Economic Valued Added at $P < 0.05$. Xu and Liu (2020) analyze how IC and its constituent parts affected Korean manufacturing companies' performance between 2013 and 2018. Additionally, it is clear that the extended and updated VAIC model outperforms the original VAIC model put out by Pulic (1998).

METHODOLOGY

The study used an ex post facto research design, and its participants included the five listed Nigerian conglomerate firms listed on the Nigeria stock exchange as of 31st December 2022. They are; John Holt Plc; Chellarams Plc; SCOA Nig. Plc; Transnational Corporation of Nig. Plc; and U.A.C.N Plc. The five

formed the sample for the study since five firms are a manageable size. Secondary data from annual financial statements for each of the quoted companies for 10 years (2010-2019) was adopted. Descriptive statistics, as well as pre-diagnostics tests of the Variance Inflation Factor (VIF), Heteroscedasticity Test, and correlation matrix, are been conducted on the data gathered before using fixed and random regression analysis. Hausman specification helps in selecting between a fixed or random test. The linear model of the study is:

$$F_p = (\text{ROA})$$

$$IC_{it} = (\text{HCE, SCE, CEE})$$

$$\text{ROA}_{it} = \alpha + \beta_1 \text{HCE}_{it} + \beta_2 \text{SCE}_{it} + \beta_3 \text{CEE}_{it} + e_{it}$$

Where:

ROA_{it} = Return on Assets of firm i at time t

HCE_{it} = Human Capital Efficiency of firm i at time t

SCE_{it} = Structural Capital Efficiency of firm i at time t

CEE_{it} = Capital Employed Efficiency of firm i at time t

α = Constant term

$\beta_1, \beta_2, \beta_3$ = Coefficients to be estimated

e_{it} = Error term.

DATA ANALYSIS AND DISCUSSION OF FINDINGS

Table 1 Descriptive Statistics

	ROA	HCE	SCE	CEE
Mean	0.065306	7249897.	1316512737.14	19.51641
Median	0.057295	6158019.	83734711.5	4.193862
Maximum	0.152556	49101796	9333980585	606.9135
Minimum	0.000557	2227148.	5068705.	0.007128
Std. Dev.	0.049423	7617257.	2629470573.02	85.60612
Skewness	0.369222	4.051629	1.846967	6.655324
Kurtosis	1.753193	20.79835	4.835188	46.16416
Jarque-Bera	4.374638	796.7582	35.44387	4250.663
Probability	0.112217	0.000000	0.000000	0.000000
Observations	50	50	50	50

Source: Generated from E-view, 2023

The study ascertains that Return on asset is distributed uniformly and the probability greater than 5% level of confidence with a mean of 0.065306 which indicates the average, the firm has an increase in the

financial performance of that amount but the median is 0.057295. Also, the maximum ROA of the firm is 0.152556 while the minimum ROA is 0.000557.

Human capital efficiency has a mean of 7249897 but it is not uniformly distributed due to its probability of less than 5% and a median of 6158019. However, conglomerate companies have a maximum and minimum human capital efficiency of 49101796 and 2227148 respectively.

Also, structural capital efficiency has an average mean and median of 1316512737.14 and 83734711.5 accordingly while the maximum and minimum amount spent on structural capital by conglomerate companies are 9333980585 and 5068705. However, the deviation from the mean of structural capital is 2629470573.02.

Furthermore, the result shows that the minimum capital employed efficiency is 0.007128 and the maximum of 606.9135 while the mean and median of capital employed efficiency are 19.51641 and 4.193862 respectively. Though the probability shows that human capital efficiency, structural capital efficiency, and capital employed efficiency are not normally distributed because it is less than a 5% level of confidence, it is corrected by the residual result in the histogramnormalitytest in Table 2 below.

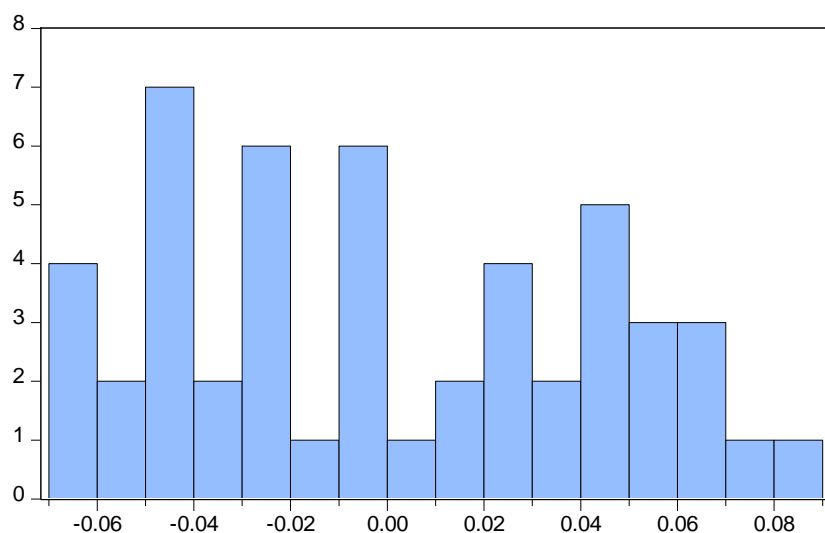
Table 2 Correlation Matrix

	ROA	HCE	SCE	CEE
ROA	1.000000			
HCE	0.273698	1.000000		
SCE	-0.472802	-0.528253	1.000000	
CEE	-0.229042	-0.098555	0.365082	1.000000

Source: Generated from Eview, 2023

The relationship between financial performance and intellectual capital variables is ascertained using the correlation matrix and from the result above, it is evident that Human capital efficiency has a positive correlation with financial performance to the extent of 0.273698 while structural capital efficiency has a negative correlation with ROA to the extent of -0.472802. Furthermore, capital employed efficiency has a negative relationship with ROA to the extent of -0.229042 accordingly.

Table 3 Normality Test



Series: Standardized Residuals	
Sample 2010 2019	
Observations 50	
Mean	-1.98e-17
Median	-0.003186
Maximum	0.080853
Minimum	-0.068114
Std. Dev.	0.043411
Skewness	0.165447
Kurtosis	1.749537
Jarque-Bera	3.485727
Probability	0.175018

Source: Generated from Eview, 2023

The normality test of the variables is ascertained by the histogram normality test with a Jarque-Bera probability of 0.175018 which is greater than 5% level of confidence thus; the residuals of the variables are normally distributed.

Table 4 Summary of Ordinary Regression Result

Variables	Coefficient	t-values	P-values	VIF
R ²	0.228488			
Adj. R ²	0.178172			
F-stat.	4.541072			
F-sig.	0.007186			
Hausman P-Value	0.8676			
Constant	0.217186	0.808054	0.4232	
HCE	0.008047	0.254808	0.8000	1.407085
SCE	-0.024999	-2.393678	0.0208	1.607700
CEE	-4.02E-05	-0.460180	0.6476	1.170439

Source: Generated from Eview, 2023

The Random model is used in this study because the Hausman p-value which indicates the appropriate result to be used is greater than 5% while the fixed effect model is attached in the appendix. The coefficient of determination explained a 22% variation in financial performance while the remaining variation is explained by other variables not captured in the model and the f-statistics show that the model is fit with less than 5% p-value.

The result shows that human capital efficiency has a positive but insignificant effect on financial performance with a p-value greater than a 5% level of confidence hence, based on statistical evidence,

neither increase nor decrease in human capital efficiency will affect the financial performance of conglomerate companies in Nigeria.

However, it was evident from the statistical result that structural capital efficiency has a negative significant effect on financial performance with a p-value of less than 5% level of confidence hence, an increase in structural capital efficiency will decrease financial performance by -0.024999 coefficient.

Furthermore, the result shows that capital employed efficiency has a negative but insignificant effect on financial performance with a p-value greater than 5% level of confidence hence, based on statistical evidence, neither increase nor decrease in human capital employed efficiency will affect the financial performance of conglomerate companies in Nigeria.

The multicollinearity is ascertained using the variance inflation factor result above and the result indicates that the independent has no collinearity within themselves rather they affect the dependent variable because all the variable-centered VIF is between 1 and 2 which shows that they have no multicollinearity problem.

Discussion of Findings

The result shows that human capital efficiency has a positive but insignificant effect on financial performance hence, based on statistical evidence, neither increase nor will decrease in human capital efficiency affect the financial performance of conglomerate companies in Nigeria. This gives the study the basis to accept the stated hypothesis that human capital efficiency has no significant effect on the Return on Assets of Nigeria Conglomerate firms. The finding disagreed with the findings from the studies of Rehman *et al* (2011), Shohreh and Geert (2015), Apiti *et al* (2017), Zarei, *et al* (2015), Ramat *et al* (2012) but agreed with the findings of Wang (2011), Clarke *et al* (2010).

Ho₂: Structural Capital efficiency has no significant effect on the Return on Assets of Nigeria Conglomerate firms

Also, it was evident from the statistical result that structural capital efficiency has a negative significant effect on financial performance thus, an increase in structural capital efficiency will decrease financial performance. The finding corroborates with most of the following findings Ekwe (2012), Muhammad and Ismail (2009), Anuonye (2014), Onyekwelu *et al* (2017), Zarei, *et al* (2015), Mina *et al* (2014) but some of the findings show a positive correlation with financial performance, unlike this finding. However, the study disagreed with the study of Umar (2017) that structural capital has an insignificant effect on financial performance. Based on the finding, the study rejects the stated hypothesis that structural capital efficiency has no significant effect on the Return on Assets of Nigeria Conglomerate firms.

Ho₃: Capital employed efficiency has no significant effect on the Return on Assets of Nigeria Conglomerate firms

Furthermore, the result shows that capital employed efficiency has a negative but insignificant effect on financial performance hence, based on statistical evidence, neither increase nor decrease in human capital employed efficiency will affect the financial performance of conglomerate companies in Nigeria. This gives the study the basis to accept the stated hypothesis that capital employed efficiency has no significant effect on the Return on Assets of Nigeria Conglomerate firms. The finding disagreed with the findings from the studies of Ramat, *et al*, (2012), Wangui (2014), Emadzadeh, *et al*, (2013), Umar (2017), Ekwe (2012), Clarke, *et al* (2010), Olayinka and Uwalomwa (2011), Kehelwalatenna and Gunaratne (2010), Pasaribu *et al*, (2012) that capital employed efficiency has a significant effect on Return on Assets.

CONCLUSION AND RECOMMENDATIONS

The objective of the study was to establish the effect of intellectual capital on financial performance of listed Conglomerate firms in Nigeria. Therefore from the findings the study concludes that human capital efficiency has a positive but insignificant effect on return on asset, predicting that investment in human capital moderately increases return on asset of listed conglomerate firms in Nigeria. Structural efficiency has a negative and significant effect on return on asset, predicting that structural capital should be judiciously applied since an undue investment in it reduces return on asset of listed conglomerate firms in Nigeria. Capital employed efficiency has negative but insignificant effect on return on asset, predicting that an optimal investment is needed to avoid reduction in return on asset of listed conglomerate firms in Nigeria.

Based on the findings, the paper recommends that Conglomerates firms should implement policies that enhance and upgrade their employees' skill and competence in the area of training and development; an improvement in both usage and investment in human capital for improved performance of listed conglomerate firms in Nigeria; judicious use and efficient investment in both structural capital and capital employed for optimal performance of listed conglomerate firms in Nigeria.

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