

EFFECT OF INTELLECTUAL CAPITAL ON FINANCIAL PERFORMANCE OF LISTED MANUFACTURING FIRMS IN NIGERIA

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ABSTRACT

Competition exists among organizations to maintain a greater percentage of market shares; this can only be achieved by management with good skill. This paper examined the effect of intellectual capital on the financial performance of listed manufacturing firms in Nigeria. The study generated data from the published annual accounts of 24 listed manufacturing firms in our study and used it for analysis. The VAIC was adapted to measure Intellectual capital, while Return on Assets was used as a determinant of financial performance. Descriptive statistic was carried out and stationarity test was conducted, Co integration analysis was also carried out and least square regression of the panel data comprising of fixed and random effect with Hausman test was duly conducted and result revealed a significant and positive relation between intellectual capital and financial performance of manufacturing companies in Nigeria and we recommended that management of listed manufacturing companies in Nigeria should ensure efficient and effective management of intellectual capital since it impacts positively on their revenue generation.

Keywords: Intellectual Capital, Financial Performance, Revenue Generation, Return on Assets

INTRODUCTION

The recent collapse of high profile organizations world over have ushered high nervousness to corporations, permitting the skill of corporate managers as crucial in corporate financial management. On the other hand, the nascent advancement in technology experienced in the corporate sector has also introduced a shift in corporate decision making to concentrate on intellectual capital rather than tangible assets (Raze 2011; Borneinan, 1999; Ahmadi, Ahmadi & Shakeri, 2011; Huang & WU, 2010; Ekwe, 2013; Ifsu & Fang, 2010). Currently, both developing and developed countries alike are experiencing economic downturn hence organizations nowadays do not just hire labour but the skilled that is capable to fit into the modern production system thereby enhance corporate performance (Ekwe, 2013; Adelakun, 2011; Firer & Williams, 2003) opine that intellectual capital increases the competitive edge of corporations. Suffice it to say that the degree of difference between two firms with an identical number of physical assets lies in the management strategies adopted by these firms (Brennan & Connell, 2000).

Again, skill and expertise are vital in the management of the organization as can be evidence by the great importance which investors and the financial market attach to its as change in CEOs and top management brings about change in stock prices. Bontis (2001) argued that if intellectual capital does not subsist in corporations afterward stock value would not have responded to changes in the executive as an element of intellectual capital (Lev & Zaowin, 1999; Lev, 2001; Bontis, 2001). However, the invisibility and not tangibility nature of the worth

of skill cannot be reported accurately by the traditional measure accounting which corporations adopt in their everyday activities (Rastogi, 2000; Lev & Radhakrishnan, 2003; Ekwe, 2013). Hence, the adequacy and reliability of traditional accounting in the present day ought to be questioned since it has failed to capture the value of knowledge and information in an employee.

A conflicting opinion exists on the relevance of IC in corporate performance, while the studies of (Bornemann, 1999; Brennan & Connell, 2000; Clarke, Seng & Whiting, 2010; Obedient, Abdallah, Aqqad, Akhoershiedah & Maqabled, 2016; Badraadi & Akbarpour, 2013) strongly agreed that intellectual capital plays a crucial role in organizational performance, (Wright, Kaemar, McMahan & Deleemo, 1995) found an affirmative alliance linking acquaintance and managerial performance. Most often, the collapse of organizations does not blame on materials rather on management and how effective such management skill is, this portrays the crucial nature of intellectual capital in ensuring the continued existence of the firm which is a function of profitability as no investor is interested in a venture without a positive return.

Furthermore, intellectual capital is the life wire of every organization, no wonder organizations during an advertisement for recruitment place importance on years of experience, the type of skill required, and the task to be performed. Submit that the rationale behind the acquisition of one company by another is the skill of the management team which is lacking in the acquired company. Besides, the potential nature of intellectual capital cannot be doubted as it is the motivation behind firms after incurring huge costs in the recruitment processes still take incurs more costs in training their employees to ensure that the proper and required skill is adequately imparted into them for more productive reasons. It is against this backdrop that this study is designed to examine the effect of intellectual capital on manufacturing companies in Nigeria.

LITERATURE REVIEW

One of the challenges facing corporations nowadays is changes in plans and strategies (Shah & Shah, 2010) in retort to social development and demographical modifications like the dominance of capitalist models, increasing antagonism, industrial development, and the swift senescent of the populace (Garaverts, Kyndt, Dochy & Baert, 2011; Masa'deh, 2013; Masa'dah, Shannak, Maqableh & Tarhim, 2016; Obedient, Masadag & Abdallah, 2014; Shannak, Masada, Obedient & Almajali, 2010; Shannal, Masadeh, Al-zu'bi, obedient, Alshurideh & Altamony, 2012). Consequently, ascent organizational administration styles are not appropriate and effective (Ho, 2008). Hence, organizations now channel their resources in areas like employee education, client associations, etc (OECD, 2008). These are known as intellectual capital and have taken dominance in management decisions (Zeghal & Maaloul, 2008; Kamukama, Ahiauzu & Ntayi, 2010)

Lee, Wu & Chao (2015) opine that IC is the skill that can be transformed to value and it is the professional skill for achieving aggressive advantage. Permit to say that learned practice are those invisible or intangible assets that are hard to qualify into a value and are never reported in a financial statement such as skill, workforce, and its organization. Discoveries, skills, acquired practical experiences, etc are encapsulated in intellectual capital (Stewart, 1997; Fredriksen, 1998) asserted that it is packaged knowledge.

Dimensions of Intellectual Capital

Divergent opinions exist as regards mechanisms of intellectual capital (Badrabadi & Akbarpour, 2013) among them is the widely accepted pigeonholed of IC into HC, SC, and RC (Bontis, 2010; Chen, 2008; Hsu & Fang, 2009; Shih, Chang & Lin, 2010).

Human Capital (HC)

This is described as the aggregate of employees' proficiency, acquaintance, know-how, innovativeness, ability, and dedication (Wang, Wang & Liang, 2014). corporations retort on human capital a lot as it assists corporations to counter environmental changes resourcefully (Kong, 2010; Rodrigues, Faria, Renfield & Morais, 2013; Edvinsson & Malon, 1997) defined (HC) as the hard wares, soft wares, etc that improve efficiency. It is the mechanisms and structural novelty thereby make crucial organizations resourceful (Kong, 2010).

Relational Capital

Orugun & Aduku (2017) opine that relational asset has to do with a consciousness that a corporation has for its client, the contentment that turns patrons on and keep their benefaction.

Financial Performance

It is the yardstick for determining and reporting corporate performance as it appears in the financial statement of corporations (Chang & Lee, 2012). Suffice it to say that it is a display of how a corporation performs comparatively to profitability etc (Ho, 2011; Luo, Huang & Wang, 2012) posit that financial performance is the accomplishment of corporate financial goals which is displayed in the outcome of financial indices and market indicators. Hernaus, Bach & Vuksi (2012) asserted that financial performance is calculated with the listed yardsticks: return on assets, return on equity, etc.

Return on Assets (ROA)

This is a measure that indicates the extent to which a corporation's revenue exceeds its cost. It shows how profitable a business is relative to its total assets. It depicts management competency in the use of assets to engender income (Madugba & Okafor, 2016). It is the percentage of the mesh returns subtract first choice shareholders returns alienated by the book value of total assets contained in the financial statement (Williams & Firer, 2003; Ekwe, 2013; Clarke, Seng & Whiting, 2010).

Theoretical Framework

Human Capital Theory

This conjectures that schooling enhances the proficiency of a worker through the improvement of their cognitive skill. The theorists hold prima-facia that the essence of schooling is to improve human capacity which is an amalgamation of instinctive talent with speculation in human beings (Babalola, 2000; Adelakun, 2011). It is expedient to state that the supply of human resources improves in an era only when the gross venture is greater than reductions over time, with concentrated use or lack of use. This theory will be adopted in this study because it centers on enhancing employees' productivity which leads to increased profitability.

Empirical Review

Clarke (2010) in their study which focussed on Australia between 2004 and 2008 adopted VAIC as a determinant of IC. The source of data was secondary and the findings revealed that there is direct affiliation connecting IC and financial performance. Bramhandkar, et al., (2007) found that companies with high concentrated IC had a more interesting result. Tan, et al., (2007) also in their finding corroborated the finding of Bramhankar, et al., (2007). (Kamath, 2008) in his study affirmed that IC is completely and considerably linked with profitability. Pal & Soriya (2012); Makki, et al., (2009) also affirm that IC impacts financial performance. Ahangar (2011) in his study in an Iranian company, which spanned from

1980-2009 which also adopted VAIC and ROA, and secondary data sourced from the financial statement was used to test the hypotheses, found that corporate profitability and productivity is explained intellectual capital.

Xu & Wang (2019) in their study of this nature though in agricultural companies in China, found that workers skill influences the financial performance of agricultural companies in China and concluded that intellectual capital is a vital index for growing the agricultural companies in China. Abbasi, et al., (2019) in their study adopted VAIC in measuring intellectual capital and found that IC is directly related to the business performance of indexed corporations in Pakistan. He suggested that companies in Pakistan should consider IC as a crucial tool for corporate growth. Khalique, et al., (2019) in their study in Pakistan adopted the integrated intellectual capital model and found out IC is very imperative for the continued existence of the banking sector in Sialkot Pakistan and that customer capital, etc was shown to be noteworthy to operational accomplishments of Banks in Sialkot.

Mondal & Ghosh (2012) in their study which spanned from 1999 to 2008 in which data got from the yearly reports of the banks were used and VAIC was adopted to determine IC while ROA and ROE were employed to quantify profitability and productivity as a measure of assets turnover ratio (ATO). The result revealed a varied opinion between IC and Performance. Joshi, et al., (2013) in a study to find out the effect of IC on the performance of the Australian financial sector in which the result of the tested hypothesis revealed that operational performance is extremely prejudiced by human capital.

METHODOLOGY

Ex-post-facto research design was chosen on the account that the data on intellectual capital cost and financial performance of listed manufacturing companies in Nigeria already exist in the published annual accounts of the manufacturing companies hence, is not subject to manipulation (Madugba et al., 2015). Out of 62 manufacturing companies in Nigeria, 24 were selected based on the availability of the nature of data required for this study. The study spanned from 2009-2018. Secondary data got financial reports of the listed manufacturing companies in our study were analysed with aid of E-view 9. Descriptive statistics and multiple regressions were carried out to establish the liaison linking the tested and predictor variable. Also, the unit root test was conducted to ascertain the stationarity of data and Cointegration to establish the long-run relation of the tested and predictor variables. The tested variable operating performance was measured with Return on Assets while the predictor variable IC was measured by adopted Value Added Intellectual Capital (VAIC) as developed by Pulic (1998).

$$VAIC = HC + SC + CEE \dots\dots\dots 1$$

Where VAIC= Value added intellectual coefficient of the companies.

CEE= Capital employed efficiency of the companies.

HC= human capital of the companies.

SC= structural capital of the companies.

To compute VAIC, Value-Added (VA) will first be premeditated. VA is therefore the disparity linking output and input. The output here is net sales revenue and input comprises of all the charges incurred in generating sales revenue except for labour costs which are considered to be a value-creating entity (Tan, Plowman & Hancock, 2008). VA is described as the net value produced by the firm in a particular year (Chen, Cheng & Hwang, 2005). It is expressed as:

$$VA = S - NI + T + DP + I + W \dots\dots\dots 2$$

Where S= net sales revenues (output), B=bought in materials and manufacturings or cost of goods sold (input), NI= net income after tax, T= taxes, DP= depreciation, I= is interest expenses, and W= employees' wages and salaries.

More so, VA is computed by Lessing selling charges (material cost, maintenance costs, and other peripheral costs) from sales income (Pulic, 1998).

$$CEE = VA/CE \dots\dots\dots 3$$

VA= Value added of the companies

CE=book value of the net assets of the companies

HCE= is the ratio of total VA divided by the total salary and wages spent by the companies on its employees.

$$HCE = VA/HC \dots\dots\dots 4$$

Where: HCE= human capital efficiency coefficient of the manufacturing companies

VA= Value added of the manufacturing companies

HC= total salary and wages costs of the manufacturing companies.

To calculate SCE, Pulic (1998) as cited in Ekwe (2013) opined that the value of the firm structural capital should determine d first.

$$SC = VA - HC \dots\dots\dots 5$$

Where

SC= structural capital of the manufacturing companies,

VA= value-added of the manufacturing companies

HC= total salary and wages expenditures of the manufacturing companies.

$$SCE = SC/VA \dots\dots\dots 6$$

Where

SCE= structural capital efficiency coefficient VA of the manufacturing companies.

SC= structural capital of the manufacturing companies.

VA= Value added of the manufacturing companies

From the above, our model specification will be thus

$$ROA_t = f((HC_t, CEE_t, SC_t) \dots\dots\dots (7)$$

$$ROA_{it} = \beta_0 + \beta_1 HC + \beta_2 CEE + \beta_3 SC + e_t \dots\dots\dots (8)$$

Descriptive Statistics

Table 1 DESCRIPTIVE STATISTICS					
	N	Minimum	Maximum	Mean	Std. Deviation
ROA	240	1.01	1.99	1.453	0.24277
HC	240	1.01	1.89	1.331	0.20632
SC	240	1	1.89	1.345	0.2217

CEE	240	1.01	1.99	1.42	0.24589
Valid N (listwise)	240				

Evidence from Table 1 indicates that the average value of Return on Assets of the manufacturing firms is 1.45. This value is positive and is supported by a standard deviation value of 0.242. The minimum and maximum values indicated for the same variable are 1.01 and 1.99.

Human Capital (HC) is indicated to have an average value of 1.33 with a standard deviation value of 0.206. The minimum and maximum value of 1.01 and 1.89 was also indicated for the human capital of the manufacturing firms in our study.

There is statistical evidence from Table 4.1 that structural capital is shown to have a mean value of 1.33. This value is positive and supported by a standard deviation of 0.221. The minimum and maximum values are 1.00 and 1.89. Statistical evidence from Table 4.1 indicated that capital employed efficiency has an average positive value of 1.42. This is validated by a standard deviation of 0.245. The minimum and maximum values are 1.01 and 1.99.

Table 2			
TESTS OF NORMALITY			
	Kolmogorov-Smirnov^a		
	Statistic	df	Sig.
ROA	0.055	240	0.072
HC	0.072	240	0.004
SC	0.112	240	0
CEE	0.05	240	.200*
*. This is a lower bound of true significance.			
a. Lilliefors Significance Correction			

The normality test in this study was conducted with the use of Kolmogorov-Smirnov and a histogram. Table 2 indicated that the return on assets has a statistic value of 0.055. This value is positive and is validated by a probability value of 0.072 implying that the variable is good for further analysis. Also, a histogram in the figure 1 indicated a bell-shaped curve which proved the ordinarieness of the data.

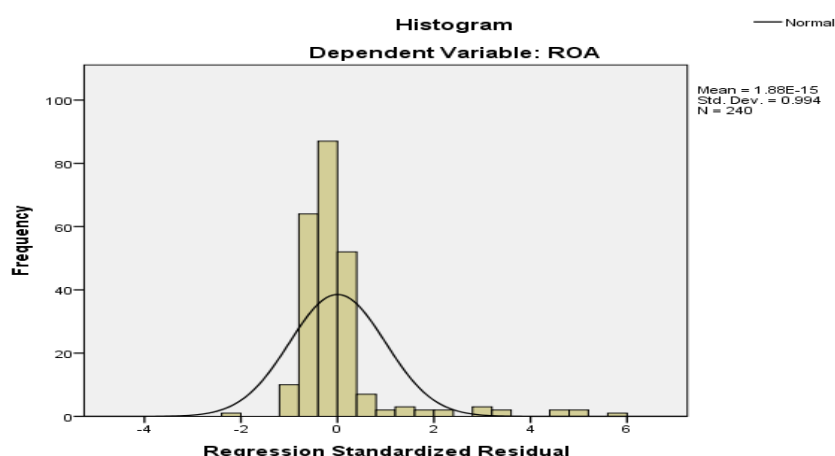


FIGURE 1
HISTOGRAM INDICATING NORMALITY TEST FOR ROA

Figure 2 Chattered by Authors' 2020

DATA ANALYSIS AND INTERPRETATION

Results

Table 3 MODEL SUMMARY ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.844 ^a	0.712	0.708	0.1311	1.852
a. Predictors: (Constant), CEE, SC, HC					
b. Dependent Variable: ROA					

The evidence contained in table 3, revealed that the association (R) is 84.4% which signifies a very high affirmative affiliation between the ROA and the predictor variables. The coefficient of determination of 712 % suggests that independent variables (HC, SC, and CEE) could explain about 71.2% of the variations in EPS. About 28.8% relate to other variables outside the model. This result indicates that the return on assets determines the learned practices (intellectual capital) of quoted manufacturing companies in Nigeria. The adjusted (R) is 708 that is 70.8%, this implies that the contribution of each variable is too small to influence the tested variable in this study. The Durbin-Watson of 1.852 which is in the region of 2 indicates a deficiency of autocorrelation in the distribution.

Table 4 ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.03	3	3.343	194.531	.000 ^b
	Residual	4.056	236	0.017		
	Total	14.086	239			
a. Dependent Variable: ROA						
b. Predictors: (Constant), CEE, SC, HC						

The F Statistics on table 4 is 194.531 while the significant value is $0.000 > 0.05$ level of significance. This outcome is significant confirms the model of a good fit. Thus, the human capital, structural capital and capital employed efficiency variables jointly impact the dependent variable (Return on Assets).

Table 5 COEFFICIENTS								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.208	0.081		2.562	0.011		
	HC	0.102	0.043	0.086	2.345	0.02	0.899	1.113
	SC	-.0046	0.04	-0.042	-1.144	0.254	0.901	1.11
	CEE	0.825	0.035	0.835	23.88	0	0.997	1.003
a. Dependent Variable: ROA								

Table 5, indicated that the tolerance values of 0.899, 0.901, and 0.997 are below the benchmark 0.10, implying the absence of collinearity in this study. This well corroborated by the Variance Inflation Factor (VIF) value of 1.113, 1.110, and 1.003.

DISCUSSION

The Effect of Intellectual Capital on Return on Assets of Listed Manufacturing Companies in Nigeria

Table 4 showed that Human Capital (HC) has an optimistic and major alliance with return on assets as validated by a coefficient of regression value of 0.102. This implies that about 10.2% of the total variation observed in the tested variable (ROA) is accounted for by HC. Our judgment was affirmed by the study of (Xu & Wang, 2019; Abbasi et al., 2019). Structural Capital (SC) is indicated to have a co-efficient value of -0.046, meaning that there is a negative and insignificant link between ROA and SC of listed manufacturing companies in Nigeria. This finding does not agree with the study of Khalique, et al., (2019). The reason could be the geographical location of the study and the sector where the study was carried out. Statistical evidence from table 4 showed that Capital Employed Efficiency (CEE) has an affirmative and significant affiliation with ROA of listed manufacturing companies in Nigeria as supported by the coefficient of a regression value of 0.825.

CONCLUSION

Novelty as the aftermaths of intellectual product is the sustenance of any corporate entity (Onag et al., 2014) hence; we investigated the effect of intellectual capital on the operating performance of listed manufacturing firms in Nigeria. The tested variable operating performance was measured with Return on Assets (ROA) while the predictor variable intellectual capital was determined through the adoption of the Value-Added Intellectual Capital (VAIC) model. Secondary data extracted from the annual account of the manufacturing companies in our study were used and the outcome of the test of hypothesis revealed that intellectual capital has an activist and considerable effect on the return on assets of the manufacturing firms in our study. Hence, we concluded that intellectual capital can be relied upon to explain the operating performance of listed manufacturing companies in Nigeria. This confirms that the survival, sustenance, and continued existence of any organization is wholly a function of the skill of the labour force operational in that organization. No wonder organization spends a huge amount to ensure that the best possible labour is engaged for effective productive reasons. The study, therefore, suggests that listed manufacturing firms in Nigeria should consider intellectual capital fundamental in the pursuit of organizational goals, strike a balance amongst the components of intellectual capital, and that training and retraining should be considered vital it improves worker skill and productivity.

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