INTELLECTUAL CAPITAL AND FINANCIAL PERFORMANCE OF SELECTED DEPOSIT MONEY BANKS IN NIGERIA: THE PULIC VAIC™ MODEL APPROACH

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ABSTRACT

This study evaluates the effect of intellectual capital on the financial performance of selected banks in Nigeria, using the Ante Pulic Value Added Intellectual Coefficient (VAIC) model. The top three banks quoted on the Nigeria stock market (namely Zenith bank, First bank and Guaranty Trust bank) are selected for this study. Three VAIC components (capital employed efficiency - CEE, human capital efficiency-HCE and structural capital efficiency-SCE) represent the independent variables of the study while return on assets (ROA) is used to proxy for financial performance of the banks. Data on these variables are sourced from the online published annual reports of the banks for the period of ten (10) years (2007-2016). Multiple linear regression model is employed in the analysis of the data via the statistical package for the social sciences (SPSS) version 21. Results from the analysis reveal that: a significant negative relationship exists between CEE and ROA; HCE exerts significant positive effect on ROA and a negative but insignificant relationship exists between SCE and ROA. Findings further indicate that the intellectual capital variables aggregately exert significant effect on the banks' financial performance measured with ROA. The study thus recommends, among other things, that human capital (employee costs) should be capitalized in the assets-base of the banks reported under their statement of financial position, so as to give a clear impression of the real value of a bank in our today's rapidly technological-driven competitive business environment.

Key Words: Intellectual Capital, Capital Employed, Human Capital, Structural Capital, Financial Performance, Return on Assets

INTRODUCTION

The complexity of modern day business organization occasioned by the expansion of varied interest groups and the globalization of business activities has warranted a shift from the traditional way of ascertaining the capital worth of an organization to a technological and knowledge-based approach. Obviously, the economic disposition of any nation (Nigeria inclusive) is largely defined by the level of business operations in that nation. The level of business operations on its part is fostered by the performance of business organizations in a given period of time. Hence, when business activities blossom, it spells a handsome performance of the business organizations in the economy; consequently, economic growth becomes most likely.

Notably, what culminated to economic recession in Nigeria was the fallout of the global economic meltdown around 2008 which mostly became prominent with the advanced economies of the world. However, the prompt response by these economies in confronting the effect of the meltdown through well targeted economic policies and mustering of active and responsive socio-political Will resulted to some significant level of recovery of the global economic fortune; particularly, as it pertains to the developed world. Yet, the spill-over effects of the global economic crises remain potent in many second and third world countries. Nigeria as an emerging economy ultimately went into recession within the second-half of 2015 as a result of the spillover effect of the global economic meltdown which was occasioned by steady deterioration of the nation's economic standard in terms of poor standard of living of the people, high inflation rate, poor infrastructure, high unemployment rate, slowing gross domestic product, and in fact abject downturn in the key economic measurement indices. Incidentally however, economic experts have asserted that Nigeria technically exited recession by late 2017.

Consequently, to guard against being subsequently plunged into another time of economic siege requires a well-committed effort towards providing an enabling environment for the thriving of the key sectors of the economy. The role played by the financial sector of any economy in general and the banking sub-sector in particular in this regard cannot be overemphasized. Therefore, it can be safely said that the performance of the banking sector of Nigerian economy at any point in time largely affects the performance of the nation's economy at large. It becomes

eloquently clear therefore that to manage Nigerian economy beyond recession, business activities generally and banking operations in particular require a well-targeted attention in terms of regulatory policies and managerial structure to enable improved performance of the banking industry and by extension Nigerian economy.

The performance report of any business firm (including the banks) is ultimately indicated in the market value of such firms. Modern day businesses (banks in particular) operate in a typically competitive environment; it becomes obvious that a firm's market price is driven by its ability to take competitive advantage through effective manipulation of the available capital at its disposal. Traditionally (in the past), the capital worth of a firm is defined in the value of its tangible assets comprising of land, equipment and other physical assets which are used in creating value for the organization; but in the recent times of advancement in information technologies, firms performance is largely dependent on the ability to apply knowledge (Nuryaman, 2015). This, thus, indicates a shift from physical-based-value of a firm's assets to a combination of both physical and knowledge-based-value. Notably, the modern business environment has been largely influenced by the trend of globalization aided by improved information and communication technologies such that the whole world has been reduced to one global village. Hence, the globalization processes today accelerate change in innovation such that most businesses are driven by knowledge.

Consequently, this trend of technological sophistication and knowledge-based operations resulted to a drastic revolution in the operations of banks all over the world with Nigerian banks not operating in

isolation. This required the engagement of knowledge-based assets (other than mere physical assets alone) like software, database etc. in the operations of banks. Given the level and nature of the competition confronting the banks now which is on a cross-border scale, local banks therefore needed to adjust their competitive position to sustain their financial performance. Thus, in the modern business parlance, value creation depends far less on their physical assets than on their intangible ones. In fact, in this 21st century, intellectual capital is being recognized as the foundation of organizational competitiveness and the banking industry being one of the most knowledge-inclined business entities. Thus, Intellectual Capital (IC) generally represents the critical resource in the value creation process.

Maditinos, et al (2011), cited in Al-Musali and Ku-Ismail (2014) assert that in the new economic era, intellectual capital (IC) resources such as human capital and customer relations have become the most important business success factor and the key factor in sustaining competitive advantage and creating value for firms. Shih, Chang and Lin (2010) opine that for knowledge-based organizations like the blanks, the main resources are non-tangible and intellectual in nature. Therefore, it is of paramount importance that the management of banks should ensure the efficient management of their IC so as to guarantee improved performance in terms of the profitability and size. This underscores the reason why this study is based on the banking sector of Nigeria.

STATEMENT OF THE PROBLEM

Conventionally, the worth of a business enterprise is determined by reference to the written down value of the tangible assets of the enterprise. This approach cut across all business entities including the banks. Here, tangible assets are valued based on their acquisition costs less accumulated depreciation; thus the firms' net worth revolves around the tangible value of the assets. This approach is susceptible to vagueness and unreliability of the reported figures; thus, vulnerable for informed business and investment decisions. But with the contemporary realities within the global business environment, a shift from the conventional approach becomes inevitable; in which case, organisations increasingly tend to develop models based on knowledge; which brings the human and structural factors at the fore of firms' performance measurement.

Therefore, the non-capitalization of firms' investment in human and structural inputs in their statements of financial position has the tendency of distorting the financial information derived from the published accounts of organizations in Nigeria, particularly the banks whose activities are mostly knowledge-based today. This has triggered arguments among scholars on the veracity of excluding intellectual capital (IC) in the reporting of accounting figures of firms' assets value vis-à-vis their effect on the financial performance of Nigeria banks. For instance, Al-Shubiri (2011) observed that increasing evidence that the drivers of value creation in modern competitive environments lie in a firm's IC rather than its physical and financial capital abounds. Ahuja and Ahuja (2012) also highlighted that an efficient utilization of IC is more crucial for accomplishing success in banking than other industries; asserting that delivering of high quality services by a bank depends on its investment in items related to IC such as its human resources, brand building, systems

and processes. Nuryaman (2015) on his part argues that intellectual capital can create value added for the company; intellectual capacity of the firms will increase investor confidence, so it can have an impact on the increase in value of the company. For Kamal, et al (2016), given the pressure of globalization, high-class human capital today has become a necessity and not merely opulence; in essence therefore, financial sector, especially banks, needs a new generation of professional executives who are more customer-centric, technology-savvy, more highly qualified, flexible and agile with skill sets that are now more comprehensive than previously; as such, Hashim, Osman and Alhabshi (2015) observed that intellectual capital is no less important than capital investments for companies in developing countries in order to create value and sustainable advantages.

In the face of the foregoing, one wonders why the key elements of intellectual capital are not capitalized in the assets base of an organization. Would firms in general and banks in particular not fare better in their financial performance if their human and structural inputs are capitalized in the assets base of the organization? These concerns form the thrust of this study; hence, the study evaluates the effect of intellectual capital on the financial performance of quoted banks in Nigeria, using the Ante Pulic value added intellectual coefficient (VAIC) model.

OBJECTIVE OF THE STUDY

The main thrust of this study is to investigate the effect of intellectual capital on the performance of quoted deposit money banks in Nigeria. Consequently, the study addresses the following specific objectives:

i. Determining the relationship between capital employed efficiency (CEE) and return on assets (ROA) of quoted Nigerian banks.

ii. Evaluating the effect of human capital efficiency (HCE) on the return on assets (ROA) of the quoted banks in Nigeria.

iii. Examining the relationship between structural capital efficiency (SCE) and the return on assets (ROA) of the quoted banks in Nigeria.

iv. Identifying the combined effect of CEE, HCE and SCE on the return on assets (ROA) of the quoted banks in Nigeria.

Hypothesis of the study

In line with the objectives of the study, the following assertions are made (in null form):

Ho_1: There is no significant relationship between the CEE and ROA of quoted banks in Nigeria.

Ho_2: HCE exerts no significant effect on the ROA of quoted banks in Nigeria.

Ho_3: SCE does not significantly relate with the ROA of quoted banks in Nigeria.

Ho_4: CEE, HCE and SCE have no combine significant effect on the ROA.

LITERATURE REVIEW

Conceptual Framework

The Concept of Intellectual Capital

Intellectual capital (IC) represents the value of a firm's investments of resources other than the tangible assets in its operations and activities towards the realization of the set organizational goal. Consequently, Nuryaman (2015) views IC as a firm's intangible assets which can be knowledge, information, and experience owned by human resources and firm's organization (Stewart 1997 in Nuryaman, 2015). In a typical business organization, IC comprises of the collection and alignment of the knowledge, experience, invention, innovation, market share and communities

that may affect the firm's bid to realize a set objective. Stewart (1998), cited in Gruian (2011), views intellectual capital as consisting of the knowledge owned by employees and knowledge built in equipment and networks that participate in the production process.

Intellectual capital can also been defined as the difference between a firm's market value and the cost of replacing its assets. It is those things that we normally cannot put a price tag on, such as expertise, knowledge and a firm's organizational learning ability. Thus, a firm's market value is equal to the book value plus firm's intellectual capital. IC encompasses much more than patents, copyrights and other forms of intellectual property; it is the sum and synergy of a company's knowledge, experience, relationships, processes, discoveries, innovations, market presence and community influence. In a nutshell, IC is "knowledge that is of value to an organization," (Akpinar & Akdemir, 2014).

Burgman et al (2005) in Kamal, et al (2016) viewed intellectual capital as an asset which represents all the stocks of what matters to the creation of enterprise value of an enterprise that is not represented on its traditional balance sheet as monetary or physical assets. Thus, intellectual capital is the sum of everything everybody in the organization knows that gives a competitive edge in the market place. Anuonye (2015) holds that intellectual capital represents all human efforts in the form of intangible assets which can be measured and through which organizations can gain competitive advantage.

The concept of intellectual capital and its measurement has been severally discussed by many scholars. However, the Value Added Intellectual Coefficient (VAIC™) model by Ante Pulic remains one of the successful efforts which has attracted many scholars and has formed the basis of numerous research works (Vishnu, 2015); this present study also toes the same line.

The VAIC™ model as proposed by Pulic in 1998 (Pulic, 2004), measures the efficiency of Intellectual Capital and its components by using accounting data of a firm. In VAIC™, two components of IC were stipulated; namely, Human Capital (HC) and Structural Capital (SC). Pulic believes that firms' performance is premised on the efficiency of the HC and SC in addition to the efficiency of physical and financial capital of a firm, otherwise referred to as Capital Employed (CE) in the model. In VAIC™, 'Value Added' (VA) was used as a benchmark of success of a business entity.

A. Human Capital

Human capital, according to Akpinar and Akdemir (2014) is defined as the knowledge, skills, experience, intuition and attitudes of the workforce. Intellectual capital can be increased by increasing the capacity of each worker. The authors opine that human capital is the knowledge, skill and capability of individual employees providing solutions to customers. For Gruian (2011), Human Capital (HC) refers to the knowledge, skills and abilities of employees, i.e. professionalism, efficiency and effectiveness in improving business productivity. HC is the firm's collective capability to extract the best solutions from the knowledge of its people. It is important because it is a source of innovation and strategic renewal, whether it is from brainstorming in a research lab, daydreaming at the office, throwing out old files, re-engineering new processes, improving personal skills or developing new sales leads (Akpinar & Akdemir, 2014).

HC, according to Kamal, et al (2016:579) is the health, knowledge, motivation and skills, the attainment of which is regarded as an

end in itself because they yield fulfillment and satisfaction to the possessor; it also referred to the employee competence in creating both tangible and intangible assets by contributing in the continuous generation of knowledge and ideas.

Human Capital is also seen as the value of all the workers in the organization with all the attendant rewards attached to their utilization; these capabilities are peculiar to the workers because they go away with them whenever they leave the organization (Verguwen & Alem, 2005; Roos & Roos, 1997 cited in Anuonye, 2015:89). In essence, human capital is the generic term for the competences, skills, trainings and motivation of the employees which comprises of all the qualities and professional skills the worker brings into the organization. HC is owned by the worker and leaves along with him whenever he leaves the organization. Namvar, Fathian, Gholamin and Akhavan (2011) argue that human capital is at the heart of intellectual capital measurement.

B. Structural Capital

Structural capital consists of concepts, models, patents, computers and system created by employees, yet owned by the organization (Hashim, Osman & Alhabshi, 2015). An organization being a social system exists from the combination of some internal and inter-related structure and people. Once the organization enhances its technology, develops process and establishes other internal initiatives, structural capital will improve. Therefore, structural capital means the ability of organization to accommodate their customers demand (Hashim, Osman & Alhabshi 2015). Recent evidence suggests that a good organization structure, together with skilled employees providing efficient and quality service will cause greater

performance of an institution (Amrizah & Nawal, 2013).

According to Gruian (2011:267), structural capital (SC) is a component of IC formed within the company and consists of specific policies, procedures, processes, working environment, all information and know-how, whatever their nature - technology (patents, trademarks, designs), economic (information on market prices, credit, taxes), legal (laws, ordinances and other laws relating to company), management system.

Anuonye (2015) argues that structural capital is the supportive infrastructure that enables human capital to function in an organization and is owned by an organization and remains with it even when the worker leaves the organization. Structural capital (according to Anuonye, 2015) consists of trademarks, patents, formulas, management style, company reputation, image, corporate culture, networking, mission, vision. Namvar, et al (2011) observed that it is the difference between non-thinking and thinking resources that use very different management methods such as culture, organizational processes, technology, absorptive capacity and information systems to achieve corporate goals. This form of capital is of strategic importance in the corporate planning and growth of any organization.

Akpinar and Akdemir (2014) highlighted the following four elements of the structural capital of a firm:

➢ **Systems** - The way in which an organization's processes (information, communication, decision-making) and outputs (products/services and capital) proceed.

➢ **Structure** - The arrangement of responsibilities and accountabilities that defines the position of and relationship between members of an organization.

➢ **Strategy** - The goals of the organization and the ways it seeks to achieve them.

➢ **Culture** - The sum of individual opinions, shared mindsets, values, and norms within the organization.

C. Capital Employed

Amaefule (2015) defines capital employed as shareholders fund plus long-term loans plus current liabilities. Kamal, et al (2016) defined it as the total capital harnessed in a firm's fixed and current assets. Therefore, if capital employed is viewed from the funding side of the statement of financial position of a business entity, it equals to stockholders' funds or equity capital plus long-term liabilities or loan-term capital; however, if it is viewed from the asset side, it equals to fixed assets plus working capital (Kamal, et al, 2016). Thus, capital employed represents the value of the assets that contribute to a company's ability to generate revenue and it is also known as operating assets.

THE CONCEPT OF FINANCIAL PERFORMANCE

Gruian (201) asserts that the financial performance of a firm is the natural consequence of operational performance, understood as the final result of all corporate efforts. Financial performance is the change of the financial state of an organization as the consequence of the implementation of managerial decisions made by the players in an organization. It provides feedback on the success of pursuing organizational objectives. Adebimpe and Ekwere (2015) noted that this can be measured by looking at organizational profitability and efficiency such as operating profit, return on investment and return on assets; and organizational size which is measured by sales level and cash flows.

Al-Matari, Al-Swidi and Fadzil (2014) enumerated the following as measures of a firm's financial performance: Return on Assets (ROA), Return on Equity (ROE), Tobin-Q, Profit Margin (PM), Earnings Per Share (EPS), Divided Yield (DY), Price-Earnings Ratio (PE), Return on Sales (ROS), Expense to Assets (ETA), Cash to Assets (CTA), Sales to Assets (STS), Expenses to Sale (ETS), Abnormal returns; annual stock return, (RET), Operating Cash Flow (OCF), Return on Capital Employed (ROCE), Labor productivity (LP), Critical business Return on Asset (CROA), Cost of Capital (COC), Market Value Added (MVA), Operation Profit (OP), Return on Investment (ROI), Market-to-book value (MTBV), Log of market capitalization, LOSS, Growth in Sales (GRO), Stock Repurchases, Sales Per Employee (SPE), Return on revenue (ROR), Output per staff (OPS), Cost Per Service Provided (CPSP) and Cost per Client Served (CCS), Superior to cumulative abnormal returns (CARs), Profit Per Employee (PPE) and Return on Fixed Assets (ROFA) etc.

In this study, financial performance of the selected banks is measured with their return on assets (ROA).

RETURN ON ASSETS (ROA)

Return on Assets measures the company's ability to utilize its assets in order to make profit. Dwi (cited in Nengzih, 2015) asserts that this ratio measures the level of return on the investments made by the company using all the funds (assets) it possessed. ROA is the income a company generates during normal operation divided by its total assets. This calculation determines how well a

company is using its assets to generate income (Nengzih, 2015). Niresh and Velnampy (2014) assert that firms' return on assets is calculated with the following formula: Earnings Before Interest & Tax (EBIT) divided by Total Assets and multiplied by 100. Lubyanaya, Izmailov, Nikulina and Shaposhnikov (2016) posit that ROA measures the overall effectiveness of management in generating profits with its available assets; thus, the higher the ROA, the better for the organization. They highlighted the following formula for calculating ROA: Return on Total Assets = Net Profit After Taxes / Total Assets.

THEORETICAL FRAMEWORK

This study greatly shares from the postulations of Resource-Based Theory (RBT). The RBT sees firms as being collections of physical and intangible assets and capabilities (Al-shubiri, 2011). It thus postulates a contrasting view from the traditional valuation of a firm as being the worth of its tangible assets. This contrast also leads to a different view of corporate performance. Advocates of resource-based theory, for example, suggest corporate performance is a function of the effective and efficient use of the respective tangible and intangible assets of the firm.

The resource-based theory holds that organizations that own strategic resource have important competitive advantages over organizations that do not. The theory believes that such resources of an organization in tangible form (e.g. plant, trucks, cash, inventories, etc) are not considered to be strategic resources because an organization's competitors can readily acquire them. Instead, a resource is strategic to the extent that it is valuable, rare, difficult to imitate and non-substitutable. They are valuable resources in that they aid in improving the organization's effectiveness and efficiency while neutralizing the opportunities and threats of competitors. They are rare resources in that they are held by few or no other competitors. They are difficult-to-imitate in that they often involve legally protected intellectual property such as trademarks, brand names, etc. They are non-substitutable resources in that they exist when the resource combinations of other firms cannot duplicate the strategy provided by the resource bundle of a particular firm. This study adopts resource-based theory because, the postulations of the theory is in tandem with the core objective of this study; thus, the theory is considered appropriate to form the theoretical basis of this study.

EMPIRICAL REVIEW

The literature provides evidence of empirical studies existing around the subject matter in view. Some such reviewed works are given as follows:

Yu, et al (2010) Carried out an empirical study of the impact of intellectual capital performance on business performance using audited accounting data collected from the constituent companies of Hang Seng Index in Hong Kong Stock Exchange between 2005 – 2008. Four accounting ratios: market-to-book value (MB), return on assets (ROA), asset turnover (ATO) and return on equity (ROE) were used as proxies for measuring business performance. VAIC™ and its associated indexes, and the accounting ratios of sample companies were subjected to regression analysis for the detection of their associations. Results show no conclusive evidence to support the associations between VAIC™ and the four financial indicators.

Al-Shubiri (2011) tested the relationship between the efficiency of value added intellectual coefficient and corporate performance at commercial banks in Amman Stock Exchange (ASE). The study Used 14 commercial banks data drawn from Amman Stock Exchange (ASE) reporting period of 2002-2007. Regression analysis was employed in analyzing the data. The study found that in overall, intellectual capital has positive and significant relationships with market value and that there is a significant relationship between financial performance (ROA, ROE, and EP).

Gruian (2011) studied the influence of intellectual capital on Romanian companies' financial performance using the regression method via the VAIC method. Data used in the study were collected from 41 companies listed at Bucharest Stock Exchange. Results from the regression analysis supported the proposed alternative hypothesis of the study, proving that there is a significant positive correlation between intellectual capital and financial performance.

Rahman and Ahmed (2012) investigated associations, first, between a firm's intellectual capital and market value, and second, between a firm's intellectual capital and financial performance in the context of Bangladeshi companies. The study selected three companies from different industries, namely banking, textiles, and pharmaceuticals. This was investigated through applying Ante Pulic's (1998) framework of Value Added Intellectual Coefficient (VAIC) via regression analysis. Results show that the correlations between the intellectual capital coefficients are mixed such that whereas human capital coefficient and capital employed coefficient have weak negative correlation (r=-0.289), the correlation of structural capital coefficient with human capital (r=0.35) and capital employed coefficients (r=.0129) are weak positive.

Sumedrea (2013) analyzed the structure of the intellectual capital and its influence on the economic performances based on the VAIC model. Data used in the study were sourced from 62 non-financial companies listed on Bucharest Stock Exchange for the period of 2010-2011. The analyses of the study were carried using regression models and results indicated that, in crisis time, the development of companies is influenced by the human and the structural capital, while profitability is additionally linked to the financial capital through the value added intellectual capital coefficient. In other words, the study finds that analyzing the link between the intellectual capital and the company growth reveals that the dynamics of the business is influenced primarily by the human and structural capital and not essentially by the financial capital (i.e. capital employed).

Al-Musali and Ku-Ismail (2014) investigated the impact of intellectual capital on financial performance of listed banks in Saudi Arabia using value-added intellectual coefficient (VAIC) methodology. The authors collected data from all the listed banks in Saudi Arabia during 2008 to 2010 period. Regression analyses results show positive association of intellectual capital (when VAIC components are taken aggregately) with bank financial performance indicators (ROA and ROE). However, when VAIC is split into its components, the relationships between these components and bank financial performance indicators vary. Precisely, the results show a significant positive relationship between human capital efficiency (HCE) and both financial performance indicators of banks in Saudi

Arabia while in contrast; structural capital efficiency (SCE) showed insignificant associations with financial performance indicators. In terms of capital employed efficiency (CEE), a significant positive relationship was found between CEE and only banks` ROE.

Hashim, Osman and Alhabshi (2015) investigated the relationship between six elements of intellectual capital such as human capital, structural capital, customer capital, social capital, technological capital and spiritual capital with organizational performance in Malaysia. The study utilized primary data drawn through a structured questionnaire distributed to higher-level management personnel working in various organizations in Malaysia with sample size of 187 respondents selected randomly based on non-probability convenience sampling. Data collected were analyzed using the Multiple Regression Analysis Model. The results revealed that intellectual capital has significant influence on the organizational performance on an aggregate note; but when the intellectual capital proxies are disaggregated, results showed that among the six predictors entered into the regression model, four (comprising customer capital, technological capital, spiritual capital and social capital) made statistically significant contributions (that is having a positive relationship with organizational performance); while the relationship between human capital and structural capital towards organizational performance was found to be insignificant.

Anuonye, (2015) studied intellectual capital measurement: using the earnings per share model of quoted insurance companies in Nigeria. The study utilized both secondary and primary data generated through purposive sampling technique in which case 150 workers were used as the target population selected from the human resources, accounts and marketing departments of 18 active insurance companies. Regression analysis was used in analyzing the data. Findings from the primary data analysis revealed that the effect of human capital was negatively insignificant on EPS while result from the secondary data showed that structural capital had insignificant negative effect on EPS.

Nuryaman (2015) sought to determine the effect of intellectual capital on the firms' value with companies' financial performance (profitability) as an intervening variable. Data for the study were collected from 93 manufacturing companies listed in Indonesia Stock Exchange. The analysis embraced Pulic model of intellectual capital with regression models to establish the relationship between the intellectual capital proxies and that of the financial performance of the firms. The results showed that: (a) the intellectual capital has a positive effect on firm value; (b) intellectual capital has a positive impact on profitability.

Kamal, et al (2016) determined the relationship between the level of intellectual capital efficiency in terms of Human Capital, Capital Employed and Structural Capital (VAIC) with the commercial banks performance in Malaysia from the traditional accounting based perspective that comprises of ROA and ROE. The study employed regression analysis in establishing the relationship between the VAIC variables and the proxies; two proxies of bank performance (namely, ROA and ROE). Overall result of the analysis revealed that there is significance impact of intellectual capital variables namely Value Added Capital

Employed (VACA), Value Added Human Capital (VAHU) towards bank performance.

Virender (2017) examined the effect of intellectual capital on financial performance of Indian public and private sector banks. Data used in the study were collected from 49 public and private sector banks out of which 40 were quoted in Indian Stock Exchanges (Bombay Stock Exchange and National Stock Exchange). Regression analysis was employed in which case two financial performance variables (ROA and ROE) were regressed on the VAIC indices. Results show that there is a significant positive association between VAIC and both financial performance indicators- ROE and ROA. Individually however, the result showed significant positive relationship between CEE and ROE; HCE and ROE while there is an insignificant association between SCE and ROE. On the other hand, results also show significant positive relationship between CEE and HCE with ROA while SCE has insignificant association with ROA of banks in India.

Ozkan, Cakan and Kayacan (2017) analyzed the relationship between the intellectual capital performance and financial performance of Turkish banking sector. 44 banks operating in Turkey between 2005 and 2014 constituted the population of the study. The intellectual capital performance of banks was measured through the value added intellectual coefficient (VAIC) methodology while the banks' financial performance was measured with return on assets (ROA). Data used in the study were obtained from the statistical reports uploaded to the websites of the Banks Association of Turkey (BAT) and the Participation Banks Association of Turkey (PBAT) and were analyzed using regression analysis. Results of the analysis showed that

there is a positive but statistically insignificant relationship between VAIC and the financial performance indicator (ROA), which implies that VAIC has no impact on the profitability of banks. It further revealed that intellectual capital of the Turkish banking sector is primarily affected by human capital efficiency coefficient (HCE). On the other hand, capital employed efficiency coefficient (CEE) and structural capital efficiency coefficient (SCE) is less effective in creating value in the banking sector compared to HCE.

GAP IN LITERATURE

From the empirical review carried out, it is evident that there is seemingly dearth of literature on the subject matter of this study with regards to Nigeria as more than 90% of the empirical works reviewed were foreign-based. Only a study by Anuonye, (2015) was at our disposal during the review. Yet, Anuonye's work basically hinged on primary data which has been argued by many scholars as being susceptible to bias. Besides, that study measured performance with earnings per share (EPS) alone and was based on insurance companies. Our study fully utilized secondary data in its development and measures financial performance with ROA; it also focuses on quoted banks on the Nigeria Stock Market. The essence of this study therefore is not in doubt as it will go a long way in bridging this obvious gap in intellectual capital literature as it bothers on firms' performance with respect to Nigeria.

MATERIALS & METHODS

This study employed ex-post facto research design in its development in which case existing data were drawn from the on-line published accounts of three (3) selected DMBs (namely; Zenith bank plc, First bank Ltd. and Guaranty Trust bank) quoted on the

floor of the Nigeria Stock Exchange. The choice of the three banks is premised on the report of the Nigeria Deposit Insurance Corporation (NDIC) 2016 which placed the banks as the top three banks with shareholders fund of N500.67 billion, N459.99 billion and N430.98 billion respectively. In this study, intellectual capital is proxied with the components of the value added intellectual coefficients (VAIC™) model as proposed by Pulic in 1998 (Pulic, 2004) while banks' financial performance (the study's dependent variable) was measured with return of assets (ROA). The VAIC model as used in this study measures the efficiency of Intellectual Capital and its components by using accounting data of banks for period of ten (10) years (2007 – 2016). The VAIC™ model proposed three components of IC namely, physical/financial capital otherwise referred to as Capital Employed (CE), Human Capital (HC), and Structural Capital (SC) with a measure of the value added (VA) used as a benchmark of success (or value relevance) of a business entity.

Consistent with most existing literature, mathematically, the VAIC is computed as follows:

$$VAIC = CEE + HCE + SCE \quad .... (1)$$

Where: CEE represents Capital Employed Efficiency;
 HCE represents Human Capital Efficiency; and
 SCE represents Structural Capital Efficiency.

But, $\quad CEE = VA/CE \quad .... (2)$
 $HCE = VA/HC \quad .... (3)$
 $SCE = SC/VA .... (4)$
 $SC = VA - HC \quad .... (5)$
 $VA = OP + EC + D + A \quad .... (6)$
 Where: CE is capital employed measured with the book value of net assets.
 HC is the total human (personnel) costs/expenses.
 OP is the operating profits represented with gross earnings.
 EC is the Total Employee Expenses (Salaries and other benefits/emoluments).
 D is Depreciation of fixed assets.
 A is Amortization of intangible assets.

Regression analysis was employed with the aid of SPSS version 21 in analyzing the effect of intellectual capital on the financial performance indicator (ROA) of the three selected banks for the period of 10 years; thus giving a total of 30 observations. The specified regression model is as follows:

$$ROA = ß + \lambda_1 CEE + \lambda_2 HCE + \lambda_3 SCE + U \quad .... 7$$

Where: ROA represents Return on Assets of the selected banks for the given periods.
 ß represent the slope (intercept) of the regression line.
 $\lambda_1, \lambda_2, \lambda_3$ represent the coefficients of the independent variables.
 U represents the error term or stochastic variable.

Results and Discussions

Data used in the analysis of the study are presented as annexure. The analysis results are presented as follows:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.766[a]	.587	.539	.00813

a. Predictors: (Constant), SCE, CEE, HCE

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	.002	3	.001	12.314	.000[b]
1	Residual	.002	26	.000		
	Total	.004	29			

a. Dependent Variable: ROA

b. Predictors: (Constant), SCE, CEE, HCE

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	.035	.022		1.554	.132
1	CEE	-.022	.009	-.368	-2.389	.024
	HCE	.003	.001	.775	3.492	.002
	SCE	-.014	.036	-.095	-.386	.703

a. Dependent Variable: ROA

Source: *SPSS version 21 statistical analysis result, 2018*

From the result of the analysis, the R2 is above average at 59% indicating that the change in the dependent variable (financial performance measured with ROA) is caused by changes in the independent variable, IC, by approximately 59% while the rest 41% percent change in the banks' ROA is caused by other variables not captured in the model. Result also revealed that capital employed efficiency (CEE) and structural capital efficiency (SCE) each exerts negative influence on the banks' financial performance while the human capital efficiency exerts positive influence (effect) on the banks' financial performance. These are indicated in the values of the coefficients $(\lambda_1, \lambda_2, \lambda_3)$ -0.022, 0.003 and -0.014 for CEE, HCE and SCE respectively. The implication is that only the efficiency of human capital shows statistical evidence of positive effect on banks' performance while the rest two measures of IC indicated negative effect on

the financial performance of the banks. However, to ascertain the significance of the results and to specifically affirm or reject the assertions of the null hypotheses formulated in the study, the analysis results also revealed that there is significant relationship between the CEE and ROA at t-sig = 0.024 (i.e. $P < 0.05$); HCE exerts significant effect on the ROA with t-sig = 0.002 (i.e. $P < 0.05$) and SCE does not significantly relate with the ROA with t-sig = 0.703 ($P > 0.05$). Aggregately, result also revealed that the intellectual capital variables exert combined significant effect on the ROA as indicated in the value of F-sig = 0.000 ($P < 0.05$).

With these results, the alternative hypothesis of the first, second and fourth hypotheses of the study are affirmed while their associated null hypotheses are rejected. However, the null hypothesis of the

third hypothesis of the study is accepted, thus discarding the alternative hypothesis.

Summarily, this study finds the following:

1. There is significant negative relationship between the efficiency of capital employed (CEE) and the return on assets of the selected banks. This result shows consistency with Rahman and Ahmed (2012) to the extent of their finding that capital employed coefficient has negative correlation but disagrees with their study to the extent that the negative correlation is insignificant (weak).

2. HCE exerts significant positive effect on the ROA of the selected banks. This result aligns with Sumedrea (2013) who, based on his finding, asserted that analyzing the link between the intellectual capital and the company growth reveals that the dynamics of the business is influenced primarily by the human and not essentially by the financial capital (i.e. capital employed). This result also agrees with Al-Musali and Ku-Ismail (2014) but disagrees with Rahman and Ahmed (2012) who found that human capital coefficient has week negative correlation. It also falls apart with Kamal, et al (2016).

3. There is negative but insignificant relationship between SCE and ROA of the selected banks.This results shows consistency with Al-Musali and Ku-Ismail (2014) to the extent of their findings that structural capital efficiency (SCE) showed insignificant associations with financial performance indicators. It also agrees with Anuonye, (2015) who found structural capital to have insignificant negative effect on financial performance (EPS). The finding of Virender (2017) is also in agreement with our findings.

4. The intellectual capital variables have combine significant effect on the ROA of the selected banks. This finding shows consistency with Al-Shubiri (2011) who found that in overall, intellectual capital has positive and significant relationships with financial performance. Our finding in this regard also agrees with Gruian (2011) who found that there is a significant positive correlation between intellectual capital and financial performance. It is also in agreement with Nuryaman (2015). It however disagrees with Yu, et al (2010) who found no conclusive evidence to support the associations between VAIC™ and the financial indicators and Ozkan, Cakan and Kayacan (2017) who found statistically insignificant relationship between VAIC and the financial performance indicator (ROA).

CONCLUSION

Based on the findings of this study, it is thus concluded that in analyzing the link between the intellectual capital and banks' financial performance, the dynamics of the business is positively influenced primarily by the human capital and not essentially by the physical capital (i.e. capital employed). Thus, pursuing the efficiency of the physical capital (capital employed) exerts negative influence on the financial performance of the bank, but pursuing the efficiency of human capital invariably triggers improved financial performance of the bank. It is the submission of this paper that intellectual capital exerts significant influence on the financial performance of Nigerian banks generally but the human capital aspect of intellectual capital influences this significant positive influence of IC on banks' financial performance.

RECOMMENDATIONS

Based on the findings and conclusion, this study therefore recommends that:

i. The capitalization of human capital in the assets-base of banks has become inevitable in order to enhance the financial performance of banks in Nigeria;

ii. Financial reporting standard setters in Nigeria (the Financial Reporting Council of Nigeria) must ensure the promotion of accounting standards and approaches that improve value relevance of the reported accounting figures;

iii. Human input and costs should be capitalized in the assets-base of the banks reported under their statement of financial position, so as to give a clear impression of the real value of a bank in our today's rapidly technological-driven competitive business environment.

iv. Greater attention should be paid on human capital development and employee satisfaction rather than paying greater attention to structural capital.

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Appendix

Table 1:   Zenith Bank of Nigeria Plc Data

Year	Value Added (VA) ₦'000	Book Value of Net Assets (BVNA) (Capital Employed) ₦'000	Employees Costs (Human Capital) ₦'000	Structural Capital (SC) ₦'000	Return on Assets (ROA)	Total Assets (TA) ₦'000	Net Profit (NP) ₦'000
2007	107409286	112833323	13733642	93675644	0.020	883940926	17509145
2008	230033768	338484138	31562720	198471048	0.028	1680302005	46524991
2009	331116000	328282000	67848000	263268000	0.012	1573196000	18365000
2010	211974000	350414000	31428000	180546000	0.019	1789458000	33335000
2011	271112000	372017000	44605000	226507000	0.019	2169073000	41301000
2012	333731000	438003000	44565000	289166000	0.039	2436886000	95803000
2013	377998000	472622000	56864000	321134000	0.029	2878693000	83414000
2014	448984000	512707000	67848000	381136000	0.027	3423819000	92479000
2015	468682000	546946000	62428000	406254000	0.026	3750327000	98784000
2016	527082000	616353000	62235000	464847000	0.028	4283736000	119285000

Source: Online published Annual Reports of Zenith bank Plc for various years

Table 2: First Bank of Nigeria Plc Data

Year	Value Added (VA) ₦'000	Book Value of Net Assets (BVNA) (Capital Employed) ₦'000	Employees Costs (Human Capital) ₦'000	Structural Capital (SC) ₦'000	Return on Assets (ROA)	Total Assets (TA) ₦'000	Net Profit (NP) ₦'000
2007	45842000	77351000	18461000	27381000	0.024	762881000	18355000
2008	73644000	339847000	31305000	42339000	0.026	1165461000	30473000
2009	234791000	351054000	43841000	190950000	0.020	1772456000	35074000
2010	264840000	345922000	47313000	217527000	0.016	2037209000	32123000
2011	339494000	373572000	54264000	285230000	0.009	2471438000	23052000
2012	383993000	372176000	60447000	323546000	0.026	2770674000	71144000
2013	402433000	350709000	53287000	349146000	0.018	3246579000	59365000
2014	484048000	423047000	63012000	421036000	0.023	3490871000	79351000
2015	495792000	459747000	63672000	432120000	0.000	3332375000	37000
2016	553165000	486087000	63392000	489773000	0.014	3557782000	50072000

Source: Online published Annual Reports of First bank Plc for various years

Table 3:   Guaranty Trust Bank Data

Year	Value Added (VA) ₦'000	Book Value of Net Assets (BVNA) (Capital Employed) ₦'000	Employees Costs (Human Capital) ₦'000	Structural Capital (SC) ₦'000	Return on Assets (ROA)	Total Assets (TA) ₦'000	Net Profit (NP) ₦'000
2007	88919470	161053064	8026365	80893105	0.030	717999797	21489885
2008	107126767	179550725	10520939	96605828	0.031	918278756	28073252
2009	171125488	188475788	14120149	157005339	0.023	1019911536	23848061
2010	158730645	205167806	14469774	144260871	0.034	1066762763	36511628
2011	197283118	234180056	17851900	179431218	0.034	1523527545	51653251
2012	233151730	288153630	20774540	212377190	0.053	1620317223	85263826
2013	250498749	329646681	19625269	230873480	0.045	1904365795	85545510
2014	287333841	369530326	21036543	266297298	0.044	2126608312	93431604
2015	300391495	405608348	20727835	279663660	0.041	2277629224	94308123
2016	399351929	476917853	20704772	378647157	0.049	2613340074	126836792

Source: *Online published Annual Reports of GT bank Plc for various years*

COMPUTATION OF VALUE ADDED (VA)

Table 4: Computation of VA for Zenith Bank

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Gross Earnings	89193780	190075034	254147000	169370000	214980000	279042000	311275000	372015000	396653000	454808000
Employee Exp.	13733642	31562720	67848000	31428000	44605000	44565000	56864000	67848000	62428000	62235000
Dep./Amortiz.	4481864	8396014	9121000	11176000	11527000	10124000	9859000	9121000	9601000	10039000
Total (VA)	107409286	230033768	331116000	211974000	271112000	333731000	377998000	448984000	468682000	527082000

Source: *Online published Annual Reports of Zenith bank Plc for various years via Excel Computations*

Table 5: Computation of VA for First Bank

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Gross Earnings	22097000	38020000	185189000	209186000	275629000	313821000	339320000	410648000	421227000	478232000
Employee Exp.	18461000	31305000	43841000	47313000	54264000	60447000	53287000	63012000	63672000	63392000
Depreciation	3300000	4319000	5761000	7972000	8517000	9169000	9164000	9741000	9563000	9210000
Amortization	1984000	-	-	369000	1084000	556000	662000	647000	1330000	2331000
Total (VA)	45842000	73644000	234791000	264840000	339494000	383993000	402433000	484048000	495792000	553165000

Source: *Online published Annual Reports of First bank Plc for various years via Excel Computations*

Table 6: Computation of VA for Guaranty Trust Bank

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Gross Earnings	77464019	93017258	151698107	138347028	172600951	204324447	221600284	249361051	268876290	365916859
Employee Exp.	8026365	10520939	14120149	14469774	17851900	20774540	19625269	21036543	20727835	20704772
Dep./Amortiz.	3429086	3588570	5307232	5913843	6830267	8052743	9273196	16936247	10787370	12730298
Total (VA)	88919470	107126767	171125488	158730645	197283118	233151730	250498749	287333841	300391495	399351929

Source: *Online published Annual Reports of GT bank Plc for various years via Excel Computations*

Table 7: Data Used For Analysis

YEAR	BANK	CEE	HCE	SCE	ROA
2007	Zenith	0.952	7.821	0.872	0.02
2007	First	0.593	2.483	0.597	0.024
2007	Guaranty Trust	0.552	11.078	0.91	0.03
2008	Zenith	0.68	7.288	0.863	0.028
2008	First	0.217	2.352	0.575	0.026
2008	Guaranty Trust	0.597	10.182	0.902	0.031
2009	Zenith	1.009	4.88	0.795	0.012
2009	First	0.669	5.356	0.813	0.02
2009	Guaranty Trust	0.908	12.119	0.917	0.023
2010	Zenith	0.605	6.745	0.852	0.019
2010	First	0.766	5.598	0.821	0.016
2010	Guaranty Trust	0.774	10.97	0.909	0.034
2011	Zenith	0.729	6.078	0.835	0.019
2011	First	0.909	6.256	0.84	0.009
2011	Guaranty Trust	0.842	11.051	0.91	0.034
2012	Zenith	0.762	7.489	0.866	0.039
2012	First	1.032	6.353	0.843	0.026
2012	Guaranty Trust	0.809	11.223	0.911	0.053
2013	Zenith	0.8	6.647	0.85	0.029
2013	First	1.147	7.552	0.868	0.018
2013	Guaranty Trust	0.76	12.764	0.922	0.045
2014	Zenith	0.876	6.617	0.849	0.027
2014	First	1.144	7.682	0.87	0.023
2014	Guaranty Trust	0.778	13.659	0.927	0.044
2015	Zenith	0.857	7.508	0.867	0.026
2015	First	1.078	7.787	0.872	0
2015	Guaranty Trust	0.741	14.492	0.931	0.041
2016	Zenith	0.855	8.469	0.882	0.028
2016	First	1.138	8.726	0.885	0.014
2016	Guaranty Trust	0.837	19.288	0.948	0.049

Source: *Deductions from table 1, 2 & 3*