Impact of Intellectual Capital on Financial Performance of Listed Oil and Gas Firms in Nigeria

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Abstract

This paper examines the impact of intellectual capital on financial performance of listed firms in Nigeria. To achieve this objective; quantitative research design was employed. Data were generated from the annual reports and accounts of the sampled listed oil and gas companies from 2016-2020. The period is chosen and believes to be adequate in providing insight on the inflationary trends which the industry experienced. Similarly, the period of five years selected is in line with the studies of Muhammad and Rashid, 2015 as well as Iyande, 2018. Intellectual Capital as independent variable was measured by its components (HCE, SCE and CEE) while financial performance being the dependent variable was measured by NPM and ROE. Regression technique was used as tools of data analysis and the findings establish that the independent variables (HCE, SCE and CEE) have significant positive impact on the oil and gas companies' Financial Performance proxies by NPM and ROE. The regression results show R-square of 86.1% and 59.4% for NPM and ROE models respectively. This implies that the model is fit and the explanatory variables are properly selected and account for the substantial value of the corporate profitability. Hence, the paper recommends that listed oil and gas companies in Nigeria should improve their efforts to boost the value of their intellectual capital for its crucial impact on NPM and ROE. This can be achieved through maximization of market value created, intellectual capital return and more investment in intellectual capital components, particularly human, structural and relational/customer capital.

Keywords: Capital Employed Efficiency, Human Capital Efficiency, Net Profit Margin, Oil and Gas Industry, Return on Equity, Structural Capital Efficiency.

1.0   Introduction

Financial performance shows the extent to which company utilizes the combination of human capital, structural capital and relational capital in order to increase owners' wealth which in turns explains the degree to which financial objectives being or has been accomplished. Almajali et al (2012) highlight that the higher the financial performance of the company the more effective and efficient the company in using the resources and later contributes at the macro level in countries economy. Thus, relationship exists between effective and efficient use of intellectual capital and financial performance which indicate the financial health of the organizations and shows the performance of the executive leadership of the company. This is also demonstrated by Ali & Bilal, (2018) who reveal that financial performance is a measure of an organization's earnings, profits as well as appreciations in value as evidenced by the rise in the entity's share price.

The organization that continues to invest in new skill and technology will continue to be successful. This is the fact that intellectual capital is gaining prominence than ever before as a matter of survival and of achieving competitive advantage for the firm to compete with the rapid growth of knowledge and technology innovation. Therefore, the growth of organization has changed to cope with the changing

environment of knowledge economy that embraces intellectual capital. The concept of intellectual capital has been viewed by Malone (2013) as possession of knowledge, applied experience, professional skills, information technology, customer relationships that provide a company with a competitive edge in the market. Therefore, Intellectual Capital (IC) includes human, structural and relational capital respectively that can be used for, to create wealth for the company. The development of wealth and other high-value assets is made possible by intellectual capital. A company's ability to innovate and its wealth of ideas, as well as integrated use of financial and natural resources become critical drivers for firm sustainability and going concern which in turns provide smooth and better financial performance.

Intellectual capital contributes immensely to the financial performance of oil and gas companies. Because with mounting competitions in the global economy intellectual capital has become the main ingredient and vital for the organization to sustain the competitive world in which they operate and help to generates more earnings (Isanzu, 2015). Similarly, managers and employers of labor are devoting more attention towards enhancing potentials on the area of human, structural and relational capital in order to achieve competitive edge in market place. It is important to note that the achievement of financial performance involves the collective use of human, financial and structural resources.

Integrated firms in the Nigerian oil and gas industry are those that engaged both in exploration and production as well as in storage and transportation of oil, refining and hydro processing, marketing and distribution of oil, gas and its derivatives (Kantudu & Samaila, 2015). Firms operating in this sector 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 than its physical and financial capital. More so, oil and gas companies as a result of its key features regarding their size and complexity of their operations are rich in terms of intellectual capital due to knowledgeable and talented employees, large investment in research and development, and ownership of inventions and diverse scientific discoveries.

It is of immense importance and relevance, disclosing the investment made by Total Nigeria Plc in quality staff training and development 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 which include Strategic Talent Management and Business Acumen developed by Human Capital Management (HCM) team of the company, (Godwin & Saidu, 2018). Furthermore, it is considered necessary to highlight the area not covered or ignored by previous studies; among them Godwin and Saidu, (2018) who uses Return on Asset (ROA) in measuring the impact of intellectual capital on financial performance of oil marketing companies. However, this research improves on their study due to the fact that it employs proxies of financial performance such as Return on equity (ROE) and Net Profit Margin (NPM) in investigating the relationship between intellectual capital and financial performance. Also, other several studies have been conducted in the area of intellectual capital and financial performance within and outside Nigeria, some in similar industry but employed different variables other than what have been used in this study, these include Ocheni, (2018), Muhammad and Rashid, (2015). While others were conducted in manufacturing and banking industries which include Saeed et al. (2013), Ogbodo et al. (2017), Isanzu, (2015), Inyanda, (2018), Ali et al. (2022) and Ofurum et al. (2023) among others.

Consequently, it against this background this study finds it worthy to look into the cost aspect of intellectual capital in order to find out whether the Nigerian oil and gas companies are cost efficient in

the uses of their rich intellectual capital and how it relates to financial performance. Hence, the paper seeks to examine the impact of intellectual capital on firms' financial performance of the Nigerian oil and gas industry.

2.0   Literature Review and Hypotheses Development

Several studies have been conducted to determine the relationship between intellectual capital and financial performance of firms within and outside Nigeria which include Ogbodo et al (2017), Inyanda (2018), Ocheni (2018), saeed et al. (2013), Isanzu (2015) and Ofurum et al. (2023) among others.

Saeed et al. (2013) carried out a study on relationship between Intellectual Capital and Financial Performance using 49 Iranian companies listed in the Tehran Stock Exchange (TSE), classified in three different industrial sectors observed over the ten-year period of 2001 to 2010. Data was analyzed using regression models. Results demonstrate that there is significant positive relationship between value added efficiency of structural capital component with the three financial performance measures (ROE, ROA, and GR). Moreover, results indicate that there is significant positive relationship between value added efficiency of capital employed and value-added efficiency of human capital with two independent variables (ROE, ROA) and there is no significant relationship between value added efficiency of capital employed and value-added efficiency of human capital with growth revenue (GR).

Nuryaman (2015) conducted a study on the effect of intellectual capital on the firm's value with company's financial performance (profitability) as an intervening variable. Intellectual capital was measured using Pulic's models. Data for the study were obtained from the sample of 93 companies manufacturing sector listed in Indonesia Stock Exchange. The results showed that the intellectual capital has a positive effect on firm value and profitability. This indicates that intellectual capital serves as an intervening variable in a causal relationship for profitability and firm value.

Isanzu, (2015) carried research on the Impact of Intellectual Capital on Financial Performance of Banks in Tanzania for the period 2010-2013. Annual reports and accounts of the selected banks have been used to obtain the data and analyzed using regression analysis. The study uses Value Added Intellectual Capital model (VAIC) in determining intellectual capital and its three major components like Human Capital Efficiency (HCE) Structural capital efficiency (SCE) and Capital Employed Efficiency (CEE). The findings exposed that Intellectual capital has a positive relationship with financial performance of banks operating in Tanzania and also when the VAICTM was divided into its three components it was discovered that the financial performance is positively related to Human capital efficiency and Capital employed efficiency but is negatively related to Structural capital efficiency.

Maryam et al (2015) carried out a study on effect of Intellectual Capital on Organizational Performance. The study used six elements of intellectual capital such as human capital, structural capital, customer capital, social capital, technological capital and spiritual capital with organizational performance in Malaysia. The study was conducted using a structured questionnaire distributed to higher-level management working in various organizations in Malaysia. Sample size was 187 respondents out of 311 questionnaires distributed and selected randomly based on non-probability convenience sampling. Data collected was analyzed using the Multiple Regression Analysis Model. The results disclosed that intellectual capital has significant influence on the organizational performance in Malaysian.

Adreeva and Garanina, (2015) conducted a study on the impact of intellectual capital elements and organizational performance of Russian manufacturing companies, using the sample of 240 Russian

companies. The data is collected with the survey using the scales that have been already validated in international context and analyzed using descriptive statistics. Results shows that only structural capital and human capital have an impact on the organizational performance and relational capital has no impact on performance.

Wen-Ying and Chingfu, (2015) conducted research on the Intellectual capital and performance in causal models: Evidence from the information technology industry in Taiwan with sample of all listed firms in the IT industry during the period 1997-2001. Data have been retrieved from the data base of the Taiwan Economic Journal (TEJ), annual report, and prospectus. The partial least squares approach is used to examine the information technology (IT) industry in Taiwan. Results show that intellectual capital elements directly affect business performance, with the exception of human capital. Human capital indirectly affects performance through the other three elements: innovation capital, process capital, and customer capital. The real so exist, a cause-effect relationship among four elements of intellectual capital. Human capital affects innovation capital and process capital. Innovation capital affects process capital, which in turn influences customer capital. Finally, customer capital contributes to performance. The cause-effect relationship between leading elements and lagged elements provides implications for the management of firms in the IT industry.

Muhammad and Rashid, (2015) using the sample of 9 companies registered in KSE-100 index under the umbrella of oil and gas sector examines the impact of Intellectual Capital (IC) on corporate financial performance of oil and gas sector of Pakistan over the period of 2007 to 2011. The study uses value added intellectual coefficient (VAICit™) to measure IC performance and its various components of VAICit™ like (HCEit, SCEit and CEEit) and its impact on financial performance (ROEit, ROIit and EPSit). Micro panel data of oil and gas sector registered in KSE-100 index is collected from their consolidated annual reports over the period of 2007 to 2011. The IC performance is measured by Ante Pulic Model (VAICit™) and its effect on corporate returns (ROEit, ROIit and EPSit) is tested by Random Effect Model estimation. The study reveals that VA is considered an important component for measuring the VAICit™ performance and has positive and significant relationship with firm's profitability proxy by ROE and ROI.

In other study, Nazif, Sinan and Murad, (2016) analyzed the relationship between the intellectual capital and financial performance of 44 banks operating in Turkey between 2005 to 2014, the intellectual capital of banks is measured through the values added intellectual coefficient (VAIC) methodology proxied by HCE, SCE and CEE and performance are measured by ROA. The VAIC result shows CEE and HCE positively influence the financial performances of banks. However, CEE has more influence on the financial performance of banks compared to HCE.

Ogbodo et al (2017) examine the effect of intellectual capital on the financial performance of quoted commercial banks in Nigeria. The study adopted panel data analysis of all the banks quoted on the Nigerian Stock Exchange as at 31st December 2015 for a period of six years (2010 – 2015). This allows for comparison of the performance of intellectual capital indices among the firms considered in this study. The population is made up of the 15 banks listed on the floor of the Nigerian Stock Exchange as at 31st December, 2015. This study made use ex-post facto research design. Data were gotten from secondary sources obtained from fact books, annual reports and accounts of the selected quoted commercial banks in Nigeria as at 31st December, 2015. The relevant data obtained were subjected to statistical analysis using Pearson coefficient of correlation, ordinary least square regression, heteroskedasticity test and Hausman test. The analysis of data was done using the Value-Added Intellectual Coefficient (VAIC)

made to measure the efficiency of value added of tangible and intangible assets used by a firm in its operation. The results of this study revealed that there is a positive and statistically significant relationship between Intellectual Capital and financial performance of deposit money banks in Nigeria at 5% level of significance.

Inyanda, (2018) conducted a study on the impact of intellectual capital on the financial performance of corporate establishments in Nigeria. Secondary sources of data collection were employed with the help of the Nigerian Exchange Group Fact Book. The timeframe for this study was five (5) years and five (5) quoted banks out of the listed banks in Nigeria were used based on purposive sampling. Bank performance is measured by ROA, ROE and GR while IC is measured by HC, CE, SC and VAIC and data were analyzed using correlation and regression analysis. It was discovered that intellectual capital has significant positive impact on the financial performance of the establishments. Also, physical and structural capitals have positive relationship with the financial performance of the organizations studied. However, the selected sample size is too scanty to form an opinion with a view to generalize on the entire population.

In similar vein, Ocheni (2018) carried research on the momentum effect of intellectual capital on the corporate valuation of oil and gas companies in Nigeria. Secondary sources were explored in data collection while a correlation and regression model were used in the assessment of the relationship between the intellectual capital and Nigerian corporate valuation. Financial performance is measured by NAPS and EPS whereas IC is measured by HCE, SCE and CEE. The outcome reveals that all the components of intellectual capital affect the corporate valuation of oil and gas companies in Nigeria. Additionally, the strength of the relationship among the variables is very high. Thus, Intellectual capital has a significant positive impact on the firms' performance of the Nigerian oil and gas industry. IC and performance of firms seem to be strongly related as observed by most of the studies. Similarly, firms with good strategy and policy in knowledge base will lead to highest profitability position and value creation.

Ali et al (2022) determine whether IC efficiency impacts the financial performance of listed Pakistani and Indian companies between 2010 and 2020. Return on Assets (ROA) and Return on Equity (ROE) are used as proxies for financial performance whereas modified Value-Added Intellectual Coefficient (MVAIC) model is used as proxy for Intellectual Capital (IC). The study reveals that Human Capital (HC), Structural Capital (SC), and Capital Employed (CE) have significant influence on financial performance of Pakistani and Indian firms. It was recommended that management should provide more emphasis on the importance of IC so as to improve their financial performance.

Madumere and Ihenacho (2022) examines the effect of Intellectual capital on the financial performance of Deposit Money Banks in Nigeria for the period of 2012-2020 with emphasis on its effect of Value-Added Human Capital, Structural Capital and Value-Added capital employed on Return on Asset. The study employed a longitudinal research design. The findings reveal that Value Added Human Capital and Structural Capital Value Added have a significant effect on the Return on Assets of Deposit Money Banks in Nigeria. The study therefore, recommends that banks should provide special consideration to human and intellectual capital looking at their pivotal role in value creation in today's economies.

Ofurum et al. (2023) evaluates the relationship between intellectual capital and financial performance of Nigerian deposit money banks for the period of 2012-2020. The study adopted Pulic's (2004) method of measuring intellectual capital and Hamdan's (2018) and Ozkan et al. (2016) model specifications. The study revealed that both structural capital and human capital have significant relationship with return

on asset (ROA) and earnings per share (EPS) respectively. The study recommends that bank managers should focus more on intellectual capital in their decision-making process to augment their financial performance through a conducive working environment, welfare packages as well as excellent in-house training program for their staff.

A number of arguments arise in favor of a direct and positive relationship between IC and financial performance. Most of the researches that came from developed economies are of the view that firm's financial performance has direct impact in relation to HC and SC components of IC. Among them Isanzu, (2015) who argued that firm could have highest profitability position if it invests much in HC and SC. In that case the more firms recognized HC and SC as strategic assets may result in higher financial performance. Similarly, (Isanzu, 2015; Nuryaman, 2015; Adreeva and Garania, 2015 & Nazif and Murad, 2016) concur that IC has positive impact on financial performance. In a nutshell, the reason behind those findings is because developed countries are good in technology, develops process and establishes other internal initiatives. However, the costs implications of IC were ignore only concentrating at the geographical location as the determining factor of IC effect on financial performance. To this end, this study will be guided by the following testable hypotheses stated in Null (HO) form:

Ho$_1$: Intellectual Capital (IC) has no impact on Return on Equity (ROE) in the Nigerian oil and gas companies.

Ho$_2$: There is no relationship between Intellectual Capital (IC) and Net Profit Margin (NPM) in the Nigerian oil and gas companies.

Theoretical framework
In order to evaluate the impact of intellectual capital on the financial performance of Nigerian oil and gas companies in the downstream sector, various theories have been developed which include knowledge-based theory of the firm, diffusion of innovations theory, signaling theory and human capital theory. However, this study considers knowledge-based theory of the firm, and it has been assessed and justified hereunder for its relevance and suitability to the variables used in this study.

Knowledge-Based Theory of the Firm (1959): The foundations of the knowledge-based view (KBV) of the firm can be found in the work by Penrose in the middle of the 1900 century (1959) that conceived the firm as an administrative organization and a collection of productive resources, both physical and human. The same resources can be put to use in different ways, according to the ideas of the firms on how to apply them.

According to the proponents of this theory, knowledge-based resources are the main determinants of continued competitive advantage and financial performance, this is because they are immobile, hard to imitate, heterogeneous and socially complex. According to this theory, Knowledge is a collection of human-related and non-human-related. 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.

Furthermore, the economic change of material-based production to information-based production created a revaluation of the firm workers. Increasingly find knowledge workers at the core of the organization functions: concept and technology designers, as well as finance and management people. Other individuals are considered to be in the firm's periphery, as a consequence their responsibilities

change permanently and they are defined by the tasks they perform at the moment. This way, a new differentiation in labor arises (Child & McGrath, 2001).

From foregone submission therefore, this study is of the opinion that knowledge based theory is the theory that best explain this study because it expound weighty aspect of the study that is, intellectual capital and how it influence financial performance of a firm which considered to be as imperative to gain competitive advantage through innovation, skill acquisition, experience, managerial competencies and industry specific know-how (Specific knowledge assets/strategic resources) which in turns improve financial performance of the oil and gas companies. Similarly, IC is difficult to imitate and substitute whereas physical capital is generic resource, easily imitable and substitutable, and can be easily purchased and sold on the open market. Hence, it is only the IC that deserves to be considered as strategic resource to allow a firm to create value added.

3.0   Methodology

For the purpose of this study, quantitative research design was employed. This is due to the fact that all the variables required for the study were extracted from the annual reports and accounts of listed oil and gas companies in the Nigerian Exchange Group (NGX). Thus, this is a correlational study because it attempts to establish the relationship between intellectual capital and firm's Financial Performance. The design is believed to be adequate and appropriate for the measurement of the impact of Intellectual Capital and firms' Financial Performance of oil and gas in Nigeria. The population of this study consists of all the listed oil and gas companies in the Nigerian Exchange Group as at 31st December, 2020. In order to avoid being bias in the selection of sample size, the sampling technique will be guided by the following criteria: i) the firm must be public limited liability company. ii) the firm must have been listed on the Nigerian Exchange Group three decade, that is 1970, 1980 and 1990. iii) the firm must guarantee at least 5-year annual financial report covering the time frame of the study.

From the above set criteria, only seven oil and gas companies were scale through having satisfied the criterion, which includes Mobil plc, Conoil plc, Eterna plc, Forte Oil plc, MRS oil Nigeria plc, Oando plc, and Total Nigeria plc. So, the working population of this paper reduced to seven (7) oil and gas companies. However, Anino International Plc., Seplat Petroleum Development Company Ltd, RAK Unity Pet. Comp. Plc, Japaul Oil and Maritime Services Plc and Capital Oil Plc were removed from the working population for not meeting the aforesaid criteria.

Model of the Study

This paper intends to adopt and modifies the model of Isanzu (2015), who uses ROA and ROE as dependent variables and IC components (HC, SE, CE) as independent variable to measure the relationship between IC and Financial Performance. However, this study used Intellectual Capital variable (HC, SE, CE) as independent variable while Net Profit Margin (NPM) and Return on Equity (ROE) as dependent variable whereas the Firm Age (FAGE) as control variable. The multiple regressions were used to test hypothesis of the study. Financial performance is estimated as a function of Return on Equity as well as Net Profit Margin. This is express as:

FP = F (ROE, NPM)

IC = F (HCE, SCE, CEE, FAGE)

Thus, FP = f (IC) which is expressed as:

FP = f (HCE, SCE, CEE, FAGE)

Therefore, the model will assume the form of:

$NPM = \alpha + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE + \beta_4 FAGE + \varepsilon$

$ROE = \alpha + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE + \beta_4 FAGE + \varepsilon$

Where:

NPM = Net Profit Margin

ROE = Return on Equity

α = constant (that is, intercept point between the independent variables and the dependent variable);

HCE = Human Capital Efficiency Coefficient

SCE = Structural Capital Efficiency

CEE = Capital Employed Efficiency Coefficient

FAGE = Firm Aged

$\beta_1 \ldots \beta_4$ = Coefficients to be Estimated;

e = Error Terms.

Decision Rule:

Reject H_o if the P-value of the test is less than 0.05, otherwise accept Ha.

Table 1: Variables definition and their Measurement

VARIABLES	MEASUREMENT	Source
Dependent Variable		
Net Profit Margin (NPM)	Net Profit Margin = (Net profit after tax)/(Sales or Revenue)	(Ali & Bilal, 2018)
Return on Equity (ROE)	Return on Equity can be calculated as Net Profit After tax divide by Total Equity. Thus ROE = PAT/Equity	(Nuryaman, 2015)
Explanatory Variables		
Independent Variables (Intellectual Capital)		
i) Capital Employed Efficiency (CEE)	CEE is the ratio of total Value Added (VA) divided by the total amount of Capital Employed (CE). Thus CEE = VA/CE	(Pulic, 1998)
ii) Human Capital Efficiency (HCE)	Human Capital Efficiency (HCE) is computed as the ratio of Value Added (specifically by the human assets) to Human Costs (which indicates personnel expenses salaries and benefits for company). Thus HCE = VA/HC	(Pulic, 1998)
iii) Structural Capital Efficiency (SCE)	Capital structure is calculated by subtracting the added value (gross income) from human capital; then capital structure efficiency (SCE) is obtained by dividing capital structure (SC) by added value (gross income). Thus: SCE = (VA-HC) /VA	(Pulic, 1998)
Control Variable		
Firm Age	Firm age is calculated by subtracting current year of a firm or base year and incorporated year. FAGE = Current Year of a Firm - Incorporated Year	(Shunway, 2001)

In order to calculate CEE, HCE, SCE values, it is first necessary to calculate the total value created by the enterprise (Value-Added-VA). This calculation should be made as follows:

VA=R+T+DIV+WS+D

VA = Value Added Intellectual Coefficient
R = Retained Earnings,
T = Taxes,
DIV = Dividend,
WS = Salary and finally
D = Depreciation

It should be noted that salary should not be considered as the initial cost; rather these costs are considered a kind of investment because of having an active role in the company's value creation. Moreover, given the fact that the sum of retained earnings, tax and dividend is called operating profit (OP), the above formula can also be written as: VA= OP +WS +D.

4.0   Results and Discussion

The model specified for this paper was estimated using linear multiple regression. The regression analysis was carried out using SPSS software version 20.0. In the model, the Net Profit Margin is used as the dependent variables and intellectual capital components of VAIC (HCE, SCE and CEE) were employed as independent variables. Furthermore, Firm Age was used as the control variable.

Table 2: Regression Model Summary (Intellectual Capital and Net Profit Margin)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	0.928[a]	0.861	0.842	0.79092	0.861	46.307	4	30	0.000	1.892

Source: Computed by the Researcher from Annual Reports and Accounts 2016-2020 using SPSS Version 20.0

The regression results in table 2 reveals the cumulative R^2 (86.1) which is the coefficient of determination gives the proportion of the total variation in the dependent variable explained by the explanatory variables jointly. Hence, it indicates that 86.1% of total variation in NPM of Oil and Gas companies is caused by their HCE, SCE, CEE and FAGE while the remaining 13.9% is explained by other variables not captured or addressed by this model which is why the stochastic error term was specified in the regression model. Likewise, the value of F statistics at 1% level of significance proved the model to be fit and the explanatory variables are properly selected combined and used as substantial value (86.1%) of the firm profitability is accounted for by the explanatory variables. Hence, the finding of the study is relied upon.

The Durbin-Watson statistic of 1.892 is less than 2 and greater than the R-square value of .861 which indicates that the result is free from autocorrelation as stipulated by econometric assumption of regression analysis. Thus, the R^2 and F-statistics are statistically reliable as there is goodness of fit and the entire regression result is acceptable.

Table 3: Coefficients^a of Model 1 (Intellectual Capital and Net Profit Margin)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-4.902	0.755		-6.491	0.000		
	HCE	0.012	0.002	0.528	6.988	0.000	0.815	1.227
	SCE	4.585	0.645	0.493	7.109	0.000	0.968	1.033
	CEE	1.890	0.292	0.501	6.465	0.000	0.774	1.293
	FAGE	0.009	0.018	0.034	0.474	0.639	0.892	1.121

Note: a. Dependent Variable: NPM

Table 3 displayed the regression model of the paper. The regression line should take the form of NPM = -4.902 + .012HCE + 4.585SCE + 1.890CEE + .009FAGE + error term. The regression result in Table 3 reveals that HCE has significant positive association with firm profitability (NPM) as evident by the P-value of .000 with a coefficient intercept of .012. This mean that NPM will increase by .012 indicating the influence of HCE on NPM while t-statistic of HCE is 6.988.

SCE has a significant impact on NPM with P-value of .000 and coefficient of 4.585. The t-statistic of SCE is 7.109. From the P-value above, it shows that SCE has influence on NPM by 4.585. Similarly, CEE has coefficient value of 1.890 t-statistics of 6.465 with P-value of .000. This relationship shows that an increase of CEE by one percent will increase the companies' NPM by 1.890 holding other variables constant. Likewise, FAGE has insignificant impact on NPM with a P-value of .639. Its coefficient value is .009 and t-statistics of .474. This indicates that FAGE has no significant influence on the industry's NPM as it suggested by P-value.

From Table 3 above, VIF shows that the variables have no multicollinearity problem as evidenced by the value which is between 1 and 10. The VIF for HCE, SCE, CEE and FAGE are 1.227, 1.033, 1.293 and 1.121 respectively. The findings from the test of hypothesis reveal that intellectual capital (HCE, SCE, and CEE) has a statistically significant impact on the financial performance proxy by Net Profit Margin (NPM) in the Nigerian Oil and gas Companies at 5% level of significance. This finding is consistent with the findings of Muhammad & Rashid, (2015) and Ocheni (2018) that found significant positive relationship between IC and financial performance in the oil and gas sector. Conversely, the findings contradict that of Saeed, Shekoofeh and Mahnaz, (2013) who suggest that IC and FP were not significantly related in Iranian companies listed in the Tehran Stock Exchange (TSE).

The empirical results of the regression analysis are quite fascinating for one outstanding reason, whereas the relationship between intellectual capital and NPM is statistically significant of the sampled Nigerian oil and gas industry. Therefore, this implies that the model is fit and the explanatory variables are properly selected combined and used as substantial value (84%) of the corporate profitability is accounted for by the explanatory variables.

Table 4: Intellectual Capital and Return on Equity of model 2.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					**Durbin-Watson**
1	0.771[a]	0.594	0.540	0.66366	0.594	10.979	4	30	0.000	1.935

Source: Computed by the Researcher from Annual Reports and Accounts 2016-2020 using SPSS Version 20.0

Table 4 above depicts the model summary for the study. The R value of approximately 77.1 per cent indicates a quite strong relationship between ROE and the independents variable (HCE, SCE, CEE and FAGE the estimates are statistically significant at the 5 percent level. This is because the prob. (F-change) of the coefficient estimates is .000 which by inference from statistical decision theory is indicative of statistical significance. The R^2, Coefficient of determination of 0.594 is high. It indicates a goodness of fit of the estimate regression line. Furthermore, the R^2 shows that 59.4 percent of the total variation in ROE is explained by the joint influence of independent variables.

The balance of 40.6 percent is explained by other variables not captured by the model which is why the stochastic error term was specified in the econometric model/regression model. The Durbin-Watson statistic of 1.935 is less than 2 and greater than the R-square of .594 which according econometric assumption indicates that the result is free from autocorrelation between successive error terms and there is goodness of fit in the regression equation.

Table 5: Regression Result of Model 2 (ROE)

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-2.066	0.634		-3.260	0.003		
	HCE	0.002	0.001	0.159	1.232	0.227	0.815	1.227
	SCE	2.161	0.541	0.472	3.994	0.000	0.968	1.033
	CEE	1.092	0.245	0.589	552	0.000	0.774	1.293
	FAGE	0.003	0.015	0.025	0.205	0.839	0.892	1.121

Note; a. Dependent Variable: ROE

Table 4 above shows the coefficient of estimate, the regression line should be ROE = -2.066 + .002HCE + 2.161SCE + 1.092CEE + .003FAGE + error term. The regression result reveals that HCE has insignificant impact on ROE as evident by, p-value of .227. Its coefficient value is .002 and t-statistic is 1.232 and VIF of 1.207. This result shows that HCE increase will not necessitate ROE to change. SCE has a coefficient value of 2.161 and t-statistic of 3.994. Likewise, it has significant influence on ROE as evident by the p-value .000 VIF of 1.003. The relationship implies that increases in the SCE of the sampled companies will lead to increase in ROE by 2.161. CEE also has significant impact on ROE having p-value of .000 with coefficient value of 1.092 and t-statistics of .452 with VIF value of 1.293. This result shows that any change of CEE can affect ROE of the sampled oil and gas companies.

FAGE as control variable has insignificant effect on ROE with a p-value of .839. Its coefficient value is .003 and t-statistic .025. The result indicates that firm age has no influence on the financial performance proxy

represented by ROE of the sampled oil and gas firms in Nigeria. The variance inflation factor (VIF) tests shows that there is no multicollinearity problem because the VIF for each independent variable is less than 10. It was established that only SCE and CEE of IC components has a positive statistically significant impact on ROE in the oil and gas companies of the Nigerian petroleum industry at 5% level of significance. This result is in line with the result of previous study of Saeed et al. (2013). By this it is clearly evidence that there is a significant relationship between IC and ROE. However, this study contradicts the findings of Ofurum and Aliyu (2018) which shows insignificant relationship between components of IC and return on equity.

5.0   Conclusion and Recommendations

Conclusively, IC is a strategic company's intangible asset that can make corporate excellence in global competition of the oil and gas industry. This is evidenced by the result of this paper that IC significantly influenced the firm's financial performance proxy represented by NPM. This further proves that IC will increase the sales volume of the industry and this will positively increase the NPM of the oil and companies in Nigeria. Likewise, it also concludes that the benefits derived from intellectual capital outweigh the cost of intellectual capital usually incurred as investment in quality staff training and development through Strategic Talent Management and Business Acumen developed by human capital management (HCM) team of the company. Since, IC has greater impact on NPM of sampled Nigerian oil and gas companies, it is recommended that those companies should put more effort to not only to maintain the statuesque but to improve accumulation of knowledge through training and development and this will bring about innovation, skill acquisition, experience, managerial competencies and industry specific know-how as imperative to gain competitive advantage which in turns improve financial performance of the oil and gas companies.

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