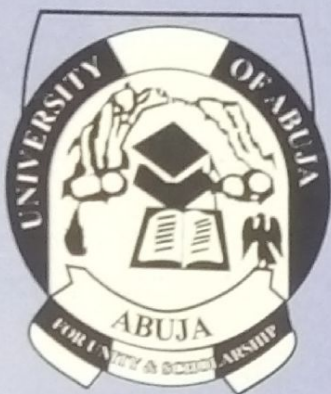




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Intellectual Capital Performance: an empirical investigation of Nigerian Banks

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Abstract

The influence of intellectual capital on the overall performance of a bank has become very important issue now than ever, this is due to the level of globalization and aggressive competition and the ever-rising expectation of customers. As a result of this, there is a need for banks to be at their best in order to be relevant in the global market and its environment. Hence, this paper focuses on banking industry of developing economies and on Nigeria specifically. Using a sample of 20 audited annual reports of Nigerian banks, the paper examines the intellectual capital components' potentialities on financial performance measured with Return on Asset (ROA) and Pulic value added intellectual capital coefficient (VAIC) model. The paper adopted ordinary least square regression model for the purpose of analysis. The results of the study show that, relationship exists between intellectual capital components and banks' financial performance. It was found that human capital and structural capital influence financial performance of the sampled banks more than physical capital employed. This study reaffirms the previous empirical support for the potentiality of performance of intellectual capital in the overall success of companies in general and banks in particular. Based on the findings, the study recommends that banks in Nigeria should invest and manage their intellectual capital in order to increase their performance and remain sustainable in the global markets.

Key words: Intellectual capital components, financial performance, value added efficiency, Nigerian banks.

Introduction

The banking industry/sector in Nigeria has gained a reputation of rapid growth and global competitive potentialities. The literature contends that a company's competitive power and performance are largely influenced by its intellectual capital. Many scholars and researchers recognize that intellectual capital, which contains non-financial measures and other related accounting information, is the value driver of a firm (Bontis, 2001, 1999;

Edvinsson and Malone, 1997; Stewart, 1997; Amir and Lev, 1996). They argue that intellectual capital assists firms in enhancing competitive edge and value (Wang and Chang, 2005). Therefore, intellectual capital can be seen as the most valuable asset and the most powerful competitive weapon in business (Salman, Tayib and Mansor, 2012; Wang and Chang, 2005). This is especially so in banking industry, as its intangible assets are more important than tangible because of the nature of service rendered. The theoretical influence of

intellectual capital on company performance has never been over emphasized in the literature (Wang and Chang, 2005). However, there is far enough empirical studies examining this issue (Salman et al., 2012; Ting and Lean, 2009; Wang and Chang, 2005). In particular, studies investigating this issue in Nigeria's banking industry are rare, even though banking industry is one of the most performing sectors in Nigerian economy (Solarin, 2012). Where ever, most of the research focuses on the impact of individual intellectual capital on performance without looking into an integrated framework that describes the relationship among individual intellectual capital components. However, as the cause-effect relations among perspectives is emphasized, rather than merely looking into the relationship between measurable proxies of perspectives, in the Balanced Scorecard System (Kaplan and Norton, 2001, 1996) the relationship among intellectual capital components should be of interest in relation to strategic perspective of banks.

From a strategic perceptive, IC is used to create and enhance organizational value. For this purpose, IC resources must be properly managed by companies (Chen et al, 2004). Companies that control and manage IC resources better than others had achieved stronger competitive advantage (Bornermann et al, 1999). In addition, intellectual capital management plays an important role on the long term business performance (Makki and Lodhi, 2009; Green, 2008; Lim and Dallimore, 2004; Brennan and Connell, 2000). **Recently, the issue of IC value creation has gained minimal attention in developing countries (Salman, Yahaya and Aliu, 2012; Firer and Williams, 2003). However, the increasing emerging economy (coupled with the rate at which IC resources (intangible) are competing with tangible resources) has geared up interest in IC drivers (Organization for Economic Cooperation and Development, 2008; Firer and William, 2003). According to OECD (2008), nowadays many companies have invested in research and development (R&D), employee training, customer relations and information technology. These investments are growing and as well competing with tangible and financial capital investments on an average bases in many countries such as South Africa, Malaysia and Nigeria (Firer and William, 2003; Salamudin et al., 2010; Okwy and Christopher, 2010). Since tangible and IC resources are growing *pari pasu*,**

there is a need for the assessment of IC value creation in developing countries especially in the banking industry.

This paper provides two main contributions to the body of knowledge. There are few studies on the relationship between intellectual capital components of banks. The paper intends to add to the extant literature in this regard. The main objective of this study is to examine the relationship between intellectual capital components and financial performance of Nigerian banks. The rest of this paper is divided into six sections. The second section discusses the relevant literature for this study. The third section explains the research framework and hypotheses development and the fourth section provides the methodology employed. The result of the study is described in section five while conclusion and limitations are discussed in the sixth section.

Literature Review

Intellectual capital and Banks' performance

There is no standard and unanimous definition of intellectual capital (IC) because scholars define it according to their own perceptions (Maditinos, Chatzoudes, Tsairidis and Theriou, 2011). Lev (2001) defines intellectual capital/assets as a claim to future benefit that does not have a physical or financial (a stock or a bond) embodiment. Amir and Lev (1996) define intellectual capital as the intellectual resource that can be formalized, captured and leveraged to create value. Edvinsson and Malone (1997) define IC as the knowledge that can be converted into value. Some have defined IC by its drivers. For example, Gu and Lev (2001); Chan and Lakonishok (2001) and Stewart (1998) include R&D, advertising, information technology (IT) and human resource as IC resources. Pablos (2003) and Edvinsson and Malone (1997) refer to IC as the difference between market value and book value. The role of IC in filling the gap between market and book value has brought even wider research attention towards the examination of its nature (Chen et al., 2005).

Despite various definitions of IC in the literature, there is an agreement that IC covers three main components in a company: Human Capital (HC), Structural Capital (SC) and Relational Capital (RC) (Bontis, 1998; Verguwen and Alem, 2005; Yang and Lin,

2009; Ghosh and Wu, 2007; Fit-enz. 2000; Rodger, 2003; Edvinsson, 1997; Amir and Lev, 1996; Calisir et al, 2010). Human capital (HC) is delineated as the skill, ability, knowledge and experience that the employees takes with them when they leave the company (Roos and Roos, 1997). Some skills are unique to the individual, while some may be generic (Ting and Lean, 2009). Examples are creativity, experience, teamwork capability, innovation capability, learning capability, formal training and education, vocational qualification, flexibility and know-how. Structural capital (SC) is defined as the knowledge that stays within the company (Bontis, 1998). It includes organizational processes, routines, procedures, systems, norms, cultures and databases. For example, the use of information technology device and organizational learning capability, management philosophy, corporation culture, management processes, networking system, patent, trade mark and copy right While, Relational capital (RC) is defined as resources which are related to external factors such as customer and suppliers. It is the link between company and its external components. It comprises of customers, customers' loyalty, brands, company's name, distribution channels, business collaborations, licensing agreements, and franchising agreements.

The categorization of intellectual capital into components makes the measurement of IC more visible (Green, 2008). Basically, the task of measuring the performance of intellectual capital in an organization, banks inclusive becomes a major step to investigate the reasons for low and high performance of workers using organization infrastructural facilities. Hence, the measurement of company performance needs to include the company's total resources (physical and intellectual) (Salman and Tayib, 2012; Uadiade and Uwuigbe, 2011).

Company performance is a significant concept that relates to the way and manner in which financial resources available to a company are efficiently utilized to achieve the overall company objective (Uadiade and Uwuigbe, 2011). It is therefore imperative that company's performance be measured in general, and banks specifically in order to ensure sustainability in the global market.

Intellectual capital performance of banks has been examined in different international setting including Malaysia (Ting and Lean, 2009; Goh,

2005); Japan (Mavridis, 2004); Australia (Pulic and Borneman, 1999). These previous studies have pointed to the intellectual capital performance potentiality with both positive and negative significance.

Nik Maheran et al (2009) examine the efficiency level and the trend of intellectual capital among 18 financial companies for the year 2002 to 2006. They found that firm's market value have been created by physical and financial resources rather than intellectual capital. Their study further reveals that there is positive and significant relationship between human capital (HC) and structural capital (SC).

Goh (2005) measures the intellectual capital performance of commercial banks in Malaysia for the period of 2001 to 2003. The result shows that value creation potentiality of commercial banks in Malaysia is largely attributed to human capital efficiency (HCE).

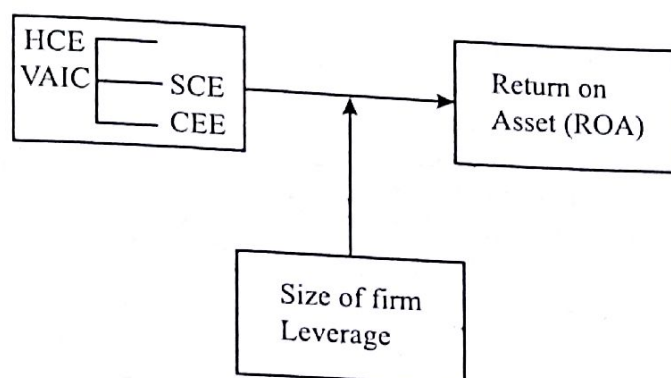
Mavridis (2004) analyse 141 Japanese banks from 2000 to 2001, and found a positive significant relationship value added (VA) and capital employed. The study further reveals that both human capital and capital employed contributed to the value of the best practice index (BPI) in different ways.

Pulic (2000) employed the value added intellectual coefficient (VAIC) model to measure the intellectual capital performance of Croatian banks for the period of 1996 to 2000. The findings of the study reveal that significant differences in banks ranking based on the efficiency and performance of intellectual capital components.

Pulic and Bornemann (1999) investigate the important information about the efficiency of intellectual of 24 biggest Australian banks for 1993 to 1995. They conclude that the use of efficiency in intellectual capital is simplest; cheapest and the most secure way to ensure sustainability and the most important resource of company success (Wang and Chang, 2005). In Bangladesh, Najibullah (2005) provides that bank's market value is positively associated with intellectual capital of the banks. The review of relevant literature on empirical studies on intellectual capital performance of banks clearly shows mixed result hence, the need to undertake an investigation on the intellectual capital components performance of Nigerian banks.

Research Framework and Development of Hypotheses

Intellectual Capital



Scholars and researchers have emphasised that productivity and profitability of a firm lies more on its intellectual capital and system capabilities than on its physical assets (Shiu, 2006; Patton, 2007). Bontis et al. (2000) concludes that regardless of the industry, the development of structural capital has a positive impact on business performance. However, Goh (2005) concludes that the domestic banks are generally less efficient compared to the foreign banks in Malaysia. Solarin (2012) examine the relationship between banks and economic growth and provides that banks in Nigeria are engine powering the nation economy.

- H₁: There is a relationship between human capital efficiency and banks' financial performance.
- H₂: There is a relationship between structural capital efficiency and banks' financial performance.
- H₃: There is a relationship between capital employed (physical capital) and banks' financial performance.

Methodology

Sample and data collection

A sample of 20 public listed Nigerian banks data were collected from the Nigerian Stock. Annual reports for 2011 for the sampled banks were used in this study. The research model is stated as below following Pulic (2000) model of intellectual capital value creation efficiency.

$$ROA = \alpha + \beta_1 CEE_i + \beta_2 HCE_i + \beta_3 SCE_i +$$

Measurement of dependent variables

To measure banks' financial performance, return on asset (ROA) is taken as dependent variable. The literature shows that there is no empirical evidence which supports superiority of any specific proxy measure over the others (Ahangar, 2011). It is on this basis that this study makes use of the commonly used proxies' measures. Therefore, the proxy measure for dependent variable is: ROA is the profitability of the banks: This measure shows the degree to which a company's revenues exceed costs (profit after tax/total assets).

Measurement of Independent variables

The Value Added Intellectual Coefficient (VAIC) methodology developed by Pulic (2000) forms the underlying measurement basis for the independent variables in this study. VAIC allows the users of financial information (investors, management and other relevant stakeholders to evaluate the efficiency use of company resources both tangible and intangible (intellectual capital). VAIC comprises of two indicators. These indicators are: (1) Capital Employed Efficiency (CEE), an indicator of Value Added (VA) efficiency of capital employed, and (2) Intellectual Capital Efficiency (ICE) an indicator of VA efficiency of company's intellectual capital. Further, ICE is composed of: (1) Human Capital Efficiency (HCE) an indicator of VA efficiency of human capital; and (2) Structural Capital Efficiency (SCE) - an indicator of VA efficiency of structural capital. Therefore the indicators of banks' efficiency in this study are

stated as independent variables as follows

$$VAIC = CEE_i + HCE_i + SCE_i \dots \dots \dots (1)$$

Where VAIC = VAI intellectual coefficient for company i, CEE_i = capital employed efficiency coefficient for i, HCE_i = human capital efficiency coefficient for company i and SCE_i = structural capital efficiency coefficient for company i. Pulic (2000) proposes that the higher the VAIC the better the efficiency of VA for the company's total resources (Ahangar, 2011).

$$VA_i = li + Di + DP_i \quad Ti + Pi + WSi \dots \dots \dots (2)$$

Where: VA for a company i is computed as sum of interest expenses (li), Dividends (Di), Depreciation expense (Dpi), corporate taxes (Ti) and profits retained for the year (Pi) and wages and salaries (WSi)

$$CEE_i = VA_i / CE_i \dots \dots \dots (3)$$

Where: CEE_i = capital employed efficiency coefficient for company i, VAI = VA for company i, and CE_i = book value of the net assets for company i.

According to Sveiby (1997, Stewart (1997, Edvinsson (1997 and Nazari (2010), salary and wage costs are indicators of company' human capital (HC). Therefore, HCE is computed as:

$$HCE_i = VA_i / HC_i \dots \dots \dots (4)$$

Where: HCE_i = human capital efficiency coefficient for company i, VA = VA for company i, and HC_i = total salary and wage costs for company i.

To calculate structural capital Efficiency (SCE), Structural Capital (SC) must be determined first by deducting human capital from total VA (Pulic, 2000). Thus SC is:

$$SC_i = VA_i - HC_i \dots \dots \dots (5)$$

Where: SC_i = structural capital for company i, VAI = VA for company i and HC_i = total salary and wage cost for the company i

There is an inverse relationship between HC and SC in the value creation efficiency of intellectual capital index (Pulic, 1998). The less human capital participation in the value creation, the higher the structural capital involved (Ahangar, 2011, Shiu, 2006).

Thus, SCE is calculated as:

$$SCE_i = SC_i / VA_i \dots \dots \dots (6)$$

Where: SCE_i = Structural capital efficiency coefficient VA for company i, SC_i = structural capital for company I.

Data Analysis

To analyze the relationships between the dependent and independent variables linear multiple regressions were performed based on the following models:

$$ROA = +_1 CEE + +_2 HCE + +_3 SCE + +_4 Size + +_5 LEV + \dots \dots \dots (1)$$

Result of the study

(a) Descriptive Statistics

Table 1 presents descriptive statistics of all the variables in this study. These include minimum, maximum, mean and standard deviation values. HCE has the highest mean value indicating that company human capital is more effective in creating value than SCE and CEE during the period of study.

Table 1: Descriptive Statistics of All the Variables

Statistic	N	Min.	Max.	Mean	Std.Dev.
ROA	20	0.5284	14.9316	3.496630	2.8896569
HCE	20	4.0000	6.7781	5.57083	0.6582382
SCE	20	0.0304	5.67973	1.227517	1.0918365
CEE	20	0.0119	9.8628	2.642284	2.4343351
Valid N (list wise)	20				

Source: Author's Computation

According to Pallant (2003) and Coakes and Ong (2011), to draw a conclusion based on regression analysis, certain assumptions must be tested. These assumptions were checked before running the regression models. Linearity assumption was verified through histogram diagrams between independent and dependent variables. In addition normal probability plots of the residuals also confirm that there is no serious violation of normality assumption.

Table 2 reveals the result of the three regression model which tests the relationship between the variables. Table 2 presents the linear multiple regression findings of profitability with independent. This table shows that adjusted R square = 0.427 and Sig. = (0.013, 0.001 and 0.000<0.05). The result shows that HCE is positively and significantly related to company's performance as measured by 'ROA'. On the other hand, SCE has a negative significant influence on ROA. This is because Sig (HCE)=0.013<0.05, (HCE)=0.295) and Sig (SCE)=0.001<0.05, (SCE)=-4.784.

Table 2: Linear Multiple Regression Results of ROA (Profitability)

Variable	Standard error	β	t-statistic	Significance
Constant	2.485	2.524	1.015	0.315
HCE	0.114	0.295	2.585	0.013**
SCE	1.387	-4.784	-3.450	0.001*
CEE	0.201	0.001	0.005	0.996

Profitability; Adj. R ² = 0.427; Significance = 0.001*, 0.013**, 0.000 *** where *, **, and *** represent 1%, 5% and 10% significant (Sig) level respectively

Source: Author's Computation

(b) Findings and Discussion

The results show that human capital and structural capital are correlated with profitability. There is an association between the efficiency of value added from human capital and structural capital with profitability (ROA) which supports hypotheses one and two and at the same time consistent with previous studies such as Nik Maheran et al (2009); Goh (2005); Mavridis (2004); Pulic and Bornemann (1999).

However, this study does not find any association between the efficiency of value added from

capital employed (physical capital) with profitability variable. However, it is in line with the finding of Nik Maheran et al. (2009); Mavridis (2004); Firer and Williams (2003). There is a higher association between efficiency of value added of human capital efficiency and structural capital efficiency value added. Thus, conforms with the result of Pulic, (2000); Pulic and Bornerman et al., 1999; Shiu, 2006; Maditinos et al., 2011). The findings reveal that Nigerian banks are in good shape because both their physical and intangible assets are interconnected to enhance their competitive

edge. The findings from the regression analysis imply that future profitability can be enhanced by efficient use and management of human capital, structural capital and capital employed by the companies. Hence, the three hypotheses were supported and accepted. Therefore, there is the need to practice measuring and valuing IC components; since intellectual capital investments are growing and as well competing with tangible and financial capital investments on an average bases in many countries such as South Africa, Malaysia and Nigeria (Firer and William, 2003; Salamudin et al., 2010; Okwy and Christopher, 2010).

Human capital has positive impact on profitability, while structural capital has negative impact on profitability. This shows that the income generated by company is determined by the quality of employees and structure put in place in order to generate such income and not by the number of the employee as measured by ROA. The quality of employees and company's processes, culture and norms are interconnected to generate income. That could be the reason why there is no relationship between human capital and ROA which is measured by net sales divided by number of employee. This result is in line with Okwy and Christopher, (2010); Shiu (2006) and Maditinos et al. (2011). Okwy and Christopher (2010) argue that quality of employees influence companies' performance.

The study also reveals the impact of the interconnectivity of intellectual capital (IC) components (HC and SC) with physical assets in line with the submissions of Youndt et al. (2004) that competitiveness of a company could only be achieved with proper combination of both IC and tangible asset of such company.

Conclusion

The aim of this study is to examine the relationship between efficiency of value added resources (human capital, structural capital and physical capital) and the company financial performance (Return on Asset (ROA)). This study measures value added efficiency of the sample companies using VAIC methodology. The results of the study, based on linear regression analysis, reveals that the associations

between the efficiency of value added of intellectual capital components and the company performance are mixed. However, empirical findings reflect that human capital, structural capital and physical capital are efficient sources of value creation to the sampled banks. In addition, the investment of the sampled banks on human capital and structural capital is justified and provides satisfactory financial performance.

Research implication

This study helps management of a company to identify relevant intellectual capital components and their drivers to enhance corporate performance. The finding is also useful in allocating of their resources because this study indicates that company operating resource (IC and CEE) have impact on the financial performance. The study shows that, the higher the amount invested in development and improvement of employees by a company, the greater the capacity building of such employees and performance (see table 2 page 7). However, there is an inverse relationship between structural capital investment and company's financial performance (ROA) (see table 2 page 7). That is, the higher a company invests on its structural capital, the lower its influence on company's financial performance.

Recommendations

There is empirical evidence that IC components influence companies' performance based on the result of this study. Specifically, the finding shows that human capital efficiency influence performance of Nigerian banks. In order to achieve higher profitability and sustainability, these banks should implement policies that will improve and upgrade their employees' skill and competence in the area of training and development. This study further reveals the potentials of structural capital in adding value to a company. This is a signal to Nigerian banks that investments in structural capital drivers are worthwhile. Therefore, it is important for Nigerian banks to put more emphasis on policy that will promote and improve the process, structure, culture and norms of their banks.

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