INTELLECTUAL CAPITAL MANAGEMENT AND FINANCIAL COMPETITIVENESS OF LISTED OIL AND GAS FIRMS IN NIGERIA

Onipe Adabenege Yahaya, PhD
Department of Accounting and Management, Nigerian Defence Academy, Kaduna
yoadabenege@nda.edu.ng
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Abstract
In Nigeria, most of the interests of scholars and policy makers are on the competitiveness of the economy. Very little is said about firm-level competitiveness. In view of this, this study interrogates the influence of intellectual capital management on firm financial competitiveness. Financial competitiveness is measured using financial performance proxies (return on assets, return on equity and asset turnover). Intellectual capital management is measured by value added intellectual coefficient score, human capital efficiency, structural capital efficiency and capital employed efficiency. The analysis is based on oil and gas firms listed on the Nigerian Stock Exchange and covers the period 2006 to 2018. Results indicate that capital employed and human capital have significant positive effects on return on assets. However, structural capital shows significant negative effect on return on assets. The study, therefore, recommends that management of oil and gas firms should increase their investment in capital employed and human capital while reducing investment in structural capital.
Keywords: Financial competitiveness, Intellectual Capital Management, Nigeria, Listed oil and gas firms.

1. INTRODUCTION

A healthy state of financial competitiveness is desirable for corporate firms and their stakeholders. A financially competitive firm should generate sufficient revenue to provide for every stakeholder and show profitability. However, financial competitiveness is expected to come from firm's employees under the direction of management and board of directors. Firms do not compete with the products they produce but with the employees that produce those products. By extension, this suggests that firm financial competitiveness depends largely on the quality or management of intellectual capital available to it. Intellectual capital is often discussed in the context of value added intellectual capital, which is made up of three forms: capital employed efficiency, human capital efficiency and structural capital efficiency.

While a considerable number of empirical studies exist in Nigeria relating intellectual capital with financial performance, most of these studies were carried out on deposit money banks. Some were carried out on food and beverage, insurance and information and communications technology sectors. The only accessible study on oil and gas was carried out by Oyedokun and Saidu (2018), in which they examined the impact of intellectual capital on financial performance of listed Nigerian oil marketing companies using a 10 year data set (2007-2016). This study differs from four perspectives: first, the data set covers 2006-2018, which provides a wider spectrum. Second, this study uses 6 models as against one model used by the study in reference. Third, this study uses vaic, hce, cee and sce to proxy intellectual capital as against the use of vaic and Tobin'Q by aforementioned study. Finally, this study uses correlational research design while the study under reference used ex-post facto research design.

In view of these gaps in the literature, this study seeks to provide answer to the question of whether intellectual capital influences financial competitiveness among oil and gas firms in Nigeria. From previous studies, intellectual capital has been seen broadly as value added intellectual capital or disaggregated into capital employed efficiency, human capital

efficiency and structural capital efficiency. Following this categorization, the following hypotheses were developed and tested:

H_{O1}: Value added intellectual capital has no significant effect on financial competitiveness of   listed oil and gas firms in Nigeria.

H_{O2}: Capital employed efficiency has no significant effect on financial competitiveness of listed oil and gas firms in Nigeria.

H_{O3}: Human capital efficiency has no significant effect on financial competitiveness of listed   oil and gas firms in Nigeria.

H_{O4}: Structural capital efficiency has no significant effect on financial competitiveness of listed oil and gas firms in Nigeria.

This study is useful to a number of stakeholders in the oil and gas sector in Nigeria and beyond. For example, the management of oil and gas firms will come to appreciate the role of employees' knowledge, skills and competences and takes measures to improve on it. Also, employees will come to terms with the influence or role they play in ensuring firm financial competitiveness. Shareholders will also come to terms with the fact that though they provide the seed money to establish the firm, employees are the ones maximizing firm's wealth. Similarly, labour unions, ministry of labour and productivity, and scholars will benefit from the study.

The study will also expand the state of empirical literature, particularly on oil and gas sector. It also provides opportunity for several models and theories to be developed, discussed and tested. However, the study is limited to listed oil and gas firms in Nigeria and covers 13-year period (2006-2018). The remaining part of the study is divided into literature review, methodology, results and discussion and conclusion and recommendations.

2. Literature Review

Ogbo, Ezeobi and Ituma (2013) examined the effect of intellectual capital on organizational performance in the Nigerian banking sector using a sample of 378 employees of banks in South Eastern States of Nigeria. Findings indicated that human capital efficiency and structural capital efficiency have positive and significant effects on organizational performance. Similarly, Ekwe (2013) used value added intellectual coefficient to investigate the relationship between human capital efficiency, structural capital efficiency and capital employed efficiency and growth in revenue of selected banks in Nigeria over the period (2000-2011). The study adopted ex-post facto research design and used longitudinal panel data. Results showed that there is positive and significant relationship between components of VAIC and the growth in revenue of the banks in Nigeria. Uwuigbe (2014) examined the impact of intellectual capital on business performance measured with return on equity and return on assets. Results showed that intellectual capital has a positive and significant relationship with business performance.

Similarly, Arsian and Zaman (2015)examined the intellectual capital performance of oil and gas sector of Pakistan over the period (2007-2011) and its impact on corporate financial returns. Results revealed that intellectual capital has positive and significant relationship with firm's profitability and human capital efficiency and structural capital efficiency have positive and significant relationship with firm's financial performance. Also, Anuonye (2015) evaluated the influence of intellectual capital on earnings per share of quoted insurance firms in Nigeria. Ex-post facto research design was used for the secondary data selection. Results revealed that human capital efficiency was negatively insignificant on EPS and structural capital efficiency has insignificant negative effect on EPS.

Kurfi, Udin and Bahamman (2017) examined the impact of intellectual capital on

financial performance of listed Nigerian food products companies for a 5-year period (2010-2014). Regression models were used to test the study's hypotheses. Results showed that there was positive significant influence of intellectual capital on financial performance. Specifically, the results showed that structural capital efficiency and capital employed efficiency influence financial performance. Also, Orugun and Aduku (2017) examined the influence of intellectual capital on organizational performance. Findings indicated that intellectual capital has significant influence on organizational performance. Furthermore, human capital, structural capital, and relational capital have significant effect on organizational performance.

Inyada (2018) examined the impact of intellectual capital on financial performance of 5 banks in Nigeria. Secondary data were collected from the Nigerian Stock Exchange 5-year fact books. Results showed that intellectual capital positively and significantly impact on financial performance. In specific terms, physical and structural capitals show positive relationship with financial performance. Ewereoke (2018) assessed the effect of intellectual capital on performance of 40 firms listed on the Nigerian Stock Exchange. The study used ex-post facto research design and secondary data sourced from annual reports and accounts and the Nigerian Stock Exchange Fact Books. Results showed that intellectual capital significantly affects firm performance. Ofurum and Aliyu (2018) empirically examined the relationship between intellectual capital and financial performance of 15 quoted banks in Nigeria. The study adopted ex-post facto research design and data were collected from published annual financial statements. Findings revealed mixed results; intellectual capital was not significantly related to financial performance. However, human capital efficiency was significantly related to financial performance.

Oyedokun and Saidu (2018) examined the impact of intellectual capital on financial performance of listed Nigerian oil marketing companies over 10 years (2007-2016). Intellectual capital was measured by market to book value ratio (MB), Value Added intellectual coefficient (VAIC), and monetary model of Tobin's Q (MMQR) while financial performance was measured by return on asset (ROA). Ex-post facto research design was adopted while data was extracted from the firms' financial statements. Results showed that market to book value has a negative significant impact on return on asset. Monetary model of Tobin's Q has insignificant impact on return on asset while Value added intellectual coefficient also has insignificant impact on return on asset.

John-Akamelu and Iyidiobi (2018) examined the effect of intellectual capital on performance of 6 Nigerian banks over 2010-2015. Ex-post facto research design and secondary data were used. The study used Pearson product moment coefficient to test the hypotheses. Results revealed that there is a relationship between Value Added Intellectual Coefficient indices and performance. Oko, Onodi and Tapang (2018) investigated the effect of intellectual capital management on revenue generation of listed deposit money banks in Nigeria over 6 years. Descriptive research design was adopted and data were collected via secondary source and analyzed using percentages and ratios. Results revealed that human capital efficiency has a positive and significant effect on revenue growth; structural capital efficiency has a positive insignificant effect on revenue growth.

Nwaiwu and Aliyu (2018) empirically examined the relationship between intellectual capital reporting and measures of financial performance of 15 quoted banks in Nigeria. The study adopted ex-post facto research design and data were collected from annual financial statements. Findings revealed that structural capital efficiency index is significantly related to return on investment. Ugwuanyi and Onyekwelu (2018) assessed the effect of intellectual capital on revenue and market values of 3 listed information and communication technology firms in Nigeria over 10-year period (2004-2013). Human capital, structural capital and

capital employed were used as proxies for intellectual capital while gross revenue and market price per share were used for measuring financial performance. The study adopted ex-post facto research design and data were sourced from annual reports and accounts and analyzed using Ordinary Linear Regression. Results showed that intellectual capital has positive and insignificant influence on revenue. Also, result showed that human capital efficiency has positive and insignificant influence on share price. Omotayo and Omiunu (2019)investigated the influence of intellectual capital on operational and financial performance of small and medium scale enterprises in Nigeria. Questionnaire was used to collect data from 210 SMEs. The study found no significant relationship between human capital, structural capital and relational capital and performance of SMEs. However, a significant relationship was observed when the variables were jointly considered.

3. Methodology

The population of the study is the 12 listed oil and gas firms on the Nigerian Stock Exchange. Out of these, 4 do not have complete data set for the period of the study; so, the sample is reduced to 8, thus, accounting for more than 66 percent of the listed oil and gas firms in Nigeria. The data for analysis is sourced from the annual reports and accounts of the firms. We examine the effects of intellectual capital management on financial competitiveness using the following models, derived from existing literature:

$$roa_{i,t} = {}_0 + {}_1cee_{i,t} + {}_2hce_{i,t} + {}_3sce_{i,t} + {}_4lage_{i,t} + {}_5fsiz_{i,t} + e_{i,t} \dots (1)$$
$$roe_{i,t} = {}_0 + {}_1cee_{i,t} + {}_2hce_{i,t} + {}_3sce_{i,t} + {}_4lage_{i,t} + {}_5fsiz_{i,t} + e_{i,t} \dots (2)$$
$$asst_{i,t} = {}_0 + {}_1cee_{i,t} + {}_2hce_{i,t} + {}_3sce_{i,t} + {}_4lage_{i,t} + {}_5fsiz_{i,t} + e_{i,t} \dots (3)$$
$$roa_{i,t} = {}_0 + {}_1vaic_{i,t} + {}_2lage_{i,t} + {}_3fsiz_{i,t} + e_{i,t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$
$$roe_{i,t} = {}_0 + {}_1vaic_{i,t} + {}_2lage_{i,t} + {}_3fsiz_{i,t} + e_{i,t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (5)$$
$$asst_{i,t} = {}_0 + {}_1vaic_{i,t} + {}_2lage_{i,t} + {}_3fsiz_{i,t} + e_{i,t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (6)$$

Whereas:
roa = Return on assets
roe = Return on equity
asst = Assets turnover
vaic = Value added intellectual coefficient
cee = Capital employed efficiency
hce = Human capital efficiency
sce = Structural capital efficiency
lage = Listing age
fsiz = Firm size, measured as natural logarithm of total assets
e = Idiosyncrasy or stochastic error term (residual)
i = Firm script (in this case, i = 8)
t = Time script (in this case, t = 13 years)

Consistent with the literature, we used return on assets (earnings before interest & tax/ total assets), return on equity (earnings after interest & tax/total equity) and assets turnover (sales to assets ratio) as measures of financial competitiveness (Akben-Selcuk, 2016). High relative value indicates high competitiveness. In order to analyze the role of intellectual capital management in firm financial competitiveness, we used value added intellectual capital score, capital employed efficiency score, human capital efficiency score and structural capital efficiency score (Nwaiwu & Aliyu, 2018; Oko et al., 2018; Ugwuanyi & Onyekwelu, 2018). High score indicates high intellectual capital management.

Although, we are investigating how intellectual capital management can influence firm financial competitiveness, we recognized other firm level factors that can influence financial competitiveness and which require to be controlled in the estimations. On the basis of earlier

studies, we consider firm listing age (Shumway, 2001; Yahaya, Tanko & Muhammad, 2017), firm size (Ilaboya & Ohiokha, 2016; Yahaya, Tanko & Muhammad, 2017; Yahaya, Kutigi & Ahmed, 2015) and firm growth (Park & Jang, 2013; Yahaya, Tanko & Muhammad, 2017) as control variables. Listing age is calculated as 2018 less age of listing. Firm size is measured as the natural logarithm of average total assets.

4. Results and Discussion

The results of analysis are reported and discussed in this section. Table 1 reports the results of descriptive analysis.

Table 1

Descriptive Statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
vaic	overall	7.940	4.768	-2.85	37.07	N = 104
	between		1.765	5.245	10.572	n = 8
	within		4.470	-.772	34.438	T = 13
cee	overall	.216	.129	0	.66	N = 104
	between		.093	.104	.376	n = 8
	within		.094	.077	.560	T = 13
hce	overall	6.887	4.718	-4.06	35.72	N = 104
	between		1.770	4.148	9.499	n = 8
	within		4.415	-1.332	33.108	T = 13
sce	overall	.837	.184	.22	1.89	N = 104
	between		.079	.751	1	n = 8
	within		.168	.303	1.727	T = 13
roa	overall	1.966	12.444	-71	26.2	N = 104
	between		7.184	-12.786	11.878	n = 8
	within		10.452	-56.248	23.523	T = 13
roe	overall	8.938	64.765	-394	90.76	N = 104
	between		27.225	-28.358	49.819	n = 8
	within		59.495	-356.704	92.933	T = 13
asst	overall	1.951	1.240	.04	5.43	N = 104
	between		.934	.281	3.108	n = 8
	within		.876	.098	5.055	T = 13
lage	overall	26.75	11.586	2	48	N = 104
	between		11.659	8	42	n = 8
	within		3.760	21	32.75	T = 13
fsiz	overall	7.717	.529	5.97	9.03	N = 104
	between		.463	7.145	8.671	n = 8
	within		.301	6.542	8.302	T = 13

Source: Stata 13 outputs

Table 1 presents the descriptive statistics for the variables of the study. For the period covered by the study, oil and gas firms in Nigeria have a mean vaic value of 7.940 (std. dev. = 4.768), with a minimum value of -2.85 and a maximum value of 37.07. The average proportion of cee is .216 (std. dev. = .129), with a minimum value of 0 and a maximum value of .66. The mean value of hce is 6.887 (std. dev. = 4.718), with a minimum value of -4.06 and a maximum value of 35.72. The average proportion of sce is .837 (std. dev. = .184), with a minimum value of .22 and a maximum value of 1.89. For the financial competitiveness proxies, the mean proportion of roa is 1.966% (std. dev. = 12.444%), with a minimum value of -71% and a maximum value of 26.2%. Similarly, the mean value of roe is 8.938% (std.

dev. = 64.765%), with a minimum value of -394% and a maximum value of 90.76%. Also, the average proportion of asst is 1.951% (std. dev. = 1.24%), with a minimum value of 0.04% and a maximum value of 5.43%. Furthermore, the mean listing age is 27 years (std. dev. = 12 years), with a minimum value of 2 years and a maximum value of 48 years. Finally, the average firm size is 7.717 (std. dev. = .529), with a minimum value of 5.97 and a maximum value of 9.03.

In terms of variation, Table 1 shows that variation in vaic between the firms is 1.765; while within a firm over the 13 year period is 4.470. Similarly, the variation in cee between the firms is .093, while within a firm is .094. In the same vein, variation in hce between the firms is 1.770; while within a firm is 4.415. Similarly, variation in sce between the firms is .079, while within a firm is .168. However, variation among the dependent variables shows that roa has 7.184% between the firms and 10.452% within the firm over the study period. Also, variation in roe between the firms is 27.225%; while within a firm is 59.495%. Variation in asst between the firms is .934%, while within a firm is .876%. Furthermore, variation in listing age between the firms is 12 years; while within a firm is 4 years. Finally, variation in firm size between the firms is .463, while within a firm is .301.

The results of normality distribution test are reported in Table 2.

Table 2

Results of tests for Normality

Variable	Obs	Swilk	Sfrancia	Skt	Skewness	Kurtosis
vaic	104	0.000	0.000	0.000	0.000	0.000
cee	104	0.000	0.001	0.005	0.001	0.208
hce	104	0.000	0.000	0.000	0.000	0.000
sce	104	0.000	0.000	0.000	0.000	0.000
roa	104	0.000	0.000	0.000	0.000	0.000
roe	104	0.000	0.000	0.000	0.000	0.000
asst	104	0.005	0.010	0.048	0.012	0.821
lage	104	0.012	0.033	0.005	0.231	0.001
fsiz	104	0.001	0.001	0.054	0.641	0.015

Source: Stata 13 outputs

As shown in Table 2, the p-values of the variables of interest under different test of normality are significant, indicating that the variables are not normally distributed. As a consequence, the imtest was used to test for heteroskedasticity instead of the usual hottest. The results of Cameron & Trivedi's decomposition of IM-test are reported in Table 3.

Table 3

Cameron & Trivedi's decomposition of IM-test results

Model	roa		roe		asst	
	Panel A	Panel B	Panel A	Panel B	Panel A	Panel B
$Chi^2(1)$	43.83	25.53	23.89	10.68	19.62	11.95
$Prob>Chi^2$	0.002	.0024	0.247	.2981	0.482	.2162

Source: Stata 13 outputs

In Panel A, the independent variables are cee, hce and sce, however, in Panel B, the independent variable is vaic. The results in Table 3 indicate that roa has heteroskedasticity problem, while roe and asst are free of heteroskedasticity. Thus, model roa requires use of robust standard errors instead of normal standard errors in its regression. The results of serial (auto) correlation test are reported in Table 4.

Table 4
Wooldridge test for autocorrelation in panel data

Model	roa		roe		asst	
	Panel A	Panel B	Panel A	Panel B	Panel A	Panel B
$F(1, 7)$	2.722	3.25	2.648	2.785	.752	1.468
Prob>F	.143	.1144	.1477	.1391	.4146	.265

Source: Stata 13 outputs

The results in Table 4 indicate that the models are free of serial (auto) correlation. The results of Pearson product moment correlation are reported in Table 5.

Table 5
Correlation results

	roa	roe	asst	vaic	cee	hce	sce	lage	fsiz
roa	1.000								
roe	.642*	1.000							
	.000								
asst	.41*	.307*	1.000						
	.000	.002							
vaic	.357*	.226*	.049	1.000					
	.0002	.021	.621						
cee	.546*	.407*	.707*	.163	1.000				
	.000	.000	.000	.099					
hce	.364*	.214*	.040	.999*	.146	1.000			
	.000	.029	.685	.000	.138				
sce	-.469*	.063	-.263*	.168	-.237*	.138	1.000		
	.000	.523	.007	.088	.016	.162			
lage	.337*	.208*	.286*	.218*	.345*	.216*	-.129	1.000	
	.001	.035	.003	.026	.0003	.028	.194		
fsiz	-.046	-.189	-.319*	.158	-.199*	.159	.145	.294*	1.000
	.643	.055	.001	.109	.043	.106	.143	.0024	

Source: Stata 13 outputs

The correlation test results in Table 5 indicate a high correlation between vaic and hce (.999). This is not surprising since they are from the same family, however, it is an indication that the bulk of vaic comes from hce. However, the implication is that both cannot be in the same model. Table 5 indicates that vaic shows significant positive relationship with roa (coef. = .357, p-value = .0002). Similarly, cee (coef. = .546, p-value = .000) and hce (coef. = .364, p-value = .000) show significant positive relationship with roa. Meanwhile, sce shows significant negative link with roa (coef. = -.469, p-value = .000).

Furthermore, listing age shows significant positive association with roa, however, firm size shows insignificant negative association with roa. A further examination of Table 5 indicates that vaic has significant positive relationship with roe (coef. = .226, p-value = .021). Similarly, cee (coef. = .407, p-value = .000) and hce (coef. = .214, p-value = .029) show significant positive relationship with roa. However, sce shows insignificant positive association with roe. Furthermore, listing age shows significant positive association with roe (coef. = .208, p-value = .035), however, firm size shows insignificant negative association with roe (coef. = -.189, p-value = .055).

Table 5 also indicates that vaic has insignificant positive relationship with asst (coef. = .049, p-value = .621). However, cee shows significant positive association with asst (coef. = .707, p-value = .000). On the other hand, hce shows insignificant positive relation with asst

(coef. = .040, p-value = .685). A further look at Table 5 shows that sce (coef. = -.263, p-value = .007), lage (coef. = -.286, p-value = .003) and fsiz (coef. = -.319, p-value = .001) show significant negative association with asst, respectively.

We confirmed the absence of multicollinearity in Table 6 after separating vaic from its components using variance inflation factor and tolerance level.

Table 6

VIF and Tolerance Level Results

Variable	VIF		1/VIF	
	Panel A	Panel B	Panel A	Panel B
lage	1.38	1.13	0.724	.883
cee	1.34		0.748	
fsiz	1.27	1.11	0.786	.904
sce	1.12		0.896	
hce	1.11		0.901	
vaic		1.06		.943
Mean VIF	1.24	1.10		

Source: Stata 13 outputs

The VIF of individual variables and mean VIF indicate the absence of multicollinearity in the panels. The results of Breusch and Pagan Lagrangian multiplier test for random effects vs OLS are reported in Table 7.

Table 7

Breusch and Pagan Lagrangian multiplier test for random effects results

Model	roa		roe		asst	
	Panel A	Panel B	Panel A	Panel B	Panel A	Panel B
Chibar^2(01)	.55	3.85	.000	.05	103.77	71.07
Prob>Chibar^2	.228	.0248	1.000	.4121	.000	0.000

Source: Stata 13 outputs

The results in Table 7 for Panel A data indicate that *roa* and *roe* have no panel effects, since the prob>chibar^2 is greater than .05 thresholds. However, *asst* shows that there is a panel effect, which needs to be determined between fixed and random. The Hausman specification test shows a Prob>chi^2 = 0.7060, which indicates that random effects model (REM) is most appropriate for *asst*.

Table 8 reports the results of OLS for *roa* and *roe* and REM for *asst*. However, under Panel B, roa and asst show panel effects, which require further determination. The results of Hausman specification test show that prob>chi^2 for roa = .0305 and asst = .0554, indicating that fixed effects model is most appropriate for roa and random effects model is most appropriate for asst. The regression results are reported in Table 8.

Table 8

Regression Results for Panel A (Equations 1, 2 & 3)

Model	roa		Roe		asst	
Variable	Coef.	p-value	Coef.	p-value	Coef.	p-value
cee	37.875	.000	212.273	.000	7.073	.000
hce	.964	.001	1.823	.149	-.019	.193
sce	-28.93	.007	51.010	.123	.335	.385
_cons	11.364	.213	-92.239	.004	.272	.512
R^2		.547		.209		.493
Adj R^2		.533		.185		.497
Prob > F		.000		.000		.000

Source: Stata 13 outputs

As shown in Table 8, the three models have the same Prob>F (.000), which is significant, suggesting that all the models are fit. However, under roa all the three independent variables are significant (p-values less than .05) and it has higher adjusted R^2. These results suggest that roa is better than roe and asst in terms of predicting capacity, thus, roa is used to test the hypotheses of the study. Based on this premise, cee and hce shows significant positive effects on financial competitiveness, while sce shows significant negative impact on financial competitiveness. Based on these results, hypotheses one, two and three are hereby rejected.

The results of regression analysis for Panel B (equations 4, 5 and 6) when vaic is used to proxy intellectual capital are reported in Table 9.

Table 9

Regression Results for Panel B (Equations 4, 5 & 6)

Model	roa		Roe		asst	
Variable	Coef.	p-value	Coef.	p-value	Coef.	p-value
vaic	.694	0.261	2.969	0.023	.013	0.495
lage	-.754	0.322	1.380	0.013	.006	0.794
fsiz	.299	0.928	-36.264	0.003	-1.242	0.000
_cons	14.309	.213	228.292	.004	11.274	0.000
R^2		.232		.157		.260
Adj R^2		.208		.131		.238
Prob > F		.000		.001		.000

Source: Stata 13 outputs

From Table 9, the three models show fitness (Prob>F is less than .05), however, under roa and asst, vaic and listing age are not significant. On the other hand, all the three variables are significant under roe. Thus, roe is used to test hypothesis four, which states that intellectual capital has significant effect on financial competitiveness. Given the p-value of .023, it shows that hypothesis four is hereby rejected. The results in Table 9 also indicate that listing age has significant negative influence on financial competitiveness, while size shows significant positive influence on financial competitiveness.

A discussion of the findings in Tables 8 and 9 is necessary. From the tables, cee shows significant positive effect on financial competitiveness. This result is in line with the works of Ekwe (2013), Apiti et al. (2017), Kurfi et al. (2017) and Inyada (2018). However, the result is not in agreement with the work of Omotayo and Omiunu (nd), which finds insignificant effect. Similarly, hce shows significant positive effect on financial competitiveness. This result is in line with the findings of Ogbo et al. (2013), Ekwe (2013), Arsian and Zaman (2015), Orugun and Adaku (2017), Ofurum and Aliyu (2018), and Oko et al. (2018). However, the result is in contrast with the findings of Anuonye (2015), Uguwanyi and Onyekwelu (2018) and Omotayo and Omiunu (n.d).

Also, sce shows significant negative effect on financial competitiveness. While this result is in agreement with the finding of Anuonye (2015), it is in contrast with the findings of Ogbo et al. (2013), Ekwe (2013), Arsian and Zaman (2015), Kurfi et al. (2017), Orugun and Adaku (2017), Inyada (2018) and Oko et al. (2018). Finally, vaic shows significant positive effect on financial competitiveness. This result is in line with the findings of Ekwe (2013), Uwuigbe (2013), Arsian and Zaman (2015), Apiti et al. (2017), Onyekwelu et al. (2017), Ogbodo et al. (2017), Kurfi et al. (2017), Orugun and Adaku (2017), Inyada (2018), Eweoreke (2018), John-Akamelu and Iyidiobi (2018) and Omotayo and Omiunu (n.d). However, the result is not in agreement with the findings of Ofurum and Aliyu (2018), Oyedokun and Saidu (2018) and Ugwuanyi and Onyekwelu (2018), which did not find significant effect.

5. Conclusion and Recommendations

The study examined the influence of intellectual capital management on financial competitiveness of listed oil and gas firms in Nigeria. Based on the results of the study, it is concluded that intellectual capital constitute an important asset to oil and gas firms in Nigeria. This is true whether it is seen as a whole or its components such as capital employed efficiency, human capital efficiency and structural capital efficiency. In view of the results, it is recommended that management of oil and gas firms should invest more on capital employed and human capital and reduce their investment in structural capital.

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