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Impact of Intellectual Capital on Financial Performance of Listed Nigerian Oil Marketing Companies

Godwin Emmanuel Oyedokun* Babale Saidu
Department of Accounting, Faculty of Administration, Nasarawa State University, Keffi Nasarawa State, Nigeria

Abstract
Intellectual capital plays an important role in every company regardless of nature and the environment its operates, in the sense that, investment in human capital development is considered to be important than in physical and financial asset despite the fact that such expenditure is not expressed in monetary term but in narrative form especially in Chairman's statement. Therefore, this study examined the impact of intellectual capital on the financial performance of the listed Nigeria oil marketing companies. The study's period spanned through 10 years 2007 - 2016. Intellectual capital was measured by the market to book value ratio (MB), Value Added intellectual coefficient (VAIC), and monetary model of Tobin's Q (MMQR) while the financial performance was measured by return on asset (ROA). The ex-post facto research design was adopted while data was extracted from the firms' financial statements. Multiple regression analysis was used to ascertain the impact of intellectual capital on financial performance. From the result, it was discovered that market to book value has a negative significant impact on return on asset. Monetary model of Q Tobin's has an insignificant impact on return on asset while Value added intellectual coefficient also has an insignificant impact on return on asset. The study, therefore, recommended that the listed Nigerian oil marketing companies should strive to boost the value of their intellectual assets for its ultimate effect on ROA through maximization of their market value, maximization of Intellectual Capital return and more investment in Intellectual Capital components, particularly human, structural and relational capital. More attention should be given to the human side of the intellectual capital and reliance should not strictly be focused on the numeric evaluation and improvement. Also, standard on intellectual capital accounting is issued by the International Financial Reporting Committee (IFRC) to enable firm's measure and record their intellectual capital values as they relate to financial performance in their income statements which will invariably improve company performance.
Keywords: Accounting, Financial performance, *Financial reporting, Intellectual capital, Tobin Q*

1. INTRODUCTION

Intellectual capital is nowadays important in every company regardless of its size or complexity and can help to increase the company's value added. The importance is so paramount that companies invest more in this asset than in physical and financial assets. As customer demand innovative goods and services that can satisfy their need as well as have value for their money, that is why manager and employers of labour are devoting more attention and resources towards enhancing potentials on the area of human, structural and relational capital in order to satisfy those needs and achieve competitive edge in marketplace. Additionally; companies recently paid more attention to intellectual capital which it refers to as hidden and intangible resources of an organization that cannot be fully captured by traditional accounting reports (Chu, Lin, Yu, Hsiung & Liu, 2006).

Petroleum marketing companies are companies that engaged in storage and transportation of oil, refining and hydroprocessing, marketing and distribution of oil, gas and its derivatives (Kantudu & Samaila, 2015), are not left out in the race for achieving competitive edge; as the industry over the years witnessed what can be termed as giant stride investments in human, structural and relational capital, as drivers of firm value in modern competitive environments lie in a firm's intellectual resources than its physical and financial capital.

Although intellectual capital has been considered an an essential resource especially in an environment where the source of outstanding financial performance is known and other intangible resources; conservative accounting practices as revealed by Chen, Cheng and Hwang (2005) restrain firms' investment in intellectual capital from being present in financial statements. For instance, a study conducted by Okwy and Christopher (2010) (as cited in Tayib and Salman, 2011) revealed that investments in local and overseas training and development of employees by Nigerian Breweries Plc and Unilever in 2006 are N88 and N40 millions respectively. This is in addition to same investment by Wema Bank Plc, and construction of Access University of Banking Excellence by Access Bank Plc in 2007. These gigantic investments are nowhere to be found in the statement of financial position of these companies; as there has not been any specific accounting standard on Intellectual Capital and its reporting in Nigeria. Because SAS 22 issued in June 2006 by NASB now Financial Reporting Council (FRC) was on research and development cost, and IAS 38 by International Accounting Standard Board (IASB) addressed intangible assets generally.

Also, Chevron (now MRS) sponsored training and development courses for its 118 employees in 2007; this was complemented by other programmes such as New to Chevron, people leadership and leading workgroup with a view to developing its intellectual assets. In line with patterns over the years, investment in quality staff

training and development were stepped up by Total Nigeria Plc, to cover 91% of its employees through training courses in 2010; this was followed by graduate traineeship and feminization programmes in the same year. Above all, Oando plc commenced a training school project on 13th June 2011 near the trade fair Complex in Lagos, with the first training session on 5th December, same year. This was complemented by two courses i.e. Strategic Talent Management and Business Acumen developed by human capital management (HCM) team of the company. In view of the foregoing, this study aimed at examining the impact of Intellectual Capital on the financial performance of the listed Nigerian oil marketing companies from the year 2007 to 2016.

Employees are often forgotten as valuable assets since they are often only represented by wages and salaries, including other related employees' expenses, a shift of importance to the knowledge-based economy has encouraged companies to increase the quality of their employees through training and development as drivers of intellectual capital in response to market transformation. Notwithstanding, this scenario trigger's this study into examining the impact of intellectual capital on the financial performance of listed Nigeria oil marketing company in order to ascertain how positively or negatively intellectual impacted on the financial performance of corporate undertaking on the industry under study.

Moreover, in Nigeria the field of Intellectual Capital has not attracted many researchers attention being a newly emerging area only a few researchers such as Yahaya (2007); Uadiale and Uwuigbe (2011); Salman, Mansor and Babatunde (2012a); Suraj and Nick (2012); Salman, Yahaya and Olarewaju (2012b); Abdulai, Kwon and Moon (2012); Okafor (2012); Ogbo, Ezeobi and Ituma (2013); Ekwe (2013); Ekwe (2014) and Kantudu and Samaila (2015), have so far been found to have contributed to the existing literature in this area. With the exception of Uadiale and Uwuigbe (2011) that focused on a selection of 32 listed Nigerian companies (including two oil marketing companies with a study period of one year (2009) as well as Kantudu and Samaila's (2015) study that focuses on the examination of Board Characteristics, Independent Audit Committee and Financial Reporting Quality of Oil Marketing Firms: Evidence from Nigeria, none of the aforementioned studies touched on the impact of intellectual capital on the financial performance of listed Nigerian oil marketing.

Therefore, this research has identified a gap created from the other studies base on the fact that none of the studies conducted in Nigeria touched on the impact of Intellectual Capital and Financial performance, especially in the Nigerian oil marketing industry.

It is with this that this study is to examine the impact of Intellectual Capital on the financial performance of the listed oil marketing companies in Nigeria.

2. LITERATURE REVIEW

2.1. Conceptual Framework

2.1.1 Concept of Intellectual Capital

Intellectual capital is one of the concepts in accounting that are yet to have universally accepted definitions. This is as a result of its nature and constituents that vary among corporate institutions. Academics, practitioners and managers viewed it in different ways, and thus defined it based on their perception. Kavida and Sivakoumar (2008) pointed out that it is referred to as knowledge asset, intellectual capital and intangible/intellectual asset by economists, management experts and accountants respectively; and went further to define it as a non-physical claim to future benefits. On the other hand, Edvinsson (1997) defined intellectual capital in a more explicit term as the possessions of applied experience, knowledge, professional skills, organizational technology, and customer relationships that enable a firm to occupy a competitive position in the market. According to Financial Institution (1998), intellectual capital is a capital property that is based on knowledge. Intellectual capital according to Stewart (1997) is the sum of everything that everybody known within the company that gives it a competitive edge in the marketplace. Abdul and Fauziah (2007) defined Intellectual Capital as the aggregation of human knowledge, structural and relational resources. Finally, Pablos (2003) viewed it from what a company is worth in the market and on the books of accounts. This is because; to him, Intellectual Capital is simply the difference between market value and book value of a company. The researcher sees intellectual capital as a process by which a company achieve a competitive edge by harnessing the potentials of its intangibles assets. Therefore, this study adopted the definition as described by Edvinsson (1997).

According to Edvinsson and Malone, (1997); Zéghal and Maaloul, (2010) the value created by a company, expressed in the tangible form, depends largely on the intangibles employed, such as reputation, relationships with clients, staff competence, etc. In most studies, intellectual capital is recognized as the knowledge that can be converted into value. To this end, it is pertinent to note here that, despite the role played by intellectual capital in knowledge base economy Shakina and Barajas (2012) opined that a high level of education in the country makes this factor no longer a competitive advantage for a particular company. Furthermore, the sustainable competitive advantage is also no longer rooted in physical assets and financial capital, but an ineffective channelling of unique intellectual assets that cannot easily be purchased from the market.

The disagreement over the definition of Intellectual Capital makes it difficult for scholars to come to term on what constitutes the asset. The definition given by OECD (1999) denotes that the components of intellectual

assets are only human and structural capital; however, Khalique, Shaari and Isa (2011) revealed that researchers such as Brooking (1996); Sveiby (1997); Roos and Roos. (1997); Stewart (1997); Edvinsson (1997) and Bontis (1998); argued that Intellectual Capital covers three main components i.e. human capital (HC), structural capital (SC), and Relational Capital (RC). It was also reaffirmed by Khalique et al (2011) that the components were later on expanded by Bueno, Eduardo, Salmador, Marı´ Paz and Rodrı´guez (2004) to include social capital and technological capital; and Bin Ismail (2005), introduced spiritual capital, which his study found to have a positive effect on financial performance. Therefore, the components of Intellectual Capital are presently six consisting of human, structural, and relational, social, technological and spiritual capital.

Human capital according to Bontis (1998) could be seen as knowledge, experience, skills and competence possessed by employees. Petty et al (2009) added that human capital includes the value characteristics of an organization's workforce. Human capital "is in the heads of employees", (Roos and Roos, 1997). Researchers like Uadiale and Uwuigbe (2011) argued that although human capital is not owned directly by an enterprise, it is the foundation of Intellectual Capital as individual's ideas, knowledge and skills are what count in the current market environment. It should be noted that various definitions of human capital from different scholars emphasize that human capital is about knowledge, and this means that human capital can be enhanced through various training and development programmes

Structural capital, on the other hand, is about the process, system, practice and procedure of corporate organizations that are used by employees of an enterprise, (Boisot, 2002). Structural capital according to Roos and Roos, (1997) is "what is left in the organization when people go home in the evening", It can also take the form of patents, policies, information systems, formulas and competitive intelligence that emanates from the products or systems which a particular company developed over time (Maheran and Ismail, 2009) as cited in Tayib and Salman (2011). Structural capital differs from human capital according to Ahangar (2011), as it serves as supportive tools to the latter. Besides, it is owned by a company and could be reproduced and shared within the enterprise. Thus, it can be deduced that structural capital may differ from one company to another, as different companies have different processes and policies guiding their activities.

Relational capital is also known to as customer capital was defined by Stewart (1997) as the strength and networking of organization through its customers and external environments. This element of Intellectual Capital encompasses knowledge embedded in the relationships with outside environments; knowledge provided by customers, suppliers, government or even competitors, and perceptions held about the firm, such as corporate reputation (Bontis, 1999; Petty, Cuganesan, Finch and Ford 2000; Grasenick and Low, 2004) as cited in Andrikopoulos (2009). Customer capital i*s* developed, maintained and nurtured by the organization in order to maintain its external relationship, which influences corporate performance ultimately, (Eugstrom, Westnes and Westnes, 2003) in Tayib and Salman (2011). While customer capital focuses on the relationship with the external environment, Social Capital, on the other hand, lies in the network of relations among individuals in an organization. It is the collection of resources brought about by a stable network of relationships within a company, (Bourdieu and Wacquant, 1992) in Khalique, Shaari & Isa (2011).

Technological capital according to Ramı´rez, (2010) in Khalique, Shaari and Isa (2011) means an intangible asset accumulated through technical knowledge. In the same work also, Bueno, Eduardo, Mari'paz, Rodri'guez and Oscar (2004) defined it more comprehensively by linking it to information technological knowledge, research and development, activities and functions both internal and external that facilitate the development of products and services in a company. Therefore, technological capital can be counted among the most important components of Intellectual Capital, as corporate organizations are now operating in a complex and competitive environment that is based on the knowledge economy.

Spiritual capital According to Khalique, Shaari and Isa (2011) lies in religious and ethical values. The spiritual capital was first introduced by Bin Ismail (2005) when he found that this additional element has a role to play in boosting performance indicators of Telecom sector in Malaysia. In the same work, Liu (2008) viewed it as power and influence which an organization could create by virtue of spiritual and religious beliefs.

2.1.2 Concept of Financial Performance

Financial performance according to Meigs, (1978) refers to the act of performing the financial activity. In a broader sense, financial performance refers to the degree to which financial objectives being or has been accomplished. It is used to measure a firm's overall financial health over a given period of time and can also be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. It was also considered as a measure of the results of the company's policies and operations in monetary terms. It is a measure of how well a company uses assets and a measure also of overall financial health. Moradi, Saeedi, Hajizadeh and Mohammadi (2013) specifically take financial performance to mean a criterion which determines how a company utilizes different components of Intellectual Capital to earn a profit. It can, therefore, be inferred from the definitions that financial performance measures financially the way a particular company uses different categories of assets in order to increase owners' wealth.

Financial performance can be evaluated using different measures. However, Bacidore, Boquist, Milbourn,

and Thakor (1997) argued that an appropriate performance measure is one that captures the amount of capital invested, the required rate of return on capital and net operating income after taxes. Some of the financial performance measures provided by investopedia, (2013) and financial dictionary (2012) include revenue from operations, operating income or cash flow from operations, return on assets (ROA), return on investment (ROI), value added (VA).To Ahmad and Mushraf (2011), financial performance measures can be used to ensure compliance with standards, check how well organizations are doing, test strategic assumptions, provide a reliable medium for communicating with interested parties.

2.2 Empirical Studies

2.2.1 Intellectual Capital and Corporate Financial Performance

In Indonesia, study carried out by Budiandriani and Mahfudnurnajamuddin (2014) on the effect of Intellectual Capital Components on Financial Performance of the Firms listed with Indonesian Stock Exchange established that all the elements of VAIC have positive and significant impact on financial performance, with the exception of VAHU that relates directly but insignificantly with the financial performance.

Same nature of the relationship between intellectual capital and corporate performance of technology-intensive companies (MESDAQ) listed on Bursa Malaysia was also established by Gan and Saleh (2008) using the VAIC model. Because, the Correlation and regression results indicate that VAIC could explain profitability and productivity, regarding the order of importance, the results established that physical capital efficiency is the most significant variable affecting profitability while human capital efficiency influences productivity most significantly.

Still, on the studies conducted in companies listed on the Tehran stock exchange, Amirkhani, Veiseh and Shekari (2011) established a positive relationship between the components of Intellectual Capital and organizational performance of Sepah banks. The study used multiple regressions to analyze the data generated from all managers and assistants of Tehran's Sepah Banks. The coefficients were 0.297, 0.339 and 0.508 for human capital, structural capital and client capital respectively indicating a direct relationship with financial performance.

Chu, Chan, Yu, Ng, and Wong (2011) Studied the Impact of intellectual capital on Business Performance of companies listed on the Hong Kong Stock Exchange from 2005 to 2008 using VAIC, MB, ROA, ATO and ROE were used as proxies for financial performance. The study found no evidence to establish that VAIC as aggregate measure explains financial performance. However, constituents of the VAIC were found affecting the financial performance of the companies, with Structural Capital Efficiency having a significant and positive effect on productivity, and Human Capital Efficiency affecting financial performance negatively. It can, therefore, be observed that these are peculiar cases where an indirect relationship between the variables was established.

In India also, some studies' findings show mixed outcome, thereby conflicting the findings of Deep and Narwhal (2014) who conducted the study in the country's textile sector from 2003 to 2012VAIC method was employed by Ekwe (2014) while examining the impact of Intellectual Capital on financial performance indices of six highly rated deposit money banks in Nigeria. The study used secondary sources of data and the Duncan Multiple Range Test (DMRT) of ANOVA instead of multiple regression analysis for the test of research hypotheses. It found a similar result and further confirmed that the banks differ in terms of intellectual capital indices and financial performance indicators. Thus, banks with a larger investment in intellectual capital attain a higher level of financial performance.

However, Deep and Narwhal (2014), argued that the study was conducted when Physical capital was the most critical and significant resource determining corporate performance in South Africa.

The findings of Fathi, Farahmand and Khorasani (2013) conform to this, though the study considered 49 Iranian companies listed on the Stock Exchange; and GR was found to be affected positively but insignificantly by VACE and VAHU. Using same VAIC model and main profitability indicator (BEP) as financial performance indicator apart from ROA; findings of Hamehkhani, Boochani and Rarani (2014) support the previous position, even though the study was on 12 sampled steel Companies listed on the Stock Exchange.

Garkaz (2012) used Calculated Intangible Value (CIV) and efficiency of intellectual capital (ICE) to measure the independent variable, the study covered 170 companies listed on the stock exchange from 2003 to 2007. The findings support the previous position, as there exists a significant positive relationship between intellectual capital (CIV and ICE) and financial performance measures used i.e. ROE and ROA.

Moradi, Saeedi, Beshkooh, Maham and Heidarzadeh (2013) also found the same result as Intellectual Capital components were found to have a direct influence on ROE and Q-Tobin, although the relationship is not significant.

Mehri, Umar, Saeidi, Hekmat and Naslmosavi (2013) examined the impact of Intellectual Capital and its components on the financial performance of Technology, Trading and Services, Consumer Products and Hotel sectors listed in the main board of Bursa Malaysia. The results revealed that the aggregate VAIC has a positive significant effect on ROE, ROA and ATO as measures of financial performance. However, different results were

obtained when individual components of VAIC were correlated with financial performance. This implies that there is a need for a corporate organization to identify which of the intellectual capital components has an effect on their financial performance; understanding the nature of the relationship is also very important. Ogbo, Ezeobi and Ituma (2013) considered the impact of intellectual capital on financial performance in the industry using a survey comprising 378 employees of banks in the South Eastern States of Nigeria. The study employed the intellectual capital questionnaire developed by Bontis (1997) to generate data on intellectual capital components. The Chi-Square test statistics show that the components have a strong positive impact on the financial performance of the banks located in the region. This result is in consonance with the findings of Ekwe (2013) who used same VAIC model to value intellectual capital, even though the latter used annual reports and multiple regression analysis rather than survey method and chi-square test as in the former.

Although questionnaire was used for data collection from 200 employees of Pakistani telecom sector by Saeed, Sami, Lodhi and Iqbal (2013), the result agreed with the findings of Iqbal, Ahmad and Javaid (2012). This is because after adopting a positivist approach alongside deductive reasoning, the regression analysis confirmed the existence of a direct association between intellectual capital and performance of the companies from different Pakistani cities. This reaffirmed the findings of previous studies in different countries of the world and indicates the need for corporate organizations to special pay attention to investment in intellectual capital.

On the other hand, above finding was supported by Sharabati, Nourb and Shamari (2013) after examining the relationship between the variables in the country's telecommunication Companies. Even though, their study differed from the previous work found in terms of questionnaire administered on 84 managers of Jordanian Telecommunication Companies, a Kolmogorov-Smirnov (K-S) test, Cronbach's Alpha and factor analysis used to test the fitness of the data collection tool; it was finally established that all the intellectual capital components affect financial performance positively. Except that the direct relationship is not significant with respect to structural and relational capital on one hand and intellectual capital on the other.

Investment in intellectual capital by the Nigerian manufacturing companies have also received the attention of researchers like Salman et al (2012a), where they assessed the impact of intellectual capital on return on asset (productivity) in the industry using the VAIC method. The study confirmed the existence of a direct relationship between intellectual capital components and productivity of the industry, with human capital as the most significant factor in explaining performance.

Using a sample of thirty-two audited financial statements of quoted companies in Nigeria; Uadiale and Uwuigbe (2011) examined the impact of Intellectual Capital measured using VAIC on business performance (ROA and ROE). The Pearson correlation analysis revealed that ROA and ROE are positively and significantly correlated to IC at $p < 0.01$. Also, ROAs R^2 indicates that the explanatory power of the independent variables is 0.635; and which implies that about sixty-four per cent of the variation in ROA is explained by Intellectual Capital. For ROE, the R^2 is 0.664, which means that about sixty-six per cent (66%) of the variation in ROE is determined by changes in Intellectual Capital.

Wang (2011) used the same model and different financial performance indicators such as market to book value ratio (PBR) and productivity (ATO), but the ordinary least square results still revealed that intellectual capital components have a positive impact on the performance indicators in Taiwanese companies. This indicates the extent to which this asset when measured using VAIC influences other financial performance indicators of a company not only ROA and ROE.

Studies conducted in various companies listed on the Tehran stock exchange also continue to confirm that intellectual capital relates positively to financial performance. This is so when we have a look at a research by Yegane, Moazez, Nikoonesbati and Khanhossini (2013) that examined the auditing impact of Intellectual Capital elements on the financial performance of pharmaceutical companies listed on the stock exchange from 2006 to 2010. Return on asset (ROA), return on Equity (ROE) and basic earning power (BEP) were proxies for the dependent variable, while the VAIC method was used to compute the value of intellectual capital, the least squares regression (GLS) results indicate that significant and direct relationship exists between intellectual capital and financial performance indicators considered in the model; however, among the components of intellectual considered in the model, capital employed efficiency has the most significant impact on the financial performance of the companies.

2.3 Theoretical Framework

Knowledge-Based View (KBV) and Intangible-Based view (IBV)

Nonaka and Takeuchi (1991) came up with a Knowledge-based view (KBV) in order to address the issues raised against Resource-Based View (RBV) by critics. Grant (1996) in Stam (2006) revealed that KBV focused on knowledge as the most essential resource of a firm. According to the proponents of this theory knowledge-based resources are the main determinants of sustained competitive advantage and financial performance, this is because they are immobile, hard to imitate, heterogeneous and socially complex (Fenwick, 2011). While resource-based view gave only implicit definition of knowledge, knowledge-based explicitly defined knowledge,

its nature and management. To *KBV,* Knowledge is a collection of human-related and non-human-related (Stam, 2006). The former was alternatively called tacit knowledge, while the latter was referred to as explicit knowledge. Human knowledge according to the proponents of this theory refers to everything that had to do with employees, and over which they have control. Non-human knowledge, on the other hand, belongs to the organization, not the employees; thus, they do not have control over it. However, there is a mutual relationship between tacit and explicit knowledge, this is because the non-human resource has to be available before the human resource can create value for the firm. The theory finally concluded that in order for companies to get a competitive advantage and positive results, they have to accumulate specific knowledge assets. Even though, the proponents of the knowledge-based view see it as a theory in a formal sense, scholars like Grant (1996) and Ariely (2003) as cited in Fenwick (2011), argued that it is an extension of RBV, for firstly regarding knowledge as a resource, and organizations as heterogeneous entities relying on specific knowledge assets.

The intangible-based view emerged following the contributions of Intellectual Capital movement i.e. Sveiby (1997); Stewart (1997) and Edvinsson and Malone (1997) as cited in Stam (2006). This approach combined the view of the last two theories. IBV made a distinction between human and non-human related resources of a company, just as in KBV. It also takes both categories (tangible and intangible) of organizations resources into consideration. Intellectual Capital, intellectual assets, intangible assets, intangibles, knowledge assets, knowledge capital are used interchangeably in this theory and can be taken to mean sources of value creation that are not visible (Stam, 2006). The proponents of this theory further added that knowledge was merely part of these assets.

It can be noted that the main difference between the last two theories is that while KBV regards knowledge as the major determinant of competitive advantage and corporate financial performance; IBV considers the whole intangible assets as the major determinants and knowledge as part of intangible assets. To IBV, what matters today are the entire intangible resources of a company rather than physical assets.

Since the main objective of this study is to examine the impact of Intellectual Capital (human-related and non-human-related knowledge) on the financial performance of the listed Nigerian oil marketing companies; knowledge-based view best explained the work, and will, therefore, be adopted as a guide. This is justified by huge investment in the drivers of both human-related and non-human-related knowledge identified with the listed Nigerian oil marketing companies. The chairman's statement and caption entitled employees' training and development of the respective companies made mention made of the large investment that Mobil Oil Nigeria Plc, MRS Oil Nigeria Plc, Total Nigeria Plc and Oando Nigeria plc have been making in various training and development programmes aimed at boosting human-related knowledge of their workforce. A mention was also made of investment in system applications and products in data processing (SAP)/ Enterprise Resource Software (ERP) by Mobil Oil Nigeria plc purposely to boost its structural capital and by extension non-human-related knowledge. Chevron (MRS Oil Nigeria) and Forte Oil Plc are also among Nigerian companies that use SAP, (Albertwal, 2014).

3. METHODOLOGY

3.1 Research Design

This study used the ex-post facto research design. The choice of this design was informed by the fact that the impact of the predictors on the dependent variable has already taken place. This means that the examination of the relationship between the variables is based on information from the selected companies, with a view to highlighting the need for taking an informed decision in the future.

The listed Nigerian oil marketing companies to date constitute the population of this study. There are 14 oil marketing companies quoted with the Nigerian Stock Exchange as at this date December 2017. The list of these companies is Capital oil plc, Rakunity oil, Beco Petroleum, Japaul Oil and Maritime Services, Seplat Petroleum Development Company, Conoil Plc, Eterna Oil and Gas Plc, Anino International Plc, Navitus Energy Plc, Forte Oil Plc, Mobile Oil Nigeria Plc, MRS Oil Nig. Plc, Oando Plc and Total Nig. Plc. The study of the entire 14 companies listed would have been desirable; however, the unavailability of data caused the number of companies to be reduced because, the relevant data required with respect to companies like, Beco Petroleum PLC, Navitus Energy Plc, Anino International plc, Japaul Oil and Maritime services, Seplat Petroleum Development Company, Rakunity and Capital oil plc do not satisfy the criteria, as Beco Petroleum was only listed on the Nigerian Stock Exchange in 2009 while Navitus Energy Plc was also delisted in March, 2016 and Anino International Plc is into drugs production, Seplat Petroleum Development is into exploration and production and Japaul and maritime Services engaged in dredging and other maritime services while Rakunity and Capital Oil Plc have no full available data and as such they did not have complete required data. Therefore, from a population of the 14 petroleum marketing companies listed on the Nigerian Stock Exchange, only 7 would be considered as sampled population for the study and these are Conoil, Eternal, Forte, Mobil Oil Nigeria, MRS, Oando and Total oil plc.

The study used secondary sources of data which comprises annual reports and account of these sampled

companies from their respective web sides. Information on financial performance indicators such as ROA was sourced from the annual reports and accounts of the companies. The choice of the sources and methods of data was influenced by the models to be used for measuring intellectual capital and financial performance of the companies.

The study variables are in two sets, i.e. dependents and explanatory variables.

The dependent variable is the financial performance of the listed Nigerian oil marketing companies measured using one indicator as employed in previous studies. This is:

ROA= return on assets (profit after tax ÷ total assets). This was used in the work of Uadiale and Uwuigbe (2011); Yegane, Moazez, Nikoonesbati and Khanhossini (2013); Farahmand and Khorasani (2013); Jafari (2013); and Ahangar (2011).

The study explanatory variables consist of independent and control variables.

The independent variables for this study are values of intellectual capital measured using different models as developed by different scholars and used in previous studies. They are:

MB= value of intellectual capital using market value to book value ratio (mkt value =issued and fully paid ordinary shares × stock price at accounting year end of each company). This was used in Stewart (1997) and Kavida & Sivakoumar (2008).

ICVAIC= IC using Value Added Intellectual Coefficients (i.e the summation of VACE, VAHU, and STVA, that stand for VA efficiency of capital employed, human capital and structural capital respectively. This is used in the works of researchers like Chen, Cheng and Hwang (2005); Wang (2011); Kehelwalatenna and Premaratne (2012);Yegane, et al (2013); Farahmand and Khorasani (2013); Amirkhani et al (2011); Hajizadeh and Mohammadi (2013); Ahangar (2011); and Amalia (2012).

MMQR= value of IC using a monetary model of Tobin's Q Ratio (i.e. Market Value -Replacement cost of Tangible Assets). As used in Naslmosavi, Ghasemi and Mehri (2012); and Kavida & Sivakoumar (2008).

The control variables used are Physical capital intensity, financial leverage. The choice of the first two variables was informed by the fact that the study was guided by the knowledge-based theory. Even though the theory argued that the main/major determinants of corporate financial performance are knowledge-based resources, other assets might impliedly have little role to play in influencing financial performance. Besides, firms' characteristics such as financial leverage and size were the remaining control variables used in previous studies on intellectual capital.

Physical capital intensity (PAI) = net book value of fixed assets ÷total assets.

This was used in Ahanger (2011); Firer and William (2003); and Kehelwalatenna & Premaratne (2012).

Financial leverage (FL) = Total debt/book value of total assets. This was used in Firer and William (2003); Ahanger (2011); Kehelwalatenna and Premaratne (2012); Moradi, Saeedi, Beshkooh, Maham & Heidarzadeh (2013).

The technique of data analysis used is Multiple Regression.

3.2. Multiple Regression

This study used multiple regressions to determine the impact of changes in independent variables (IC) on the dependent variable (Fp). Thus, this technique was used to test the four hypotheses formulated. Therefore, the regression equation is expressed as follows:

$Fp = f(IC, CV)$ (i)

Meaning Fp is a function of Intellectual Capital and other control variables. Since Fp was measured by ROA, and IC was measured by ICMB, ICVAIC, ICMMRQ, and PAI, FL, represent control variables.

Thus, the proposed research models are formulated as follows:

$$ROA_{it}=\alpha+\beta_1 ICMB_{it}+ \beta_2 ICVAIC_{it}+\beta_3 ICMMQR_{it}+\beta_4 PAI_{it}+\beta_5 FL_{it} +e_{it}$$

Where:

e = error term

ROA_{it} = indicator of how profitable a company is relative to its total assets of firm i at time t

$ICMB_{it}$ = Market to book value of firm i at time t

$ICVAIC_{it}$ = Value Added Intellectual Coefficient of firm i at time t

$ICMMQR_{it}$ = Monetary Model of Q Tobin of firm i at time t

IC_{it} = Intellectual Capital of firm i at time t

PAI_{it} = Physical capital Intensity of firm i at time t

FL_{it} = Financial Leverage of firm i at time t

4. RESULTS

The descriptive statistics, diagnostics test of variance inflation factor (VIF), Heteroskedasticity test, Hausman test and fixed effect test were presented in tables.

Table 1. Descriptive Statistics

	ROA	MBV	MMQ	VAIC	PAI	FL
Mean	0.204335	7.707702	9.835262	1.962206	0.371865	0.574005
Median	0.053560	7.749678	10.11572	1.454489	0.320656	0.286917
Maximum	3.894704	8.709909	11.63599	12.62933	1.000000	12.97935
Minimum	-0.462583	6.450942	6.279915	0.012709	0.068849	0.001369
Std. Dev.	0.569990	0.437489	1.299261	2.151091	0.222808	1.598411
Skewness	4.946654	-0.093874	-1.645542	2.451656	0.791327	6.969676
Kurtosis	29.87927	3.319961	4.895624	11.06868	3.058707	53.65245
Jarque-Bera	2392.754	0.401405	42.07183	260.0092	7.315693	8049.930
Probability	0.000000	0.818156	0.000000	0.000000	0.025788	0.000000
Sum	14.30348	539.5391	688.4683	137.3544	26.03055	40.18032
Sum Sq. Dev.	22.41734	13.20638	116.4774	319.2763	3.425401	176.2893
Observations	70	70	70	70	70	70

Source: Eview 8 Computation Output (2018)

Table 1 describes summarizing the data set used. It covers the mean, median, maximum, minimum, standard deviation, skewness, kurtosis and Jarque-Bera with 70 observations of the data.

Return on Asset (ROA) has a Mean value of 0.204335 with a median of 0.053560. Also, it has a maximum and minimum value of 3.894704 and -0.462583 respectively. This, therefore, means that the values are not closely netted due to the nature of the variables. It has a Standard Deviation of 0.569990 with Skewness of 4.946654 and Kurtosis of 29.87927. The Jargue-Bera value of ROA is 2392.754. The mean as well median of MBV is 7.707702 and 7.749678 respectively. In like manner, it has a maximum and minimum value of 8.709909 and 6.450942. Also, its standard deviation is 0.437489 and skewness is -0.093874 while the Kurtosis is 3.319961 with 0.401405 for Jarque-Bera. The MMQ mean value is 9.835262 while the median is 10.11572. The maximum, minimum and standard deviation value of MMQ is 11.63599, 6.279915 and 1.299261 respectively. Also, MMQ Skewness, Kurtosis and Jarque-bera value are -1.645542, 4.895624 and 42.07183. The deviation from the mean simply implies that the variables have widespread because of the nature of the variables with a mean of 9.835262 and standard deviation of 1.299261.

The Mean value of VAIC is 1.962205 with a median of 1.454489. Also, it has a maximum and minimum value of 12.62933 and 0.012709 respectively. It has a Standard Deviation of 2.151091 with Skewness of 2.451656 and Kurtosis of 11.06868. The Jargue-Bera value of VAIC is 260.0092. In respect of PAI, the mean as well median value is 0.371865 and 0.320656 respectively. Likewise, it has a maximum and minimum value of 1.000000 and 0.068849. Furthermore, its standard deviation is 0.222808 and skewness is 0.791327 while the Kurtosis is 3.058707 with 7.315693 for Jarque-Bera. The FL mean value is 0.574005 while the median is 0.286917. The maximum, minimum and standard deviation value of FL is 12.97935, 0.001369 and 1.598411 respectively. Also, FL Skewness, Kurtosis and Jarque-bera value are 6.969676, 53.65245 and 8049.930. The deviation of the mean from standard deviation is closely netted which connotes that financial leverage is closely netted with a value of 0.574005 and 1.598411.

4.1. Diagnostics Test

Table 2. Variance Inflation Factor Test

Variance Inflation Factors			
Date: 02/24/18 Time: 17:54			
Sample: 1 70			
Included observations: 70			
	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
MBV	0.029794	4.190497	1.326553
MMQ	0.002942	6.832759	1.155476
VAIC	0.001008	2.000376	1.084713
PAI	0.097881	4.324712	1.130377
FL	0.001740	1.169443	1.034147
C	1.630367	3.847663	NA

Source: Eview 8 Computation Output (2018)

From the VIF Table 2 above, it shows that the variables have no multicollinearity problem as evidenced by the value which is between 1 and 10. The MBV VIF is 4.190497 while that of MMQ is 6.832759. Also, VIF of VAIC is 2.000376 with PAI haven VIF of 4.324712. Furthermore, FL VIF is 3.847663.

Table 3. Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	3.210667	Prob. F(5,64)		0.0120
Obs*R-squared	14.03731	Prob. Chi-Square(5)		0.0154
Scaled explained SS	146.2512	Prob. Chi-Square(5)		0.0000
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 06/09/18 Time: 11:38				
Sample: 1 70				
Included observations: 70				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.540377	6.114940	0.251904	0.8019
MBV	-2.407304	7.364788	-0.326867	0.7448
MMQ	0.689813	2.601107	0.265200	0.7917
VAIC	0.391656	0.301572	1.298713	0.1987
PAI	-0.064504	0.752462	-0.085723	0.9320
FL	0.354320	0.100178	3.536903	0.0008
R-squared	0.200533	Mean dependent var		0.278322
Adjusted R-squared	0.138075	S.D. dependent var		1.399630
S.E. of regression	1.299416	Akaike info criterion		3.443523
Sum squared resid	108.0628	Schwarz criterion		3.636251
Log-likelihood	-114.5233	Hannan-Quinn criter.		3.520077
F-statistic	3.210667	Durbin-Watson stat		1.546045
Prob(F-statistic)	0.011966			

Source: Eview 8 Computation Output (2018)

Table 3 shows the Heteroskedasticity Test with Chi-square and p-value of 0.0120 and 0.0154 respectively.

Table 4. Hausman Test

Correlated Random Effects - Hausman Test				
Equation: Untitled				
Test cross-section random effects				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		57.050718	5	0.0000
** WARNING: estimated cross-section random effects variance is zero.				
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
MBV	-0.908620	0.227374	0.024794	0.0000
MMQ	-0.059935	-0.014036	0.002738	0.3804
VAIC	0.030480	0.051164	0.000090	0.0289
PAI	-0.729067	-0.017783	0.040712	0.0004
FL	0.104786	0.083994	0.000118	0.0559
Cross-section random effects test equation:				
Dependent Variable: ROA				
Method: Panel Least Squares				
Date: 02/24/18 Time: 17:33				
Sample: 2007 2016				
Periods included: 10				
Cross-sections included: 7				
Total panel (balanced) observations: 70				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.948341	1.770620	4.489017	0.0000
MBV	-0.908620	0.203148	-4.472709	0.0000
MMQ	-0.059935	0.066070	-0.907135	0.3681
VAIC	0.030480	0.025434	1.198396	0.2356
PAI	-0.729067	0.307955	-2.367449	0.0213
FL	0.104786	0.032870	3.187887	0.0023
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.575648	Mean dependent var		0.204335
Adjusted R-squared	0.495168	S.D. dependent var		0.569990
S.E. of regression	0.404987	Akaike info criterion		1.184881
Sum squared resid	9.512834	Schwarz criterion		1.570337
Log-likelihood	-29.47083	Hannan-Quinn criter.		1.337989
F-statistic	7.152649	Durbin-Watson stat		1.245122
Prob(F-statistic)	0.000000			

Source: Eview 8 Computation Output (2018)

Choosing between Fixed effect and Random effect entails that the Hausman test should be run which will determine the most appropriate model between the two. If the Hausman p-value is less than 5%, the fixed effect is the more appropriate otherwise Random effect is more appropriate. So based on the Hausman test with P-value of 0.0000 fixed effect model is appropriate for the study.

Table 5. Fixed effect

Dependent Variable: ROA				
Method: Panel Least Squares				
Date: 02/24/18 Time: 17:30				
Sample: 2007 2016				
Periods included: 10				
Cross-sections included: 7				
Total panel (balanced) observations: 70				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MBV	-0.908620	0.203148	-4.472709	0.0000
MMQ	-0.059935	0.066070	-0.907135	0.3681
VAIC	0.030480	0.025434	1.198396	0.2356
PAI	-0.729067	0.307955	-2.367449	0.0213
FL	0.104786	0.032870	3.187887	0.0023
C	7.948341	1.770620	4.489017	0.0000
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.575648	Mean dependent var		0.204335
Adjusted R-squared	0.495168	S.D. dependent var		0.569990
S.E. of regression	0.404987	Akaike info criterion		1.184881
Sum squared resid	9.512834	Schwarz criterion		1.570337
Log likelihood	-29.47083	Hannan-Quinn criter.		1.337989
F-statistic	7.152649	Durbin-Watson stat		1.245122
Prob(F-statistic)	0.000000			

Source: E-view 8 Computation Output (2018)

The regression result in table 4.5 reveals that MBV has a negative significant effect on return on the asset as evident by the p-value of 0.0000 with a coefficient intercept of -0.908620. This means that Return on Asset will decrease by -0.908620 whenever market book value is used while the t-statistics of MBV is -4.472709. MMQ has a negative insignificant impact on return on an asset with p. value of 0.3681 and coefficient of -0.059935. The t-statistics of MMQ as it relates to ROA is -0.907135. From the p-value of MMQ, it means that MMQ cannot influence return on asset. VAIC has a positive insignificant impact on ROA with a p-value of 0.2356. The VAIC coefficient value is 0.030480 and t-statistics is 1.198396. PAI has a negative significant effect on ROA as evident with a p-value of 0.0213. Its coefficient value is -0.729067 and t-statistics is -2.367449. Also, FL has a positive impact on ROA with a p-value of 0.0023. It has a coefficient of 0.104786.

The independent variables explained variation in Return on the asset to the extent of 58% while the remaining variation is explained by other variables not captured in the model. This is evident with the coefficient of determination (R^2) of 0.575648. The model is fit with f-statistics of 0.000000.

Table 6. Robust Regression

Dependent Variable: ROA				
Method: Robust Least Squares				
Date: 06/09/18 Time: 11:34				
Sample: 1 70				
Included observations: 70				
Method: S-estimation				
S settings: tuning=1.547645, breakdown=0.5, trials=200, subsmpl=6,				
refine=2, compare=5				
Random number generator: rng=kn, seed=2094612242				
Huber Type I Standard Errors & Covariance				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
MBV	-0.709240	0.214867	-3.300825	0.0010
MMQ	0.216723	0.075887	2.855854	0.0043
VAIC	-0.045185	0.008798	-5.135615	0.0000
PAI	-0.013904	0.021953	-0.633357	0.5265
FL	-0.001945	0.002923	-0.665549	0.5057
C	0.473414	0.178403	2.653621	0.0080
	Robust Statistics			
R-squared	0.119023	Adjusted R-squared		0.050197
Scale	0.061623	Deviance		0.003797
Rn-squared statistic	64.62935	Prob(Rn-squared stat.)		0.000000
	Non-robust Statistics			
Mean dependent var	0.204335	S.D. dependent var		0.569990
S.E. of regression	0.624142	Sum squared resid		24.93144

Source: E-view 8 Computation Output (2018)

The robust regression reveals that MBV has a significant effect on return on the asset as evident by the p-value of 0.0010. MMQ has a significant impact on return on an asset with p. value of 0.0043. VAIC has a significant impact on ROA with a p-value of 0.0000. PAI has an insignificant effect on ROA as evident with a p-value of 0.5265. Also, FL has an insignificant impact on ROA with a p-value of 0.5057.

4.2 Discussion of Findings

From the regression analysis, market book value has a negative significant impact on return on an asset at a 5% level of confidence. This means that the market to book value decreases returns on the asset as the coefficient increases. Monetary model of Tobin's Q has no significant impact on return on the asset as shown by its P-value. Value-added intellectual coefficient has no significant impact on return on an asset at a 5% level of confidence though; it has a positive relationship with the return on asset.

Furthermore, physical asset intensity has a negative significant impact on return on asset. This means that physical asset intensity will influence return on asset negatively as its coefficient intercept increases. Also, financial leverage has a positive significant impact on return on asset.

The findings are consistent with the study of Firer and Williams (2003), Uadiale and Uwuigbe (2011), Suraj and Nick (2012), Ogbo, Ezeobi and Ituma (2013), Chen, Cheng and Hwang (2005), Tan, Plowman and Hancock, (2007), and Parshakov (2013), Yegane, Moazez, Nikoonesbati and Khanhossini (2013), Santoso (2012) that value-added intellectual coefficient has a positive relationship with financial performance but inconsistent with the study of Okafor (2012), Wang (2011), Ahangar (2011), Mehri, Umar, Saeidi, Hekmat & Naslmosavi (2013).

Also, the finding is not consistent with the study of Wang (2011), Samiloglu (2006) that market to book value has a positive impact on financial performance. The variation in financial performance most especially return on asset is 58%. That means intellectual capital variables explained variation in return on the asset to the extent of 58% while 42% is explained by other variables not captured in the model. The model is fit with f-statistics of 0.000000.

The study is supported by Knowledge-based view theory. Knowledge-based view theory (KBV) focused on knowledge as the most essential resource of a firm. According to the proponents of this theory knowledge-based resources are the main determinants of sustained competitive advantage and financial performance, this is because they are immobile, hard to imitate, heterogeneous and socially complex. Human knowledge according to the proponents of this theory refers to everything that had to do with employees and over which they have control. Non-human knowledge, on the other hand, belongs to the organization, not the employees; thus, they do not have control over it. However, there is a mutual relationship between tacit and explicit knowledge, this is because the non-human resource has to be available before the human resource can create value for the firm. The

theory finally concluded that in order for companies to get a competitive advantage and positive results, they have to accumulate specific knowledge assets.

From the result above, it can be said that oil marketing company in Nigeria have not been utilizing the needed knowledge in order to improve their financial performance since value-added intellectual coefficient has an insignificant impact on return on asset.

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study examined the impact of Intellectual Capital on the financial performance of the listed Nigerian oil marketing companies from 2007 to 2016. From the forgone result, market to book value has a negative significant impact on financial performance of oil and marketing companies in Nigeria. This means that an increase in market book value will decrease financial performance. Furthermore, the Monetary Model of Tobin's Q has a negative insignificant impact on financial performance. This indicates that the monetary model of Tobin's Q will not influence the financial performance of oil and marketing companies in Nigeria.

More to that, value-added intellectual coefficient has a positive but insignificant impact on financial performance. From this, proper intellectual capital should be applied because for a company to sustained competitive advantage, it has to engage good knowledgeable assets that will aid the company to perform better. Physical asset intensity has a negative significant impact on financial performance of oil and marketing companies in Nigeria while financial leverage has a positive significant impact on financial performance.

5.2 Recommendations

The study recommends that:

Adequate attention should be paid on the firm intellectual capital since human capital is considered as the most important asset to the firm by implement policies that will improve and upgrade their human skill and competence in the area of training and development. More attention should be given to the human side of the intellectual capital and reliance should not strictly be focused on the numeric evaluation and improvement.

Also, standard on intellectual capital accounting is issued by the International Financial Reporting Committee (IFRC) to enable firm's measure and record their intellectual capital values as they relate to financial performance in their income statements which will invariably improve company performance because of human capital importance to the organization.

The listed Nigerian oil marketing companies should strive to boost the value of their intellectual capital for its ultimate effect on ROA. This can be achieved through maximization of their market value, maximization of Intellectual Capital return and more investment in Intellectual Capital components, particularly human, structural and relational capital.

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