Effect of Intellectual Capital on Market Performance of Listed Manufacturing Companies in Nigeria

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A b s t r a c t

This examination explores the impact of scholarly capital available execution of recorded assembling organizations in Nigeria over the time of 2009 – 2017. Nigeria manufacturing companies cannot boast of competitive edge over foreign companies and that is the main issue that this study explored. Market performance was measured using Tobin Q while intellectual capital was measured based on the Value-Added Intellectual coefficient (VAIC) measurement framework by using human capital efficiency (HCE), capital employed efficiency (CEE), Structural capital efficiency (SCE). The switch variables were firm size (FSIZE) and leverage (LEV). Firm size was measured as log of total asset while Leverage was measured as Total debt divided by total asset. In testing for the formulated hypotheses, multiple OLS pooled regression was used which is the most suitable techniques for analyzing the effect of independent variables on dependent variable when the dependent variable is neither binary nor ordered and in the case of heteroscedasticity, a robust regression was used to correct the results. The study also performed preliminary pre-regression analysis such as descriptive statistics, correlation matrix and normality test. The results from analysis shows that out of the three VAIC components used only capital employed had positive effect on market performance. This study therefore recommended that capital aspect of intellectual capital be given more attention by management and stakeholders that have interest in improving manufacturing companies' market performance.

Keywords: *Capital employed, Human capital, Intellectual capital, and Structural capital*

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Background to the Study

The global financial crisis of 2008 has prompted slow move from industry based financial condition which has an emphasis on unmistakable resources (production lines, machines, plants and hardware) to a high innovation, data, and development subordinate monetary condition. The new economy underscores ability, gifts, inventiveness, advancement, expertise, devotion and experience of individuals in the association; (that is scholarly capital base of the association) (Yusuf, 2013).

The undeniable contrast between the two monetary conditions lies in the idea of their benefits and their impact on profitability, productivity and other budgetary execution files. The substantial resources (plants, apparatus, materials, hardware, et cetera.) are essential which needs to do with the greater part of the association's benefits and decide its esteem. However high innovation, data and development subordinate economy, information, capacity, abilities, experience and disposition of laborers expect more prominent centrality. Already, land, work and capital (monetary and physical) were customarily viewed as the most significant resources in financial matters and subsequently, traditional physical resources were viewed as the fundamental determinants of the execution of any monetary movement (Ahangar, 2011).

As indicated by Porter (1985) upper hand is the capacity to win degrees of profitability reliably over the normal for the business. Barney (1991) particularly noticed that upper hand can be accomplished if the firm actualizes an esteem making system that isn't at the same time being executed by any current or potential contenders. Appropriate use of asset in the association will prompt unmistakable skill and this will result in the association having aggressive edge which will make predominant client esteem. Better client esteem will lead than higher execution. Upper hand is, as per the asset construct see, dependant in light of the important, uncommon, and difficult to-impersonate assets that dwell inside an association (Barney, 1991).

In the present information-based economy, numerous scientists guarantee that "Individuals are our most prominent resource". As expressed by Fitz-enz (2000) "individuals are the most intense factor in esteem formation of each company". All the more along these lines, for any substantial advantage for include an incentive in any association it should be put to use by the human resource of such association. Subsequently, to build up an upper hand, it is imperative that organizations genuinely use on the workforce as an aggressive weapon to complete the association's goals. Yusuf (2013) contended that the capacity of a corporate association to effectively actualize business systems exclusively relies upon productive utilization of intangibles resource, especially Intellectual Capital.

Despite the fact that the significance of Intellectual Capital (IC) is always expanding, numerous associations confront issues with its administration, for the most part because of estimation challenges (Kim, Lee, Chun, Benbasat, 2014, Nazari and Herremans, 2007). The broad acknowledgment of Intellectual Capital (IC) as a wellspring of upper hand

prompted the advancement of fitting strategies for its estimation, since conventional money related apparatuses are not ready to catch the majority of its angles (Campisi and Costa, 2008; Nazari and Herremans, 2007).

Pulic (2000) concocted the most suitable strategy for estimating Intellectual Capital, he build up the most prevalent technique that estimates the productivity of significant worth included by corporate scholarly capacity (Value Added Intellectual Coefficient – VAIC). The VAIC strategy estimates the proficiency of three kinds of data sources: capital utilized (physical and money related), human capital, and auxiliary capital (Firer and Williams, 2003; Public, 2000).

None of Nigerian manufacturing company is listed among Fortune 1000 and Fortune 500. This suggests that all Nigerian manufacturing companies are small because they are not listed among the big players. This is worrisome because Nigeria being the most populous black nation with abundant knowledgeable talents needs to be placed on global ranking. The problem facing manufacturing sector in Nigeria is that despite the abundance of talented knowledgeable human resource, made in Nigeria products cannot compete with foreign products in the market place. The question is why is the manufacturing sector not gaining competitive edge in the market despite the abundance of talents. This necessitates the need to look at Intellectual Capital activities of manufacturing companies in Nigeria with regards to market share.

Adopting Public (2000) proxy for Scholarly Capital (Human Capital Efficiency, Structural Capital Efficiency and Capital Employed Efficiency), the accompanying inquiries were raised:

 i. What is the impact of Human Capital Efficiency (HCE) on Market Performance (Tobin Q)?
 ii. What is the impact of Structural Capital Efficiency (SCE) on Market Performance (Tobin Q)?
 iii. What is the impact of Capital Employed Efficiency (CEE) on Market Performance (Tobin Q)?

The principle target of the examination is to evaluate the impact of Intellectual Capital on market execution of assembling organizations in Nigeria. The particular goals are to:
 i   Examine the effect of Human Capital Efficiency (HCE) on Market Performance (Tobin Q)
 ii Assess the effect of Structural Capital Efficiency (SCE) on Market Performance(Tobin Q)
 iii Examine the effect of Capital Employed Efficiency (CEE) on Market Performance(Tobin Q)

To address the research questions raised, the following hypotheses were stated in null form.

H0₁: Human Capital Efficiency (HCE) has no significant relationship with Market Performance (Tobin Q)

H0₂: Structural Capital Efficiency (SCE) has no significant relationship with Market Performance (Tobin Q)

H0₃: Capital Employed Efficiency (CEE) has no significant relationship with Market Performance (Tobin Q)

The Concept of Intellectual Capital

In the surviving writing there flourish a few examinations surveying the effect of scholarly capital on the money related execution of associations with accentuation on the budgetary area. In spite of these investigations, there has not been a brought together or regular meaning of scholarly capital as concurred by Engstrom, Westnes, and Westnes (2003) that scholarly capital has no for the most part acknowledged definition. Hence, earlier examinations have made a few endeavors in giving a few definitions to scholarly capital. Ahangar (2011) was of the view that scholarly capital incorporates general learning, creations, plan approaches, thoughts, PC projects and distributions. On this note, the expression "Scholarly Capital" can be viewed as comprising of the information base value of associations which has pulled in a noteworthy number of useful intrigue (Campisi and Costa, 2008). Ismail and Karem (2011) characterizes scholarly capital as the consolidated elusive resources which empower the organization to capacity and see a venture as the entirety of its unmistakable resources and elusive resources as communicated in the accompanying recipe: Enterprise = Tangible Assets + Intellectual Capital. For this study, intellectual capital is defined as the intangible assets of an organization which comprise of patents, skills, innovation, processes, programs and ideas that gives the organization competitive edge in the market.

Human capital constitutes innate abilities and acquired knowledge, skills, experiences and approaches (behaviour). It means that process of developing knowledge, professional and social skills as well as obtaining experiences that increases the human capital value. However, the process is a function of time and it is possible to articulate a hypothesis that the process is function of age, too. Consequently, there exists a relation between human capital value and age structure of its bearers, i.e. labour force of an organization or of the other unit. It is possible to develop the hypothesis that the human capital value of a certain unit is increasing if the share of older, more experienced labour force is increasing, too (World Bank, 2000).

Human capital proficiency is characterized as a key and arranged way to deal with the administration of what associations have - individuals who exclusively or in gatherings partake in meeting the goals of the organization or foundation. Human capital framework bolsters the individual procedures of the association and utilizing human capital accomplishes the goal successfully. This capital must be overseen and created. All in all, every framework comprises of no less than two, however the most widely recognized of a few sections or components (subsystems) that work together as a sorted-out solidarity of every single constituent component (subsystems), (Chodasova, 2012).

Capital utilized alludes to the book estimation of a company's net resource. It is otherwise called subsidizes utilized, is the aggregate sum of capital utilized for the procurement of benefits. It is the estimation of the considerable number of advantages utilized in a business, and can be figured by adding settled resources for working capital or by subtracting current liabilities from aggregate resources. Capital utilized can be esteemed on a chronicled cost premise, or an elective technique, for example, substitution cost may be utilized (Smhmidt, 2004:166).

Auxiliary Capital is an essential intermediary utilized in figuring Intellectual Capital. It comprises of all non-human resources. It perceived as all frameworks, systems, databases, duplicate rights, licenses, basic methodology, standards and approaches which are imperative for basic leadership as contended by (Bontis, Keow, and Richardson, 2000). Stewart, (1997) characterizes Structural capital as learning resources that are for sure companys' property and incorporates protected innovation, for example, licenses, copyright, trademarks, forms, techniques, models, records and other information curios, PC systems and programming, regulatory frameworks.

Concept of Market Performance (TobinQ)
Tobin's Q
Tobin's Q is a proportion that contrasts the market esteem and resource substitution esteem. Tobin (1969) presented Q proportion and hypothesized that the capital interest in a firm would be subject to the proportion between securities exchange valuation of capital resources and their present substitution cost. From that point forward, Tobin's Q has been broadly utilized in the writing as a proportion of corporate execution and an agent pointer of scholarly capital. It is conceivable to utilize the q proportion for individual resources or the entire firm. Stewart (1997) contended that Tobin's Q was not planned to be a proportion of scholarly capital however it is a decent pointer of scholarly capital. High Q may show that the organization is acquiring uncommon profits for a class of benefits and not encountering unavoidable losses (Stewart, 1997). As indicated by Stewart (1997), this would speak to a circumstance in which the organization acknowledges high benefits from its special resources. Bouteiller (2000) contended that the q proportion must be utilized to contrast the organization and companions in the business with comparative kinds of physical resources. It is typically simple to get a precise gauge for the market estimation of an association's benefits by deciding the estimations of the company's securities, for example, stocks and securities, from capital markets. Likewise, this strategy Tobin's Q has customarily been utilized for foreseeing venture choices. Tobin's Q is the proportion between the market esteem and substitution estimation of the equivalent physical resource.

Empirical Framework using Q
Chen, Cheng, and Hwang (2005) conducted a quantitative study with structural equation modeling to examine the influence of IC on corporate performance. The authors employed the VAIC model to measure IC and its efficiency indicators: HCE, SCE, and CEE. They also chose market value as the indicator of business performance. The authors

collected data by accessing the annual reports of 425 companies publicly listed on Taiwan Stock Exchange, most of which were in the electronic industry. The results showed that all the IC efficiency indicators (HCE, SCE, and CEE) had a significant positive impact on the market value: HCE (β = 1.053; $p < 0.05$), SCE (β = 0.112; $p < 0.05$), and CEE (β = 7.221; $p < 0.05$). The findings also revealed that R&D expenses had a significant positive influence on the market value (β = 11.781; $p < 0.05$), but the impact of advertisement expenses was insignificant. At the aggregate level, it was confirmed that VAIC significantly and positively influenced the market value (β = 0.065; $p < 0.05$). This study failed to describe the data used and so cannot be free from being bias.

Zeghal and Maaloul (2010) studied the impact of IC on organizational performance in British firms. They employed multiple linear regression, a quantitative method, to analyze the data collected from 300 UK companies publicly listed on London Stock Exchange (LSE) and available in the "Value Added Scoreboard" database. The sample was selected mostly from the following industries: high-tech, services, and traditional manufacturing. The researchers measured Intellectual Capital using the VAIC model. In their study, HCE and SCE were aggregated together as one value besides the normal capital employed efficiency (CEE).

The authors suggested that corporate investments in IC would allow companies to improve their performance in three main areas: economic performance, financial performance, and stock performance. They also selected market value as the indicator of firm performance. It was also found that CEE had a significant positive effect on the market value (β = 0.550; $p < 0.05$), but the aggregated HCE-SCE did not. Based on the findings, the study concluded that IC has a significant positive impact on firm performance although the level of influence may be varied for different components. The authors also believed that VAIC is a crucial tool for business decision makers to use and gain insights into whether their companies have successfully leveraged available intellectual assets to create values, enhance competitiveness, and improve the performance or not. There was not theoretical backing for aggregating Human capital efficiency and Structural capital efficiency which invariably impacted on the findings.
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Fahim, Maleki, and Yousefnezhad (2012) investigated the rapport amid intellectual capital and performance pointers of firms. In order to quantity the intellectual capital, the worth additional intellectual capital factor was castoff which was settled by Pulic. The model comprises of 146 putative firms in Tehran Stock Exchange in a seven-year retro amid 2004 to 2010. The statistical methods used were correlation analysis and regression pooled least squares by SPSS 18 software. The outcomes presented that there is a expressive association amid intellectual capital and Return Stock, Tobin's Q and market to booking value (MTB). This study cannot be said to be free from bias because there was no justification for the choice of study period.

Kehelwalatenna and Premaratne (2012) made attempts to examine the relationship between IC and organizational performance in the banking sector in the USA. To collect data, the authors accessed the financial reports of 191 commercial banks publicly listed on

the New York Stock Exchange (NYSE). They measured IC and its efficiency indicators (HCE, SCE, and CEE) using the VAIC model. The researchers also selected ATO (for productivity), and market value as the indicators of the business performance of the firms. They analyzed the data and tested the models using multiple linear regression. The results showed that IC had a significant positive relationship with all the indicators of firm performance: ATO (β = 0.130; p < 0.001), and market value (β = 0.140; p < 85 0.01). The findings empirically support that IC significantly and positively influences corporate business outcomes.

Pal and Soriya (2012) examined the relationship between IC and organizational performance in two Indian industries: the pharmaceutical and the textile. The authors employed the VAIC model to measure IC and its efficiency indicators: HCE, SCE, and CEE, ATO for productivity and market value for stock performance as the indicators of business performance. The researchers accessed the Prowess database maintained by Center for Monitoring Indian Economy (CMIE) to collect the financial data of 105 pharmaceutical companies and 102 textile firms. These companies are listed on both National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) of India. The authors employed ordinary least squares (OLS) regression to analyze the data and test the regression models. The results showed that IC did not significantly affect either ATO or market value of either industry. Based on the findings of the insignificant effect of IC on both the productivity and stock performance in both the industries, the authors provided an explanation that Indian firms, like those in other emerging economies, still mainly focused on making short-term profits.

Trisnowati and Fadah (2014) analyzed the influence of IC on business performance in Indonesian commercial banks using multiple linear regression. The authors collected data by accessing the annual reports of 21 banks publicly listed on Indonesia Stock Exchange. The researchers employed the VAIC model to measure IC and its efficiency indicators: HCE, SCE, and CEE. They also chose market value and revenue as the indicators of the business performance of the banks. The authors' analysis showed that IC, represented by VAIC, insignificantly impacted on both revenue and market value (Trisnowati & Fadah, 2014). As per their findings, among all the three IC efficiency indicators, SCE had the dominant role in influencing firm market share in Iranian corporations. This finding cannot be generalized with Nigeria situation because of difference in economic indicators.

Morariu (2014) empirically assess the impact of IC and its components on corporate performance in Romanian firms. The author collected data by accessing the yearly reports of 72 corporations publicly listed on Bucharest Stock Exchange. Morariu employed the VAIC model to measure IC and its efficiency indicators: HCE, SCE, and CEE. The researcher also chose ROE, ATO, and market value as the indicators of business performance. The author used multiple linear regression to analyze the data and test the models. The results revealed that IC, represented by VAIC, did not take a important optimistic effect on any of the performance indicators. Similarly, there was no significant

positive relationship between any IC efficiency element (HCE, SCE, CEE) and any business performance indicator. In summary, the impact of IC on the business performance of Romanian corporations was insignificant. The findings provide a hint that little attention has been paid to managing knowledge resources and leveraging them to create value and improve performance in Romanian corporations. Return on equity is a weak proxy of financial performance because it only looked at equity aspect of the business. Return on asset would have been a better proxy.

Deep and Narwal (2014) examined the relationship between IC and business performance in the Indian textile sector. To collect data for the research, the authors accessed the annual reports of 100 textile firms publicly listed in both the Indian stock exchanges: NSE (National Stock Exchange) and BSE (Bombay Stock Exchange). Deep and Narwal (2014) employed the VAIC method to amount IC and its efficiency indicators: HCE, SCE, and CEE. They also chose ROA, ATO, and market value to represent business performance. The study used both the fixed effect model (FEM) and the random effect model (REM) of the ordinary least regression technique to analyze the data and test the models. The results indicated that IC, represented by VAIC, had a significant positive impact on ROA (FEM: $\beta = 0.013$; $p < 0.01$; REM: $\beta = 0.012$; $p < 0.01$). However, there was no significant relationship between IC and ATO, or between IC and market value. As per the findings, IC had a significant positive influence on profitability (represent by ROA), but it did not have any significant role in impacting either productivity (represented by ATO) or market performance (represented by the market value) in Indian textile companies. This study is defective because if failed to justify the study period.

Kharal, Zia-ur-Rehman, Abrar, Khan, and Kharal (2014) analysed the relationship between IC and business performance in the oil and gas industry of Pakistan. The authors accessed the annual reports of the firms publicly listed on Karachi Stock Exchange and collected data for a total of 78 observations. The study used the VAIC model to measure IC and its efficiency elements (HCE, SCE, and CEE). They also selected market value as the indicator of company performance. The authors employed ordinary least squares (OLS) regression to analyze the data and test the models. The results showed that IC had a significant positive impact on market value ($\beta = 0.248$; $p < 0.05$). The significant positive impact of IC on the market value could suggest that knowledge resources potentially create great long-term value for these companies. Findings from this work cannot be used to generalized because the oil and gas sector is highly volatile and unstable which may affect the results.

Resource-Based View Theory
Resource Based View centers consideration around an association's inside assets as a method for sorting out procedures and acquiring an upper hand. Barney expressed that for assets to hold potential as wellsprings of practical upper hand, they ought to be significant, uncommon, defectively imitable and not substitutable (now for the most part known as VRIN criteria), (Barney, 1999). The asset-based view recommends that associations must create one of a kind, firm-particular center capabilities that will enable

them to beat contenders by doing things any other way (Prahalad, and Hamel, 2010). Despite the fact that the writing presents a wide range of thoughts around the idea of the asset advantage point of view, at its heart, the basic subject is that the company's assets are budgetary, legitimate, human, authoritative, instructive and social; assets are heterogeneous and incompletely portable and that administration's key assignment is to comprehend and sort out assets for maintainable upper hand (Makadok, 2001).

As per the Resource Base View, Grant (1991) sets that while assets are the wellspring of a company's capacities, abilities are the primary wellspring of upper hand. Thusly, it has been underlined that the way to accomplishing upper hand from the company's load of assets lies in the capacity to coordinate diverse assets to frame solid authoritative abilities (Grant 1996b; Zollo and Winter 2002; Verona and Ravasi 2003).

Porter's Competitive Advantage Theory
Porter's hypothesis is that normal components at national level can influence firms to the degree that, uniting them, can help make upper hand at the business level. To this hypothesis, achievement does not simply depend on the investigation of the five powers (risk of new contestants, dangers of substitute items or administrations, bartering intensity of providers, haggling intensity of purchasers, and contention among existing contenders) influencing the business condition and the decision of right corporate methodologies as needs be however upon focal points getting from specific area that can help the execution of all organizations there, (Porter, 1990). Doorman recognized four factors as "dynamic precious stone". These are; (1) firm system, structure and competition, (2) factor conditions, (3) request conditions, and (4) related and supporting enterprises. How these forces are used can lead to achievement of competitive advantage. This study adopts Porter's competitive advantage theory and Resource base view because proper utilization of Porter's diamond will lead to manufacturing companies gaining competitive advantage in terms of market share.

Methodology
This study adopts ex-post facto design. The ex-post facto design was adopted on the basis that it does not provide the study an opportunity to control the variables mainly because they have already occurred and cannot be manipulated.

The population of the study comprises of different sectors of the manufacturing companies listed on Nigerian Stock Exchange (NSE). A Total of 46 companies from different segments of the manufacturing sectors comprising of the consumer sectors, resource sectors, health care sectors and the industrial sectors. The study considers entire population of 46 manufacturing companies listed on Nigerian Stock Exchange.

This study used only the secondary data which is derived from the published annual reports of the all manufacturing firms listed on the Nigeria Stock Exchange (NSE) from 2009 to 2017. The period was selected because it was the financial crisis recovery era and the period when non-tangible assets were given more attention. Secondary data was used

for the purpose of analysis comprising of Nine (9) years financial report of the 46 selected manufacturing companies resulting to 391 unbalanced observations. The observations were unbalanced because the listed periods of all manufacturing companies were not uniform. The variables for the study were subjected to econometric tests to suggest if the models are appropriate for the analysis.

The joint OLS regression demonstrate was utilized for information examination. As indicated by the theories and factors portrayed in past segment, the buildup relapse model to gauge the determinants of factors under investigation. Pooled common minimum squares (OLS) relapse display is utilized to explore the effect of intellectual capital and firms' market share.

Model Specification

$$TOBINQ_{it} = \beta_0 + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 CEE_{it} + \beta_4 LEV_{it} + \beta_5 FSIZE_{it} + U$$

Where:

$TOBINQ_{it}$ = Market Performance
HCE_{it} = Human Capital Efficiency
SCE_{it} = Structural Capital Efficiency
CEE_{it} = Capital Employed Efficiency
LEV_{it} = Leverage
$FSIZE_{it}$ = Firm Size
U = Error Term
β_0-β_n = Regression Coefficient for model

The VAIC Model
Calculation of the VA Value
VA = Operating Profit + Employee Expenses + Amortization+ Depreciation…....1

Calculation of human capital efficiency (HCE)
HCE=VA / HC…………………………………………………………………………2

Where HC is Human Capital, meaning the employee expenses or the total salaries and wages paid to employees

Calculation of structural capital efficiency (SCE)
SCE = SC / VA ………………………………………………………………………….3
Where SC (Structural Capital) = VA – HC.

Calculation of capital employed efficiency (CEE)
CEE= VA / CE (Capital Employed) …………………………………………………….4
Where CE = Property, Plant & Equipment + Current Assets – Current Liabilities

Calculation of the VAIC Value
VAIC=HCE+ SCE + CEE …………………………………………………………………5

Human Capital (HC) signifies the shared information, services, originality, knowledge, and even eagerness of staffs of a company. HC can be seen at the micro level in individuals, such as personal attributes, skills, or at the macro level in organizations, such as teamwork or working environment (Joshi, Cahill, Sidhu, & Kansal, 2013; Suraj & Bontis, 2012). At the micro level, HC belongs to each employee and cannot be separated from the owner. When an employee leaves the company, he/she takes all the personal HC along with him/her, which causes a loss to the firm (Suraj & Bontis, 2012; Joshi, Cahill, Sidhu, & Kansal, 2013).

Human Capital Efficiency (HCE) is a major element of the VAIC value (Fathi, Farafmand, & Khorasani, 2013; Al-Musali & Ku Ismail, 2014).

HCE = VA / (HC: Human Capital).

Where; HC is the worker expenditures, usually the total salaries and wages

Intangible Asset Monitor is a method to measure intellectual assets, which was developed by (Berge, 2010). Intellectual Capital Index (IC-Index) is a list of indices that can be used to capture the total IC of a company, including its knowledge, processes, business strategy, efficiency, effectiveness, to name a few (Berge, 2010).

Samardi (2013) supported the following computations:

VA = Operating Profit + Employee Expenses + Depreciation + Amortization

CEE = VA / CE (Capital Employed).

Where CE = Property, Plant & Equipment + Current Assets – Current Liabilities

Structural Capital Efficiency (SCE) is a major element of the VAIC value (Fathi, Farafmand, & Khorasani, 2013; Al-Musali& Ku Ismail, 2014).

In the VAIC model:

VA = Operating Profit + Employee Expenses + Depreciation + Amortization (1)

SCE = SC (Structural Capital) / VA (2)

Where SC = VA – HC. (3)

Calculation of Tobin Q

Q ratio = Total market value of a firm / Total asset value.

Tobin Q = (Equity market value + Liabilities market value) / (Equity book value + Liabilities book value)

Results and Discussions
Descriptive Statistics
The Table underneath demonstrates the descriptive statistics of the listed Nigerian manufacturing companies that make up sample of study.

Table 1: Descriptive Statistics

	TOBINQ	HCE	SCE	CEE	LEV	FSIZE
Mean	1.93	3.66	0.49	0.29	62.8	16.1
Std.Dev	1.58	3.61	1.70	0.20	33.1	1.88
Maximum	11.7	24.7	7.48	1.66	386.8	21.2
Minimum	0.26	-10.5	-20.5	-0.16	12.4	11.7
Normality	0.00*	0.00*	0.00*	0.00*	0.00*	0.01*
Observations	382	389	389	390	390	391

1% level of Significance
Source: Authors computation (2018)

The mean value of firm market share proxy by TOBINQ was 1.93 while it maximum and minimum values where 11.7 and 0.26 respectively. This also means that there is a wide difference in the market share of sampled manufacturing companies which can lead to heteroscedasticity in the sample. In the case of intellectual capital which was proxy by human capital efficiency (HCE), capital employed efficiency (CEE), Structural capital efficiency (SCE), it was observed that human capital efficiency (HCE) had a mean value of 3.66 and a standard deviation of 3.61, capital employed efficiency (CEE) had a mean value of 0.29 and also a relatively stable standard deviation of 0.20 while Structural capital efficiency (SCE) had a mean value of 3.66 and standard deviation of 3.61. A careful look at the mean and standard deviation of all the intellectual capital variables clearly shows that they are relatively stable since their standard deviations were not higher than their means.

Correlation Analysis
The Table below shows the correlation analysis of our variables based on the data collected from the sampled listed Nigerian manufacturing companies.

Table 2: Correlation analysis

	TOBINQ	HCE	SCE	CEE	LEV	FSIZE
ROA						
TOBINQ	1.00					
HCE	0.19	1.00				
SCE	-0.03	0.14	1.00			
CEE	0.51	0.44	0.16	1.00		
LEV	0.17	-0.21	-0.38	-0.20	1.00	
FSIZE	0.20	0.25	0.06	0.06	-0.13	1.00

Source: Authors computation (2018)

Table 2 above reveals the strength and direction of association of the variables of study, a careful look at the correlation results shows the followings: (1) all three components of VAIC proxy to intellectual capital are not highly correlated which means all three

component measures different aspect of intellectual that are not strongly correlated. (2) Capital employed efficiency was found to have a very highest correlation with Tobin Q (0.51). This means that the better proxy for intellectual capital among all three components is CEE.

Regression Analysis
In testing the hypotheses for this study, multiple pooled OLS regression was used and the study also presented robust regression for the OLS results when the problem of heteroscedasticity was present.

Model
This model focus on estimating the effect of intellectual capital using three components of value-added intellectual capital (VAIC) on market share (TOBINQ). This means that market share which was proxy by Tobin Q score is our dependent variable while human capital efficiency (HCE), capital employed efficiency (CEE) and Structural capital efficiency (SCE) which are component of value-added intellectual capital (VAIC) are used to proxy intellectual capital. Firm size (FSIZE) and Leverage (LEV) where used as control variables. Table 3 is the discussion of model results.

Table 3: Market Performance (TOBINQ) Regression Model

VARIABLES	OLS (TOBINQ)	Robust (TOBINQ)
C	-3.30(0.00)*	-2.53(0.00)*
HCE	-0.02(0.19)	0.007(0.61)
CEE	4.56(0.00)*	2.60(0.00)*
SCE	-0.01(0.66)	-0.02(0.34)
FSIZE	0.19(0.00)*	0.16(0.00)*
LEV	0.01(0.00)*	0.11(0.00)*
R-Squared	0.39	0.39
Adj-R-Squared	0.38	0.38
F-Statistic	48.71(0.00)*	50.10(0.00)*
VIF Test	1.23	
Heteroscedasticity	249.30(0.00)*	
Observation	391	391

Source: Authors computation (2018), Note: * 1% level of significance. Values in () are the P values.

In table 3 above, it was experiential from the OLS joint regression that the R-squared value of 0.39 shows that about 39% of the systematic variations in the dependent variable which is firm market value performance (TOBINQ) was jointly explained by the three components of value-added intellectual capital (VAIC), firm size (FSIZE) and Leverage (LEV). The unexplained part of market share can be attributed to exclusion of certain independent variables that can explain the dependent variable but are outside the scope

of this study. The F-statistic value of 50.10 and its associated P-value of 0.00 shows that the OLS Pooled regression model on the overall is statistically significant at 1% level, this means that on the basis of statistical criteria, the regression model is valid and can be used for statistical inference. The table above also shows a mean VIF value of 1.23 which is less than the benchmark value of 10, this indicates the absence of multicollinearity, and this means no independent variable was dropped from the model. Also, from the table above, it can be observed that the OLS results had heteroscedasticity problem [48.71 (0.00) *] that was significant and that was corrected using robust regression. This therefore means that the robust regression results will be used in testing the hypothesis that relates to model 1. In testing hypotheses, the study provides below the specific analysis for each of the independent variables.

HCE-Human capital efficiency with an OLS robust coefficient of 0.007and a p-value of 0.61appears to have an optimistic effect onmarket performance (TOBINQ)and was statistically insignificant at 1% level. This result indicates that an improvement in human capital aspect of intellectual capital would not significantly increase market performance (TOBINQ)of listed Nigerian manufacturing companies. This outcome did not agree with previous experiential outcomes of Fahim, Maleki and Yousefnezhad (2012), Kehelwalatenna and Premaratne (2012) which show that human capital efficiency aspect of knowledge management is a major driver of market share. This result is supported by findings of Pal and Soriya (2012), Morariu (2014). This therefore means we should accept hypothesis 1(H1: Intellectual capital as proxy by human capital efficiency has no significant effect on market performance).

CEE-Capital employed efficiency with an OLS robust coefficient of 2.60and a p-value of 0.00 appears to have a positive effect on market performance (TOBINQ)and was statistically significant at 1% level. This result indicates that an improvement in capital employed aspect of intellectual capital would significantly increase market performance (TOBINQ)of listed Nigerian manufacturing companies. This result agrees with prior empirical results of Zeghal and Maaloul (2010), Maleki and Yousefnezhad (2012), Kehelwalatenna and Premaratne (2012) which showed that capital employed efficiency aspect of intellectual capital is a major driver of market performance. This result did not agree with Pal and Soriya (2012), Morariu (2014). This therefore means we should reject hypothesis 2(H2: Intellectual capital as proxy by capital employed efficiency has no significant effect on market performance).

SCE-Structural Capital efficiency with an OLS robust coefficient of -0.02and a p-value of 0.34appears to have a negative effect onmarket performance (TOBINQ)and was statistically insignificant at 1% level. This result indicates that an improvement in structural capital aspect of intellectual capital would cause a decrease inmarket performance (TOBINQ)of listed Nigerian manufacturing companies but not significantly. This result did not agree with prior empirical results of Maleki and Yousefnezhad (2012), Kehelwalatenna and Premaratne (2012), Trisnowati and Fadah (2014) which show that structural aspect of intellectual capital is a major driver of market

performance. Most specifically, the results tally with previous findings of Zeghal and Maaloul (2010), Pal and Soriya (2012), Morariu (2014) that report structural capital efficiency aspect of intellectual capital does not significantly impact on market performance. This therefore means we should accept hypothesis 3(H3: Intellectual capital as proxy by structural capital efficiency has no significant effect on market performance).

In the case of the control variables, Firm Size with OLS robust coefficient of 0.16 and p-value of 0.00appears to have a positive and significant influence on Nigerian listed manufacturing companies market performance (TOBINQ) at 1% level while Leverage with OLS robust coefficient of 0.11 and p-value of 0.00appears to have a positive and significant influence on Nigerian listed manufacturing companies market performance (TOBINQ)at 1% level.

Conclusion and Recommendations
Findings from this study showed that there is no relationship between training of employees, increase in employee salaries and market performance of manufacturing companies. Improvement in assets of manufacturing companies will significantly increase market performance of manufacturing companies. Changes in structural capital (systems, procedures, data bases, copy rights, patents, and trademarks) do not affect market performance of manufacturing companies in Nigeria.

This study therefore recommends that manufacturing companies should not exhaust their resources on human capital and structural capital aspect of intellectual capital because it will not improve market performance. Manufacturing companies should focus their resources on capital employed aspect of human capital because it will significantly improve market performance.

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