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INTELLECTUAL CAPITAL AND FINANCIAL PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA

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Abstract
In today's economy, intellectual resource is becoming increasingly significant as successful companies tend to posses characteristics that continually innovate, attempting new technologies and emphasize on skills and knowledge of their employees. With knowledge being the new engine of corporate development, the aim of this study is to examine the relationship between the intellectual capital namely human capital efficiency (HCE), structural capital efficiency (SCE) and capital employed efficiency (CEE) on banks performance, specifically return on asset (ROA). This study used adopted a value added intellectual capital (VAIC) model. The secondary data used covered seven deposit money banks in Nigeria for a period of four years; from 2010 to 2013.Multiple regression was used in analyzing the data. The empirical results suggest that HCE, SCE, CEE and VAIC have no significant relationship with ROA. Based on the findings, the study recommends that banks in Nigeria should invest more in Human, Structural and physical Capital in order to increase their performance.

Keywords: Capital Adequacy, Capital Efficiency, Capital Employed, Nigerian Banks, Return on Assets and Structural Capital.

1. Introduction

In a knowledge-based and an increasingly more competitive economy, a company's intellectual capital (IC) is assumed to be a fundamental determinant of its success. Intellectual capital of a company is the combination of knowledge-based assets and intangible assets. This includes its patents brand names, employee's skills, trade secret, technologies and information about consumers and suppliers that have been utilized in order to create wealth by producing a higher value asset (Stewart, 1997). In the last few decades, the importance of intellectual capital has increased tremendously specifically in the developed countries. This is because the world at large has experienced a drastic change in the form of emerging wealthy business and nations (Arenas & Lavandors, 2008). Both companies and government have shifted their focus from tangible assets to intellectual capital for sustainable competitive advantage of business and nation (Sarmadi, 2013). The reason for paradigm shift is that, IC assets contribute to shareholders' value more the tangible assets (Salman, Tayib & Mansor, 2013).

Andrew (2015) and Aliyu (2015) are of the opinion that an efficient and effective intellectual capital is more crucial in achieving success in banking sector than other sectors. This is based on the assumption of high quality services that are expected from banks, which are depending mainly on its investment in IC such as its human resources, brand building, systems and processes. The banking sector, in any country plays a pivotal role in setting the economy in motion and its development process. Banks promote growth and success of business in both developed and developing countries alike (Ekwe, 2013). In addition, Kamath (2007) stated that the banking sector is an ideal area for intellectual capital research because the banking sector is intellectual and its employees are (intellectually) more homogeneous than those in other economic sectors.

Banking sector is described as knowledge-intensive, skills-based and relationship-rich industry (Muhammad & Ismail, 2009). Typically banking operations involve close interaction with customers and rely, to a larger extent, on the integration of information and communication technologies for the development of new products and services (Mention & Bontis, 2013). As a result, although physical capital is essential for banks to operate, it is the intellectual capital that determines the quality of services provided to customers (Goh, Cahill, & Sidhu, 2010). Furthermore, the importance of intellectual capital is essential for banks to operate. It is the intellectual capital to the banking sector that is exacerbated by the increasing complexity and a more liberal environment that the banks are currently operating which competitiveness depends critically on the quality of human intellectual capital and the ability to leverage on these talents (Muhammad & Ismail, 2009). Due to the competitiveness and dynamism of the current operating environment, intellectual capital efficiency is critical for banks to develop a cutting edge strategy (Joshi, Cahill & Sidhu, 2010).

Despite the importance of intellectual capital among the research community around the world, there have been very few studies that have been conducted in Nigeria. Therefore, the main objectives of this study is to investigate how intellectual capital's components (Human Capital Efficiency, Structural Capital Efficiency and Capital Employment Efficiency) efficiencies can influence selected commercial banks return on assets (ROA) in Nigeria over four years period from 2010 to 2013.

The corresponding hypotheses are i) H_0: There is no significant relationship between Human Capital Efficiency (HCE) and Performance (ROA) of bank in Nigeria. ii) H_0: There is no significant relationship between and Structural Capital Efficiency and Performance (ROA) of bank in Nigeria and iii) H_0: There is no significant relationship between Value Added Intellectual Capital and Performance (ROA) of bank in Nigeria.

2.1 Concept Framework

Intellectual capital is a major contributor to a firm's earnings. There shift from industrial era in which plan and equipment were the core assets to the post-industrial era has confirmed the flow of the current world economy (Flamholtz, 1999). Review of related literature has proved that despite similar compositions of knowledge and its contribution, there is no one consistent definition of intellectual capital (Ahangar, 2011 and Bontis, Keow & Richardson, 2000). According to these earlier promoters, they describe IC as 'profit derived from knowledge' while Roos, Roos, Dragonetti & Edvinson (1997) as the 'totality of knowledge' translated into trademarks, processes and also brands. There exist many contrived definitions because intellectual capital is a multidisciplinary growing research area; many organizations abide by their own individual definitions. Although some authors classified IC as interchangeably; the essence and characteristics of IC remains, therefore preventing one from disqualifying and excluding another. Firstly, IC is an obscure and invisible element. Additionally, it is closely related to knowledge, information, skill and experience. Secondly, it suggests opportunity for growth or development to any enterprise in the future. Thus, accordingly, not all organizational knowledge is IC, rather only knowledge which generates value for the company constitutes IC. Public (2000) developed a suitable method for measuring the intellectual capital, he argued that the market value of the companies is created by capital employed and intellectual capital and that IC is composed of human capital and structural capital. In this method, information about the value creation efficiency is measured by both intangible (human capital and structural capital) and tangible assets of an organization. This method is called value added intellectual capital (VAIC) and is indirectly measuring intellectual capital through the value added efficiency of capital employed (VACE), value added efficiency of human capital (VAHC) and value added efficiency of structural capital (VASC). However there are inherent limitations in the VAIC method but in comparison with other methods its simplicity, intelligibility and reliability make it an ideal method (Maditinos, 2011).

Human Capital (HC) is the value of all the workers in the organization with all the attended rewards attached to their utilization (Verguwen & Alem, 2005). These capabilities are peculiar to the workers because they go away with them whenever they leave the organization (Verguwen & Alem, 2005). Roos, Roos, Dragonetti & Edvinson (1997) viewed human capital is the generic term for the organization which comprises all the qualities and professional skills the worker rings into the organization. HC is owned by the worker and leaves along with him whenever he leaves the organization. Human capital (Namvar, Fathian, Gholamin, & Akhavan, 2011) is at the heart of intellectual capital measurement.

Structural capital refers to the non-human storehouses of knowledge such as databases, data resources, organizational routines, institutions and methods, instructions and rules, form and content of the processes, organizational strategies, and operational programs (Roos, Roos, Dragonetti & Edvinson (1997). Structural capital consists of the existing knowledge in information technology, patents, plans and trademarks (Stewart, 1997). Chen, Zhu, & Xie (2004) believe that structural capital deals with the system and structure of an enterprise. It is a business routine. An enterprise with strong structural capital will create favourable condition to utilize human capital and allow human capital to realize its fullest potential. An appropriate structural capital is expected to provide a suitable environment to share knowledge, improve collectively decrease the time of expecting and increase staff's efficiency (Edvinsson & Malone, 1997).

Financial performance is a criterion which can determine how a firm uses different components of intellectual capital and earns money. It can be considered as an index for firm's health in a specific period of time. It can also be utilized to evaluate the firm in an industry or compare it with other industries and economic sections (Marian, 2011). Many researchers have been conducted to achieve an appropriate criterion to assess firms and manager's performance in order to be confident that the firms and actual investors' benefits are in the same direction. This criterion can be also helpful to obtain a basis for making economic decisions by potential investors and creditors.

2.2 Empirical Studies

The wealth of modern business no longer depend only on physical or tangible assets but on the contrary, depends on the intangible assets. Intellectual capital has been regarded as the back bone of business success (Public, 2004). Several studies have been carried out on intellectual capital and performance. Andrew (2015) investigated the effect of intellectual capital on the performance of banking sector in Malawi. The study used the value added intellectual capital (VOAIC) to measure intellectual capital and analyzed the data collected from the banks financial statements by multiple regression. The result indicates that the sampled commercial banks performance and intellectual capital has a positive relationship.

Olayinka and Uwuigbe (2011) examined the impact of intellectual capital on performance of business in Nigeria collecting data from audited financial statements of companies quoted on the Nigerian stock exchange market. They used multiple regression to analyze the dependent variable (return on assets and return on equity) and independent variable (human, structural and customers capital), the result demonstrated that intellectual capital has a positive and significant relationship with business performance in Nigeria.

Salman, Tayib, and Mansor (2013) accessed the effect of intellectual capital efficiency on companies' financial performance in Nigeria utilizing the data extracted from the audit annual reports of companies quoted on the Nigeria stock exchange and analyzed them using the multiple regression analyses. They found out that intellectual capital and performance of companies have positive relationship.

Mbugua (2014) examined the effect of intellectual capital and performance of banks in Kenya. Data utilized were extracted from financial statements of banks quoted on the Nairobi stock exchange from 2009 to 2013 using multiple regression to analyze the data. The result showed that intellectual capital has a positive effect on performance of the banks in Kenya. Maheran and Ismail (2009) accessed the impact of intellectual capital on performance of financial sectors in Malaysia; the results were based on the data collected from the financial statements of the financial sectors, that is the banking, insurance and brokerage firms. It was found that, intellectual capital has a significant and positive relationship with the performance of banks than in other sectors.

Despite all these positive relationship ascertained by the above scholars, Amitava & Santanu (2012) investigated the relationship between intellectual capital and financial performance of banks in India using the Value Added Intellectual Capital (VAIC) model to measure intellectual capital and return on asset and return on equity as a measure of profitability and productivity of the banks. Multiple regression technique was adopted to analyze the variables; the result indicated that there was a variation relationship between banks performance and intellectual capital.

2.3 Theoretical Framework of Intellectual Capital

So many theories and models have been formulated by various scholars with respect to intellectual capital measurement and application. Present day scholars of intellectual capital accounting have used these theories as bases for their current studies. Some of these are examined below:

Real Option Theory (ROT)

Is the value of opportunities arising from intellectual capital which is based on non-financial assets where the underlying asset is non-tradable. Its value depends on the idea developed by the firm's research and development (R & D) activity, the risk of the R & D activity and the speed with which it is completed and introduced into the market in relations to similar actions of competitors in the same market (Johnson, Neave & Pazderka, 2001). This approach facilitates the interchange of stocks measured in net present value (NPV) with flows of future cash value.

Value Added Intellectual Coefficient (VAIC)

According to Public (1998, 2000, 2004), VAIC measures the value creation efficiency of firms by finding the coefficients of human, structural and capital employed as intellectual capital components of the firms. The VAIC method is based on the assumption that the creation of a company's added value is based on its use of physical capital as represented by the capital employed efficiency (CEE) and the intellectual capital as represented by human capital efficiency (HCE) and structural capital efficiency (SCE).

Intellectual Capital Services' IC-Index

According to Brooking (1998), the IC-Index measures three indices used to aggregate the index into a single index which can be used to compare the same unit over time, or with other business units. The indices can be summarized into a critical review of existing indicators, development of indicators that represent the flows between different intellectual capital categories and the development of a hierarchy of intellectual capital indices.
For the purpose of this study, the Value added intellectual model was utilized.

3. Methodology

The sources of data of this study were the published financial statements of quoted banks in Nigeria. The proxy of performance measure is Return on Asset (ROA). The population of the study is 17 deposit money banks and the sample size is seven (7). The scope of the study is 2010-2013. The data collected were analyzed using multiple regression.

The model: The model proposed by Public is based on the model adopted by VAIC which has been previously utilized to other similar studies.

Independent variables: The present study included four independent variables as i) VACA, indicator of value added efficiency of capital employed, ii) VAHU, indicator of value added efficiency of human capital, iii) VAST, indicator of value added efficiency of structural capital and iv) VAIC, the composite sum of the three separate indicators as value of intellectual capital.

The first step towards the calculation of the above variables is to calculate value added (VA). VA is calculated as Vait= Lit (total interest expenses) + DPit (depreciation expenses) + Dit (dividends) + Tit (corporate tax) + Rit (profits retain for the year). Second, capital employed (CE); human capital (HU) and structural capital (SC) are being calculated: CE = Total assets - intangible assets HU = Total investment on employees-salary, wages, and other employees cost (SC=VA – HU). Finally, VAIC and its three components are being calculated. VACA = VA/CE, VAHU = VA/HU, STVA = SC/VA, VAIC = VACA + VAHU + STVA.

The use of the above measurement methodology is argued to provide certain advantages as follows: i) It is easy to calculate ii) It is consistent iii) It provides standardized measures, thus allowing comparison between industries and countries and iv) Data are provided by financial statements that are more reliable than questionnaires, since, they are usually audited by professional public accountants.

Dependent variables: The present study includes one dependent variable, that is Return on Assets. Return on assets (ROA): ROA = Net income/Total Assets. ROA is an indicator of how profitable a company is in relation to its total assets. It gives an idea as to how efficient the management uses assets to generate earnings.

Model Specification

$ROA_{it} = a + B_1HCE_{it} + B_2CEE_{it} + B_4VAIC_{it} + e$

ROA_{it} = Return on Asset of bank i in year t.
HCE_{it} = Human capital efficiency of bank i in year t
SCE_{it} = Structural capital efficiency of bank i in year t
CEE_{it} = capital employed efficiency of bank i in year t
VAIC = value added intellectual capital of bank i in year t
a = is the intercept
b = is the Beta coefficient
e = error term

4. Statistical Results and Discussion

This section is devoted to the presentation of results from the analysis performed on the data collected. Analyses were carried out with the aid of the Statistical Package for Social Sciences (SPSS) Version 20.

The statistical results show that the relationship between ROA and HCE, SCE, CEE and VAIC is positive. The association is measured in terms of correlation coefficient R which showed 23.7%. The coefficient determination R square is 0.056 which shows that the HCE, SCE, CEE and VAIC explain 5.6% changes in ROA. The coefficient of termination further reveals that majority of the changes in ROA (94.4%) is explained by other independent variables other than HCE, CEE, SCE and VAIC denoting a weak relationship between the explanatory variable and ROA. The Durbin Watson value, D.W = 1.922, is an indication that autocorrelation may not constitute a problem for which we should be worried about (going by the rule of 1.5-2.5).

The beta coefficient shows the relationship between independent variable and dependent variable. The aggression model stated earlier is stated below;

$ROA_{it} = a + B_1HCE_{it} + B_2CEE_{it} + B_4VAIC_{it} + e$

Substituting the computed beta value of the variable in the equation we have, $ROA_{it} = 0.066 + 4.972HCE_{it} + 0.643SCE_{it} + 0.53CEE_{it} – 5.683VAIC_{it} + 0.044$. From equation ii the HCE, CEE, SCE have a positive beta coefficient and influence a positive change in ROA but their combination which gives the VAIC has a negative influence on ROA whenever there is an increase in them. From the result, a unit change in HCE, CEE, and SCE will influence a positive change of 4.972, 0.643 and 0.534 on ROA but a unit change in VAIC will influence a negative change of -5.683.

The calculated t-values of HCE (0.871), CEE (0.666) and SCE (0.643) showed a positive effect on the ROA while t-value of VAIC (-0.885) showed a negative effect on the ROA. The t-significant value for HCE, CEE, SCE and VAIC indicates that there is no significant relationship between the variables and ROA at 5% level of significance due to the fact that 39.2%, 51.2%, 51.5% and 38.5% are all greater than 5% each.

The decision on whether to reject or fail to reject the null hypotheses formulated is based on the t-significance value of independent variable. If greater than 5% then the null hypotheses will fail to be rejected but is less than 5% then it should be rejected. From the t-significance value stated above, the hypotheses will not be rejected.

5. Conclusion

The paper empirically examines the extent to which intellectual capital contributes to the performance of some Nigerian listed banks. Data on components of intellectual capital and performance variables were obtained from the financial statements of selected quoted deposit money banks in Nigeria. The components and variables include Human Capital, Structural Capital, Capital employed, Return on Assets. Using a sample of seven audited financial statements of quoted banks in Nigeria, this paper examines the impact of intellectual capital on performance measured with Return on Assets (ROA).

The results show that intellectual capital has no significant relationship with the performance of banks in Nigeria which is in agreement with the finding of Amitava & Santanu (2012) but contrary to the results of Andrew (2015), Mbugua (2014) and Olayinka & Uwuigbe (2011). Based on the findings, the study recommends that banks in Nigeria should invest more in Human, Structural and physical Capital in order to increase their performance.

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Descriptive statistics

	Mean	Std. Deviation	N
ROA	.0251534360	0.4215768235	28
CEE	.400	.1925	28
	4.1977321772	1.3303313268	28
HCE	9	94	28
	.73920029023	.07711194964	28
SCE	5.339	8	28
VAIC		1.4584	

Correlation

		ROA	CEE	HCE	SCE	VAIC
ROA		1.000	-.118	.068	.068	.045
CEE		-.118	1.000	.207	.281	.327
Pearson Correlation	HCE	.068	.207	1.000	.962	.991
SCE		.063	.281	.962	1.000	.971
VAIC		.045	.327	.991	.971	1.000
ROA		.	.275	.366	.375	.409
CEE		.275	.	.146	.073	.045
Sig. (1-tailed)	HCE	.366	.146	.	.000	.000
SCE		.375	.073	.000	.	.000
VAIC		.409	.045	.000	.000	.
RA		28	28	28	28	28
CEE		28	28	28	28	28
N	HCE	28	28	28	28	28
SCE		28	28	28	28	28
VAIC		28	28	28	28	28

Variable Entered/Removed

Model	Variables Entered	Variables emoved	Method
1	VAIC, CEE, SCE, HCE[b]	.	Enter

a. Dependent Variable ROA
b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.237[a]	.056	-.108	.04437714126	1.922

a. Predictors: (Constant), VAIC, CEE, SCE, HCE
b. Dependent Variable: ROA

ANOVA[a]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	.003	4	.001	.342	.847[b]
1 Residual	.045	23	.002		
Total	.048	27			

a. Dependent Variable: ROA
b. Predictors: (Constant), VAIC, CEE, SCE, HCE

Coefficients [a]

Model	Unstandardized coefficient		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(constant)	-.066	.223		-295	.771
CCE	.117	.176	.534	.666	.512
HCE	.158	.181	4.972	.871	.392
SCE	.352	.532	.643	.662	.515
VAIC	-.164	.186	-5.683	-.885	.385

a. Dependent variable: ROA

Residential Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	.0003939669	.0392209254	.0251534360	.0099845984	28
Residual	-.1968722343			2	
Std. Predicted Value	.0401276983	4	0E-11	.0409582467	28
Std. Residual	3	1.409		3	
	-2.480	4.436	.000	1.000	28
	-.904		.000	.923	28