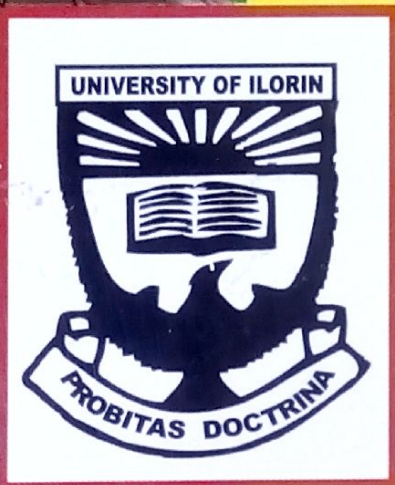




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INTERACTION BETWEEN INTELLECTUAL CAPITAL AND FINANCIAL PERFORMANCE: AN EMPIRICAL INVESTIGATION OF NIGERIAN COMPANIES

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Abstract

In the knowledge-based era and intellectual capital (IC) regime, literatures abound on the impact of intellectual capital components on company performance especially in the developed countries. However, only a few scholars have written on this topic in developing countries in general and Nigeria in particular. This study examines the relationship between intellectual capital components and financial performance in Nigeria. Annual reports of sample companies were analysed using Value Added Intellectual Coefficient (VAIC) as proposed by Pulic (2000) to measure intellectual capital components in the forms of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE) based on profitability, productivity and market value of companies' financial performance. The results of the study show that, relationship exists between intellectual capital components and company financial performance. It was found that human capital and structural capital influence financial performance of the sample companies' more.

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than physical capital employed. This study is the first to empirically examine the entire intellectual capital components and their relationship with companies' performance in Nigeria. The result of the study provides information on how to value intellectual capital components and serve as guidelines on intellectual capital measurement for Nigerian companies.

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

INTRODUCTION

Intellectual capital (IC) creates value and competitive edge (Guthrie, 2001) which is ignored by the traditional way of measuring company performance (Amir and Lev, 1996; Guthrie and Petty, 2000; Wang and Chaung 2005). The traditional way of measuring and valuing company performance is mainly based on physical assets (Ahangar, 2011). Due to globalization and technology advancement, companies are now shifting from physical assets alone to intellectual capital with physical assets for value creation and competitiveness (Bornemann, 1999). The rules of business are being rewritten and the industrial era enterprise models are no longer adequate to meet the dynamic condition of a changing world market and the information needed by investors to make strategic decision (Okwy and Christopher, 2010; Abeysekera, 2007; Garcia-Ayuso, 2003). Hence, there is a need to examine the impact of IC resources on company performance (Tayib and Salman, 2011). The widespread acceptance of IC as a source of competitive advantage led to the development of appropriate methods of IC measurement (Madinios et al, 2011; Salman and Tayib, 2012, and Guthrie, 2001). Service providers companies (banks, hotels, information and communication), technological companies, biochemical and pharmaceutical companies depend to a considerable extent on intellectual capital resources for sustainability and to earn their revenue (Ahangar, 2011). Even the manufacturing and production companies use intellectual capital together with their physical capital to enhance their competitive edge within and outside their industries (Chen et al, 2004; Ahangar, 2011).

From a strategic perspective, 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 (Bornemann 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).

Until 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 (OECD, 2008; Firer and William, 2003). According to the Organization for Economic Cooperation and Development (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.

This paper provides two main contributions to the body of knowledge. Firstly, there are few studies on the relationship between intellectual capital components and companies financial performance. The paper intends to add to the extant literature in this regard. Secondly, there is inconsistency in the results of the past research. Some research found positive relationship, while others found negative relationship between the variables. For example, Firer and Williams (2003) conducted a study on South African companies to examine IC and company performance. The study could not find any relationship between IC of the sampled companies with their performance. Contrary to Firer and Williams (2003), Okwy and Christopher (2010) found human resource (IC component driver) to be significant and related to company performance. In view of these inconsistencies, it is necessary to re-investigate IC influence on company performance of Nigerian companies.

The main objective of this study is to examine the relationship between intellectual capital components and financial performance of Nigerian companies. 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 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.

2. LITERATURE REVIEW

To date, 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; Friz-enz, 1997; Rodger, 2003; Edvinsson, 1997; Amir and Lev, 1996; Calisir et al, 2011). 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 approaches for measuring IC are categorised into four methods (Sveiby, 2007) which are: Direct Intellectual Capital (DIC), Market Capitalization Methods (MCM), Return on Asset (ROA) method and Scorecard (SC) method. These categorises are the extension of the classifications suggested by Luthy (1998) and Williams (2001). Different scholars have used different methods to measure and examine the impact of intellectual capital on company performance. Bornemann et al. (1999) stated that IC can be measured using DIC through its three components drivers -human capital (employees' skill and knowledge), structural capital (organization databases, culture and norms) and relational capital (suppliers and customer relations). Pulic (2000)

develops a convenient method for measuring IC using ROA approach called Value Added Intellectual Coefficient (VAIC) method. He proposes that market value of a company is created by capital employed and IC (structural and human capital). It is against this backdrop that many scholars have used this method to analyse the value added efficiency of intellectual capital and examine the VAIC relationship with companies' performance.

Table 1: A Summary of Studies using VAIC Method

Author (s)	Country	Independent variables	Dependent variables	Result
Ahangar, (2011)	Iran	IC components	Financial performance	Performance of Iran companies - IC can explain profitability and productivity
Chang and Hsieh (2011)	Taiwan	IC components	Financial and market performance	There is a significant association between IC components and financial and market performance.
Maditinos et al., (2011)	Greece	IC components	Financial performance	There is a significant relationship between HC and financial performance. There is no significant relationship between SC and financial performance.
Cheng et al., (2010)	Taiwan	IC components	Company performance	A significant relationship is found between IC component and company performance.
Makki and Lodhi (2009)	Pakistan	IC components	Return on Investment (ROI)	IC efficiency contributes significantly to ROI
Ting and Lean (2008)	Malaysia	IC components	Financial performance	The three IC components are associated with profitability
Tan et al., (2007)	Singapore	IC components	Financial performance	IC components and companies' performance are positively related.
Kujansiva and Lonnqvist (2007)	Finland	IC components	Value added efficiency	There is unclear relationship between IC value and efficiency
Yalam and Coskun (2007)	Turkey	IC components	Company performance	There is a significant relationship between IC measure and performance.
Appuhami, (2007)	Thailand	IC components	Capital gain on shares	The firms' IC has a significant positive relationship with its investors' capital gain on shares
Shiu (2006)	Taiwan	IC components	Financial performance	IC components correlate with financial performance.
Firer and Williams (2003)	South Africa	IC components	Financial performance	IC components are not significantly related to financial performance.

From the above table nine studies found the relationship between IC and company performance, while the remaining two do not. Due to the wide acceptance and usage of VAIC method, this study also makes use of Pulic's VAIC method to find the relationship between intellectual capital and companies' financial

performance in Nigeria.

DEVELOPMENT OF HYPOTHESES

Resource-based view (RBV) believes that companies gain competitive edge and superior financial performance through the acquisition, holding and subsequent use of knowledge or strategy assets (Barney, 1991; Wernerfelt, 1984). Intellectual capital is regarded as strategic asset and valuable knowledge that belong to the organization (Riahi and Belkaoui 2003). The assertion regarding intellectual capital as strategic asset rests on a potential link between intellectual capital and company performance (Ahangar, 2011, Seethamraju, 2000). Many scholars are of the opinion that the competitiveness of a company is based largely on the intellectual resources than the tangible resources to enhance market dominance (Brennan and Connell, 2000).

Shiu (2006) for example, analyses value creation efficiency of intellectual capital of Taiwan companies. He also examines its correlation with corporate performance based on the 2003 annual reports from 80 Taiwan listed technologies companies. The result shows that VAIC has a significant positive correlation with profitability (ROA) and market valuation (MB), and a negative correlation with productivity (Asset Turn Over (ATO)). Calisir et al (2011) applies value added intellectual coefficient on information technology and communication companies listed in the Istanbul Stock Exchange to examine the impact of IC components on company performance. The result of the study reveals that overall the companies have relatively higher human capital efficiency than structural and capital employed efficiencies. The study further reveals that factors such as human capital efficiency, firm leverage and firm size predict profitability. On the other hand, capital employed efficiency was found to be a significant predictor for both productivity and return on equity.

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, Firer and Williams (2003) examine the relationship between IC and traditional measures of firm performance (ROA, ROE) and could not find any relationship. On the other hand, Chen et al. (2004), using the same methodology, concludes that IC has a significant impact on profitability. Based on previous studies, this study therefore hypothesizes that:

- H₁: There is a relationship between human capital efficiency and companies' financial performance.
- H₂: There is a relationship between structural capital efficiency and companies'

financial performance.

- H₃: There is a relationship between capital employed (physical capital) and companies' financial performance.

4. METHODOLOGY

Sample and data collection

A sample of 50 public listed Nigerian companies was derived using a stratified proportionate sampling technique from 165 companies listed in the Nigerian Stock Exchange excluding the financial institutions. Annual reports for 2010 for the sample companies were used in this study. These companies represented 14 economic sectors (according to Nigerian Stock Exchange classification) which included agriculture and agro allied product, building and construction, logistic and services, food and beverages, and air service.

Measurement of dependent variables

To measure company's financial performance, three dependent variables are taken into consideration, namely: productivity, profitability and growth in sales. 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 measures for each dependent variable are:

1. Productivity: Productivity is a measure for the net sales per employee, which reflects employees' productive capability (Patton 2007; Chen et al 2004). This is calculated as: $\text{Productivity} = \frac{\text{Net sales for the period}}{\text{number of employees}}$. It is denoted as 'ROA' in this study.
2. Profitability: This measure shows the degree to which a company's revenues exceed costs. It is the ratio of the net income divided by book value of total assets (Ahangar, 2011; Shiu, 2006 and Firer and Williams 2003). It is denoted as 'ROE'.
3. Growth in sales (Market-to-book value): The market-to-book value is calculated by the difference between market value (MV) and book value (BV) of common stocks (Madininos et al 2011, Shiu, 2006). This is denoted as 'MB'.

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 company's 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).

$$VAI = li + Di + DPi + Ti + Pi + WSi \dots \dots \dots (2)$$

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)

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

Where: CEE_i = capital employed efficiency coefficient for company i , $VA_i = VA$ 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:

$$HCE_i = VAI/HCi \dots \dots \dots (4)$$

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, 1998). Thus SC is:

$$SC_i = VAI - HC \dots \dots \dots (5)$$

Where: SC_i = structural capital for company i , $VA_i = VA$ 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.

Control Variables

The following variables are used as control variables in this study.

1. Size: The size of a company is used as control variable in this study, and measured as natural log of total market capitalization as a proxy of Size of a firm as used by Shiu (2006), and Firer and William (2003) in their studies.
2. Leverage: This is measured by total debt of a company divided by book value of total assets (Ahangar, 2011; Shiu, 2006; Riahi and Belkaoui, 2003; Firer and Williams, 2003).

Data Analysis

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

$$ROA = \alpha + \beta_1 CEE + \beta_2 HCE + \beta_3 SCE + \beta_4 Size + \beta_5 LEV + e \dots \dots \dots (1)$$

$$ROE = \alpha + \beta_1 CEE + \beta_2 HCE + \beta_3 SCE + \beta_4 Size + \beta_5 LEV + e \dots \dots \dots (2)$$

$$MB = \alpha + \beta_1 CEE + \beta_2 HCE + \beta_3 SCE + \beta_4 Size + \beta_5 LEV + e \dots \dots \dots (3)$$

RESULT OF THE STUDY

Descriptive Statistics

Table 2 presents descriptive statistics of all the variables in this study. These include minimum, maximum, mean, standard deviation, skewness and kurtosis values. MB has the small earn average profit of 65% during the period of study. 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 2: Descriptive Statistics of All the Variables

Statistic	N	Min.	Max.	Mean	Std.Dev.	Skweness	Kurtosis
ROE	50	0.0472	5.6965	1.093960	1.4339616	2.099	2.041
ROA	50	0.5284	14.9316	3.496630	2.8896569	1.808	2.067
MB	50	0.0525	0.9906	0.653324	0.2460804	-0.911	-0.094
HCE	50	4.0000	6.7781	5.57083	0.6582382	-0.382	-0.384
SCE	50	0.0304	5.67973	1.227517	1.0918365	1.948	2.309
CEE	50	0.0119	9.8628	2.642284	2.4343351	1.414	1.437
SIZE	50	0.1139	20.9954	3.638445	4.0260912	2.178	2.137
LEV	50	0.0163	2.8194	0.554274	0.6370967	2.025	2.217
Valid N (list wise)	50						

Source: Author

Table 3, 4 and 5 reveal the results of the three regression models which test testing the relationship between the variables. Table 3 presents the linear multiple regression findings of profitability with independent and control variables. This table shows that adjusted R square = 0.427 and Sig. = (0.013, 0.001 and 0.000<0.05). The results show that HCE and LEV are positively and significantly related to company's performance as measured by 'ROE'. On the other hand, SCE has a negative significant influence on ROE. This is because Sig (HCE) = 0.013<0.05, β (HCE) = 0.295, Sig (LEV) = 0.000<0.05, β (LEV) = 0.256, and Sig (SCE) = 0.001<0.05, β (SCE) = -4.784. However, capital employed and size is not significantly related with ROE.

Table 3: Linear Multiple Regression Results of ROE (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
SIZE	0.443	0.443	0343	0.738
LEV	1.110	0.256	4.340	0.000***

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

From table 4, only Capital efficiency (CEE) is significantly and positively related with productivity (ROA). Sig (CEE) = 0.018<0.05, β = (CEE) = 1.012. It

shows that the higher the companies' invest in physical capital the higher the return. Thus, productivity of the sample companies is highly influenced by physical asset.

Table 4: Linear Multiple Regression of ROA (Productivity)

Variable	Standard error	β	t-statistic	Significance
Constant	5.089	-0.199	-0.039	0.969
HCE	0.234	0.367	1.568	0.124
SCE	2.840	-3.806	-1.340	0.187
CEE	0.412	1.012	2.456	0.018**
SIZE	0.907	0.662	0.730	0.469
LEV	0.524	0.200	0.382	0.704

Productivity; Adj. R^2 = 0.449; Significance = 0.0018**, where ** represents 5% significant (Sig) level

Source: Author.

In table 4 only leverage is significantly and positively related with Market to-Book value (MB). This is because Sig. (LEV) = 0.000, β = 0.308. This result shows that there is a relationship between companies' debt acquired to finance the business and market value of sample companies. The higher the leverage, the greater the book value of the assets and in return increase the market value of such companies. Thus, the sample companies' can compete favourable with their counterpart in the market.

Table 5: Linear Multiple Regression Results of MB (Market-to-book value)

Variable	Standard error	β	t-statistic	Significance
Constant	0.775	-0.705	-0.910	0.368
HCE	0.036	0.014	0.393	0.697
SCE	0.432	-0.283	-0.654	0.516
CEE	0.063	0.007	0.113	0.910
SIZE	0.138	0.181	1.311	0.197
LEV	0.080	0.308	3.866	0.000**

Market value: Adj. R^2 = 0.509; Significance = 0.0018**, where ** represents 5% significant (Sig) level

Source: Author

(b) Findings and Discussion

The results show that human capital, structural capital and leverage are

correlated with productivity as compared to profitability and market to-book value. There is an association between the efficiency of value added from human capital and structural capital with profitability (ROE) which supports hypotheses one and two and at the same time consistent with previous studies such as Calisair et al. (2011), Ahangar (2011), and Maditinos et al. (2011).

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 Firer and Williams (2003). There is a higher association between efficiency of value added by capital employed (CEE) and productivity than human capital efficiency value added and structural capital efficiency value added. This submission supports hypothesis three. Thus, conforms with the result of Bormerman et al., 1999; Shiu, 2006; Maditinos et al., 2011). The findings reveal that Nigerian companies 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 and productivity 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 influence of CEE is more pronounced with productivity than HCE and SCE. That is the higher a company invests in physical capital the greater is its return. This result is consistent with Firer and Williams (2003). None of the intellectual capital components and physical asset has relationship with market value. This submission is consistent with Firer and Williams (2003).

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. (2005) 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 three dimensions of company financial performance (Return on Equity (ROE), Return on Asset (ROA) and Market Value). 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 three dimensions of company performance are mixed. However, empirical findings reflect that human capital, structural capital and physical capital are efficient sources of value creation to the sample companies. In addition, the investment of the sample companies 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 3 page 9). Likewise, the higher company's investment on capital employed (physical capital) the greater the CEE influence on company's financial performance (ROA) (see table 3 page 9). However, there is an inverse relationship between structural capital investment and company's financial performance (ROE and ROA) (see table 3 and 4 page 9). That is, the higher a company invests on its structural capital, the lower its influence on company's financial performance. This study further reveals that there is no relationship between companies' IC components, CEE and market value; the growth of a company (in this study) is not measured by market value. The reason for this could be attributed to what this study used as a measure for growth. In addition, a company may have more understanding of which IC to develop and nurture as this study has highlighted the various methods that can be used to measure the value added of IC.

RECOMMENDATION

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 companies. In order to achieve higher profitability and sustainability, these companies 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 companies that investments in structural capital drivers are worthwhile. Therefore, it is important for Nigerian companies to put more emphasis on policy that will promote and improve the process, structure, culture and norms of their companies. In addition, Nigerian government should follow the move of Malaysian government by enacting HRDF (human resource development fund) Act and establish a body to be in-charge of collecting shares levy from the employers for the purpose of promoting training of employees in workplace, and administrative of the HRDF like Pembangunan Sumber Manusia Berhad (PSMB) in Malaysia since 1993. This will in return help the Nigerian economy to grow as the employees in the sectors will have the skill in line with the needs of their businesses and industrialization strategy of the country.

References

- Abeyesekera, I. and Guthrie, J. (2005), "Annual reporting trends of intellectual capital in Sri Lanka", *Critical Perspectives on Accounting*, Vol. 16 No. 3, pp. 151-163.
- Abeysekera, I. (2007), "Intellectual capital reporting between a developing and developed nation", *Journal of Intellectual Capital*, Vol. 8 No. 2, pp. 329-345.
- Aboody, D. and Lev, B. (1998), "The value-relevance of intangibles: the case of software capitalization", *Journal of Accounting Research*, Vol. 36, pp. 161-191.
- Ahangar, R. G. (2011), "The relationship between intellectual capital and financial performance: An empirical investigation in an Iranian company", *African Journal of Business Management*, Vol. 5 No. 1, pp. 88-95.
- Amir, E., & B. Lev. (1996), "Value-relevance of non-financial information: The Wireless communications industry", *Journal of Accounting and Economics* Vol. 22 No. (1-3): 3-30.
- Amir, E., and B. Lev. (1996), "Value-relevance of non-financial information: The Wireless communications industry", *Journal of Accounting and Economics*, Vol. 22 No. (1-3), pp. 3-30.
- Appauhami, B. A. (2007), "The impact of Intellectual Capital on Investors' Capital Gains on Shares: An Empirical Investigation of Thai Banking, Finance and Insurance Sector", *International Management Review*, Vol. 3 No. 2, pp. 14-25.
- Barney, J. B. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, Vol. 17 No. 1, pp. 99-120.
- Bontis, N. (1998), "Intellectual capital: an exploratory study that develops measures and models", *Journal of Management Decision*, Vol. 36 No. 2, pp. 63-76.
- Bornemann, M. (1999), "Potential of Value Systems According to VAICTM Method."

- International Journal of Technology Management*, Vol. 18 No (5/6/7/8), pp. 463-475.
- Bornemann, M., Knappo, A., Schneider, U. and Sixl, K. I. (1999), "Holistic measurement of intellectual capital", paper presented at the International Symposium Measurement and Reporting Intellectual Capital: Experiences, Issues and Prospects, June, Amsterdam.
- Brennan, N. (2001), "Reporting intellectual capital. *Accounting, Auditing & Accountability Journal*, Vol. 14 No. 4, pp. 423-436.
- Brennan, N. and Connell, B. (2000), "Intellectual capital: current issues and policy implications", *Journal of Intellectual Capital*, Vol. 1 No. 3, pp 206-240.
- Calisir, F., Gumussoy, C. A., Bayraktaroglu, A. and Denez, E. (2010), "Intellectual capital in the quoted Turkish ITC sector", *Journal of Intellectual Capital*, Vol. 11 No. 4, pp. 537-553.
- Chan, L., K. Lakanishok, J. and Sougiannis, T. (2001), "The stock Market valuation of Research and Development Expenditures", *Journal of Finance*, Vol. LVI No.6, pp. 2431-2456.
- Chang, W.S., & Hsieh, J.J. (2011). "Intellectual Capital and Value Creation Is Innovation Capital a Missing Link"? *International Journal of Business and Management*, Vol. 6 No. 2, pp. 3-12.
- Chen, J., Zhu, Z., and Xie, H. Y. (2004), "Measuring intellectual capital: a new model and empirical study", *Journal of Intellectual capital*, Vol. 5 No. 1, pp. 195-212.
- Chen, M., Cheng, S., and Hwang, Y. (2005), "An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance", *Journal of Intellectual Capital*, Vol. 6 No. 2, pp. 159-176.
- Cheng, M., Lin, J., Hsiao, T., & Lin, T. (2010). "Invested resource, competitive intellectual capital, and corporate performance". *Journal of Intellectual Capital*, Vol. 11 No. 4, pp. 433-450.
- Edvinsson, L. (1997), "Developing Intellectual Capital at Skandia", *Long Range Planning* Vol. 30 (June), pp. 366-373.
- Edvinsson, L., and Malone, M. (1997, "Intellectual Capital: Realising Your Company's true Value by finding its Hidden Brainpower", *Journal of Human Resource Costing Accounting*, Vol. 4 No. 1, pp. 21-33.
- Firer, S., and Williams, S., M. (2003), "Intellectual capital and traditional measures of corporate performance", *Journal of Intellectual Capital*, Vol. 4 No. 3, pp. 348-360.
- Garcia-Ayuso, M. (2003), "Intangibles: lesson from the past and a look into the future", *Journal of Intellectual Capital*, Vol. 4 No. 4, pp. 356-364.
- Gerpoth, T., J. Thomas, S., E. and Hoffman, A., P. (2008), "Intangible asset disclosure in the telecommunications industry", *Journal of Intellectual Capital*, Vol. 9 No. 1, pp. 37-61.
- Ghosh, D., and Wu, A. (2007), "Intellectual capital and capital markets: additional evidence", *Journal of Intellectual Capital*, Vol. 8 No. 2, pp. 216-235.
- Green, A. (2008), "Intangible Asset Knowledge: The conjugality of business intelligence (BI) and business operational data", *The Journal of Information and Knowledge Management System*, Vol. 38 No. 2, pp. 184-191.
- Gu, F. and Lev, B. (2001), Intangible assets: measurement, drivers, usefulness, working paper, Boston University, Boston, MA.
- Guthrie, J. (2001), "The management, measurement and the reporting of intellectual capital",

- Journal of Intellectual Capital*, Vol. 2 No. 1, pp. 27-41.
- Kujansivu, P., & Lonnqvist, A. (2007). "Investigating the value and efficiency of intellectual capital". *Journal of Intellectual Capital*, Vol. 8 No. 2, pp. 272-287.
- Lim, L. K. and Dallimore, P. (2004), "Intellectual Capital: Management Attitudes in Service Industries", *Journal of Intellectual Capital*, Vol. 5 No. 1, pp. 181-194.
- Lin, G., T. R. and Tang, J., Y. H. (2009), "Appraising Intangible Assets from the Viewpoint of Value Drivers", *Journal of Business Ethics*, Vol. 88, pp 679-689.
- Luthy, D. H. (1998), "Intellectual capital and its measurement", Paper presented at the Asian Pacific Interdisciplinary Research
- Maditinos, D., Chatzoudes, D., Tsairidis, C., and Theriou, G. (2011), "The impact of intellectual capital on firms' market value and financial performance". *Journal of Intellectual Capital*, Vol. 12 No. 1, pp. 132-151.
- Makki, M. A., Suleiman, A., & Lodhi C. R. (2009), "Impact of Intellectual Capital on Shareholders Earning". *Australian Journal of Basic Applied Sciences*, Vol. 3 No. 3, pp. 3386-3398.
- Nazari, J. (2010), "An Investigation of the Relationship between Intellectual capital components and Firm's Financial Performance", Accessed on 12th of February, from <http://www.proquest.umicom.eserv.uum.edu.my/pgd.web>
- Okwy, P., O and Christopher, C., O. (2010), "Human Capital Accounting and its relevance to Stock Investment Decisions in Nigeria", *European Journal of Economics, Finance and Administrative Sciences*, Vol. 21, pp. 64-76.
- Pablo, P. (2003), "Intellectual Capital Reporting in Spain: a comparative view", *Journal of Intellectual Capital*, Vol. 4 No. 1, pp. 61-81.
- Pablos, P. (2005), "Intellectual capital Reports in India: Lessons from a case study", *Journal of Intellectual Capital*, Vol. 6 No. 1, pp. 141-149.
- Petty, R. and Guthrie, J. (2000), "Intellectual capital literature review: Measurement, reporting and management", *Journal of intellectual Capital*, Vol. 1 No. 2, pp. 55-176.
- Pulic, A. (2000), "VAIC – an accounting tool for IC management. *International*", *Journal of Technology Management*, Vol. 20 No. (5-8), pp. 702-714.
- Riahi-Belkoai, A. (2003), "Intellectual capital and firm performance of US multinational firms: A study of the resource-based and stakeholder views", *Journal of Intellectual Capital*, Vol. 4 No. 2, pp. 215-226.
- Rodgers, W. (2003), "Measuring and Reporting of knowledge-based assets", *Journal of Intellectual Capital*, Vol. 4 No. 2, pp. 181-190.
- Salman, R., T. and Tayib, M. (2012), "Intellectual Capital Measure Tools", *International Journal of Social Science Economics & Art*, Vol. 2 No. 2, pp 19-26.
- Salman, R., T., Yahaya, K. A., and Aliu, O. A. (2012), "The Application of the Value Added Intellectual Coefficient to Measure Corporate performance: Evidence from Nigerian Service Companies, *Entrepreneurial Journal of Management Sciences*, Vol. 1 No. 1, pp. 30-42
- Seetharam, C. (2000), "The value-relevance of Trademarks", Working Paper, New York University.
- Shiu, H. (2006), "The Application of the Value Added Intellectual Coefficient to Measure Corporate performance: Evidence from Technological Firm". *International Journal of*

Management, Vol. 23 No. 2, pp. 356-365.

Stewart, T. (1997), *Intellectual Capital: The New Wealth of Nations*: Doubleday Dell Publishing Group, New York, NY.

Stewart, T. (1998), The e-business tidal wave: perspectives on business in cyberspace (Electronic Version), *Delitte and Touche* assessed March 23, 2011 from <http://www.solveinteractive.com/kc/eBusTidalWave.pdf>.

Sullivan, P. (1998), *"Profiting from Intellectual Capital: Extracting Value from Innovation"* John Wiley & Sons, New York, NY.

Sveiby, K. E. (1997), "The Intangible Assets Monitor", *Journal of Human Resource Costing and Accounting*, Vol. 2 No. 1, pp. 73-97.

Sveiby, K. E. (2007), "Methods for Measuring Intangible Asset", accessed on 22nd February, 2011 from <http://www.sveiby.com/Portala/0/articles/IntangibleMethods.htm>.

Tan, H. P., Plowman, D., & Hancock, P. (2007). "Intellectual capital and financial returns of companies". Vol. 8 No. 1, pp. 76-95.

Tayib, M. and Salman, R. T (2011), "Intellectual Capital Reporting in Nigeria: A way forward", Paper presented at 2nd African International Business and management Conference, in "Building Synergies for Better Performance", in Nairobi, Kenya, August 25-26.

Ting, I., W.K. & Lean, H., H. (2009). "Intellectual capital performance of financial institutions in Malaysia". *Journal of Intellectual Capital*, Vol. 10 No. 4, pp. 588-599.

Vergauwen, P.G., and Alem, F.J. (2005), "Annual report IC disclosures in The Netherlands, France and Germany", *Journal of Intellectual Capital*, Vol. 6 No.1, pp. 80-104.

Wang, W., & Chang, C. (2005), "Intellectual capital and performance in causal models: Evidence from the information technology industry in Taiwan", *Journal of Intellectual Capital*, Vol. 6 No. 2, pp. 222-236.

Wernerfelt, B. (1984), "A resource based view of the firm", *Strategic Management Journal*, Vol. 5, pp. 171-180.

Williams, S. M. (2001), "Is Intellectual capital performance and disclosure Practices Related"? *Journal of Intellectual Capital*, Vol. 2 No. 3, pp. 192-203.

Yalam, A., & Coskun, M. (2007). "Intellectual capital performance of quoted banks on the Istanbul stock exchange market". *Journal of Intellectual Capital*, Vol. 8 No. 2, pp. 256-171.