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Nexus between Capital Structure and Financial Performance of Quoted Oil and Gas Companies in Nigeria

Maimuna BELLO[1]

[1]Department of Accounting, Faculty of Management Sciences, University of Abuja, Nigeria

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ABSTRACT

This study examined the relationship between capital structure and financial performance of quoted oil and gas companies in Nigeria. The study used the secondary data retrieved from the various websites of the quoted oil and gas companies in Nigeria from 2013 to 2020. The financial performance was measured using Return on Capital Employed (ROCE) and this formed the dependent variable. The independent variable used is the capital structure measured by Total Equity to Total Asset (TETA) and Total Debt to Total Asset (TDTA). The variables were validated by conducting descriptive statistics, correlation test and the unit root test using the Augmented Dickey Fuller (ADF) and Phillips Perron (PP). A multiple regression models was employed for this study and was analysed with the aid of a statistical program (Eviews 12). The results of the study indicated that total equity to total asset has a positive and significant impact on return on capital employed and total debt to total asset has a positive and significant impact on return on capital employed. The study recommends that the oil and gas companies in Nigeria should increase their total equity to total asset as it increases the return on capital employed and should maintain the level of total debt to total equity as it increase the return on capital employed of the oil and gas companies, and that the percentage of total debt to total asset should be less in compare to the percentage of total equity to total asset.

Keywords: Capital structure, financial performance, oil and gas companies, Nigeria

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1 INTRODUCTION

The fact that capital is of practical importance to corporate organizations cannot be overemphasized. It serves as the foundation and basis upon which corporate firms are laid and therefore operates (Atseye, 2013).

Saad, (2010) defined capital structure as the various means in which a firm finances its operations which can either be through debt or equity capital or combination of both. Through this definition, we can deduce that if the company makes a weak decision related to capital structure, it may face a high risk, or higher cost of capital and this will lead to a decline in the overall performance of the company.

Financial performance can be measured by variables which involve productivity, profitability, growth or, even, customers' satisfaction. These measurements are return on investment (ROI), Residual Income (RI), Earning Per Share (EPS), Dividend Yield, Return on Assets (ROA), Growth in Sales, Return on Equity (ROE), and many others (Nirajini & Priya, 2013).

Overtime, many academic and researchers have conducted series of investigation in a bid to validate or refute these theories especially with regards to the manner of relationship that exists between capital structure and the performance of firms in both advanced and developing economies of the world and it seems as if concentration has been on other sectors order than the oil and gas sector in Nigeria as seen in the studies of Nassir (2016), Mursalim and Kusuma (2018) and the results of these investigations were mixed and divergent, thereby leaving the issue of capital structure and firm's performance unresolved.

It is also noticed in the literature that studies that used capital structure variables to examine the performance of firms in the manufacturing, banking, construction, financial service, health, etc have only anchored their studies on the Trade-Off Theory, Efficiency-Risk Hypothesis, Modern Theory of Capital Structure, Market Timing Theory and the Agency Cost Theory. Attention has not really been on the Pecking Order Theory framework which makes it scarce in West Africa and in particular, in the case of Nigeria thus, leaving a gap which the study intends to fill and lastly it seems as if concentration has not been up to 2020 year scope. With the above stated gaps, it becomes imperative to investigate the nexus between capital structure and firm's performance of quoted oil and gas companies in Nigeria.

The general objective of this study is to examine the nexus between capital structure and firm's performance of quoted oil and gas companies in Nigeria. The specific objectives are to: examine the nexus between total equity to total asset and firm's performance of quoted oil and gas companies in Nigeria, and to assess the nexus between total debt to total asset and firm's performance of quoted oil and gas companies Nigeria.

The hypotheses of this study were all stated in the null form (H0) and they are: Hypothesis 1 (H0): There is no significant relationship between total equity to total asset and firm's performance of quoted oil and gas companies in Nigeria. Hypothesis2 (H0): There is no significant relationship total equity to total asset and firm's performance of quoted oil and gas companies in Nigeria.

2 LITERATURE REVIEW

2.1 Conceptual Framework

2.1.1. Capital Structure

The following concepts were used to capture the variables adopted for capital structure and they are: Total Equity to Total Asset and Total Debt to Total Asset.

i. **Total Equity to Total Asset:** It shows the ratio between the total assets of the firm to the amount on which equity holders have a claim (Mursalim and Kusuma, 2018).

ii. **Total Debt to Total Asset:** The debt to assets ratio is a leverage ratio used to determine how much debt (a sum of long term and current portion of debt) a firm has on its balance sheet relative to total assets (Mursalim & Kusuma, 2018).

2.1.2. Financial Performance

The following concepts was used to capture the variable adopted for the measurement of financial performance:

i. **Return on Capital Employed:** ROCE stands for Return on Capital Employed; it is a financial ratio that determines a company's profitability and the efficiency the capital is applied. (Ojo, 2012).

2.2 Theoretical Framework

The following theories form the theoretical review for this study to substantiate capital structure and financial performance. They are: Pecking Order Theory, Trade-Off Theory and the agency cost theory:

i. Pecking Order Theory

This theory explains the fact that manager prefers to use capital sources that are internal, external or both to finance and promote their operations (Nirajini & Priya, 2013).

ii. Trade-Off Theory

This theory is an offshoot of M&M theory. It posits that each source of finance has its own merits and demerits, benefits and costs (Myers & Maljuf, 1984).

iii. Agency Cost Theory

The theory opines that capital structure that is optimal is achieved at the point where the benefit accruing to debt financing offsets the agency cost of borrowing or debt financing (Brendea, 2018).

Based on the theories reviewed above, this study have adopted the Pecking Order Theory since it is best suited for this study because the theory asserts that managers of corporate organizations prefer internal sources of financing first (retained earnings or liquid assets that are excess) and then external finance.

2.3 Empirical Review of Literature

Nassir (2016) examined the impact of capital structure on industrial firms' performance in Turkey. Annual accounts of 136 firms in the industrial sector quoted on the Istanbul Stock Exchange (ISE) were utilized for the analysis ranging from the period of 2005 through 2012. A regression analysis that is multivariate was applied to assess the causal relationship between capital structure and firm performance. The outcome revealed that the nexus between capital structure and firm performance is negative and statistically significant.

Nenu, Vintila and Gherghina (2017) evaluated those factors that influence the capital structure of firms quoted in the Romanian stock market within the period of 2000-2016. Fixed-effects regression analysis that is multivariate and the dynamic systems GMM (Generalized Method of Moments) was applied on a panel data comprising the quoted firms on the Bucharest Stock Exchange. The outcome of the study revealed that leverage has positive correlation with the company's size and the volatility of share prices. Conversely, the structure of the debt has an impact that is different on the performance of corporate firms.

Mursalim and Kusuma (2018) evaluated the determinants of capital structure of Malaysia, Thailand and Indonesia. Variables used were gross domestic product (GDP rate), corporate governance, growth opportunity, volatility, profitability, firm size, inflation rate using the two stage least square regressions. The findings revealed that company's profit, size of the firm and volatility has consistent and significant roles in trying to explain the changes that occur in capital structure composition.

Meero (2017) determined the nexus between capital structure and firm performance in Gulf economies. He differentiated between the Islamic banks and the conventional banks with respect to their capital structure and their performances. The findings revealed that return on asset is significant and negatively related to financial leverage and positively correlated with the ratio of equity to asset.

Oladeji, Ikpefan and Olokoyo (2015) analysed the impact of capital structure on firm performance in Nigeria from 2003 to 2012. Using data from six petroleum companies in Nigeria namely: Chevron Plc, Conoil Plc, Eterna Oil plc, Mobil Oil Plc, Oando Plc and Total Nigeria Plc. The study carried out a panel data analysis by using fixed effect estimation. The study found that a negative relationship exists between leverage and firm performance and the study established that a positive a relationship exists between three of the explanatory variables (firm's size, tax and lagged return of asset) and firm performance.

Ebaid (2009) examined the relationship between debt level and financial performance of 64 listed non-financial Egyptian companies. The study revealed a negative significant relationship existing between short term debt, total debt and financial performance measured by ROA, but the relationship between financial leverage and ROA was insignificant when long-term debt was used as measure of financial leverage. The study also found out that short-term debt, long-term debt and total debt have no significant influence on financial performance when measured by ROE and Gross Margin. Generally, the results revealed that weak relationship between capital structure choice and firm's performance in Egypt.

Table 2.1. Summary of Empirical Review

S/n	Author	Year	Location	Methodology	Variables	Findings
1.	Nassir	2016	Turkey	Granger Pairwise Causality Test	Capital Structure and Firm Performance	The Nexus between Capital Structure and Firm Performance is Negative and Statistically Significant.
2.	Nenu, Vintila & Gherghina	2017	Rome	Generalized Method of Moments (GMM)	Leverage as Positive Correlation with the Company's Size and the Volatility of Share Prices	Leverage has Positive Correlation with the Company's Size and the Volatility of Share Prices
3.	Mursalim & Kusuma	2018	Malaysia, Thailand and Indonesia	Two Stage Least Square Regressions	Gross Domestic Product (GDP Rate), Corporate Governance, Growth, Volatility, Profitability, Firm Size, Inflation Rate	Company's Profit, Size of the Firm And Volatility Has Consistent and Significant Roles In Trying to Explain The Changes that Occur In Capital Structure Composition
4.	Meero	2017	Gulf Economies	Ordinary Least Squares (OLS)	Capital Structure and Firm Performance	Return on Asset is Significant and Negatively Related to Financial Leverage and Positively Correlated with the Ratio of Equity to Asset
5.	Oladeji, Ikpefan & Olokoyo	2015	Nigeria	Panel Data Analysis	Leverage and Firm Performance	The study found that a negative relationship exists between leverage and firm performance
6.	Ebaid	2009	Egypt	Pooled Ordinary Least Square	short-term debt, long-term debt, total debt and financial performance	The study also found out that short-term debt, long-term debt and total debt have no significant influence on financial performance

Source: Author's Review, 2021

3 METHODOLOGY

Ex Post Facto was employed for this study. The adopted research design was used because it explores the relationship between variables using statistical analyses and mostly observational in terms of data availability. Secondary source of data was employed for this study and the data were retrieved from the websites of the individual oil and gas companies. The population of this study is the 10 (Ten) quoted oil and gas companies: Ardova Plc, Capital Oil Plc, Conoil Plc, Eterna Plc, Japaul Gold & Ventures Plc, MRS Oil Nigeria Plc, Oando Plc, RAK Unity Petroleum Company Plc, Seplat Energy Plc and Total Nigeria Plc. All the quoted Oil and Gas companies were used. The variables used for the purpose of this study, are the independent and dependent variables. The dependent variable is the firm's performance measured by "Return on Capital Employed (ROCE)" while the independent variables is the capital structure measured by Total Equity to Total Asset and Total Debt to Total Asset.

The correlation test was conducted to see the correlation between the variables and the data were also tested of stationarity (Unit root test) using the Augmented Dickey Fuller (ADF). The Descriptive Statistics was used to obtain the Skewness, Kurtosis, and Jarque-Bera value to show the normality of the variables.

In an attempt to establish empirical evidence on the impact of assets structure on financial performance of quoted oil and gas firms in Nigeria, Ogieva & Ogiemudia (2019) was adapted. Ogieva & Ogiemudia (2019) only used the aggregated capital structure: $FRMP_{it} = \beta 0_{it} + \beta 1\ CAPST_{it} + \beta 2\ BSIZE_{it} + \beta 3\ BINDP_{it} + \beta 4\ FAGE_{it} + \beta 5\ FSIZE_{it} + \varepsilon t_{it} \ldots 1$

Where: FRMP = Firm Performance, CAPST = Capital Structure, BSIZE = Board size, BINDP = board independence, FAGE = Firm age, FSIZE = Firm size, β0it = Constant (Intercept) , β1, β2, β3, β4, β5 are parameters to be estimated, εtit = Error term, it = the ith of the firm at time t

This study adapted their model by capturing the disaggregated capital structure. Therefore, the simple regression equations of this study is as follows:

$ROCE_t = \alpha_0 + \beta_1 TETA_+ \beta_2 TDTA + \varepsilon_t \ldots 2$

Where: ROCE = Return on Capital Employed, TETA = Total Equity to Total Asset, TDTA = Total Debt to Total Asset, α_0 = Intercept, t = Time (Annual), $\beta_{1,2}$ = Regression of the coefficient of the independent variable, ε = Error Term

The apriori expectations of the variables are given as (β1- Total Equity to Total Asset and β1- Total Debt to Total Asset) > 0. This implies that the independent variables are assumed to have positive impact on the dependent variable (financial performance - Return on Capital Employed).

The statistical method used for this research work on data collected is the regression analysis using the Dynamic Ordinary Least Squares of E-Views 12. It is used for time series estimation and forecasting and to test the hypotheses which is used to show the relationship between the two variables. The correlation coefficient was performed using the Correlation Matrix. DF = 5, where DF = Degree of freedom at 5% level of significance was used to test the hypotheses.

4 DATA ANALYSIS AND DISCUSSION OF FINDINGS

4.1 Analysis of Data

Table 4.1: Descriptive Statistics

Date: 04/08/21 Time: 01:42

Sample: (2013 2020)

	ROCE	TETA	TDTA
Mean	.64863521	364.3827	246.6533
Median	.58811042	478.4000	283.8900
Maximum	.59939942	678.4900	578.2800
Minimum	.46720549	263.7200	27.58300
Std. Dev.	.24719788	247.2277	53.84704
Skewness	0.9555088	0.867322	0.039504
Kurtosis	2.3041554	2.985527	2.695201
Jarque-Bera	1.9875678	1.950512	0.678066
Probability	0.9760858	0.567303	0.906965
Sum	7.675508	6885.732	2848.952
Sum Sq. Dev.	2.678415	395275.3	24736.81
Observations	80	80	80

Source: E-Views 12 result, 2021.

Table 4.1 provides the summary of the descriptive statistics of the variables for the quoted oil and gas companies showing the skewness, kurtosis, Jarque-Bera, from 2013 through 2020. The Skewness measure the asymmetry of the probability distribution of a real-valued random variable about its mean. If the value is greater than zero it is positively skewed and if the value is less than 0, it is negatively skewed ROCE, TETA and TDTA, are positively skewed having 0.9555088, 0.867322 and 0.039504 respectively. The Kurtosis measures the normality of a distribution; the range for Kurtosis is -3 to + 3. Any value greater than +3 is a sign of outliers. The problem of outliers are not seen in ROCE, TETA, and TDTA since they have values 2.3041554, 2.985527 and 2.695201 respectively.

Table 4.2. Test of Stationarity - Unit Root Test Using the Augmented Dickey Fuller

Date: 04/08/2021; Time: 02:11

VARIABLES	IN LEVEL I(0)		FIRST DIFFERENCE I(1)		Order of Integration	
	ADF	PP	ADF	PP	ADF	PP
lnROCE	-3.489493	-3.859994	-2.788344**	-2.677485**	I(1)	I(1)
lnTETA	-2,289944	-2.849934	-1.933234**	-1.344578**	I(1)	I(1)
lnTDTA	-1.955748	1.948854	-2.489954**	-2.475884**	I(1)	I(1)

Source: Eviews 12, 2021.

*Note: ** level of significance at 5%.*

The unit root test in the table 4.2 was performed at the in level and also at the first difference to establish the presence of a unit root test and the order of integration. The result of the ADF test showed that both tests accepted the presence of a unit root for ROCE, TETA and TDTA. This informs that the variables can be relied upon for regression analysis.

Table 4.3. Test of Hypothesis

Method: Dynamic Ordinary Least Squares

Date: 04/08/21 Time: 9:32

Sample: 1 80 (2013 2020)

Included observations: 80

	Coefficient	Std. Error	t-Statistic	Prob.
C	3943385.	6894855.	6.347558	0.0003
TETA	38577.35	48675.51	1.256473	0.0345
TDTA	29576.78	183348.9	0.859968	0.7343
R-squared	0.718309	Mean dependent var		67588477
Adjusted R-squared	0.606939	S.D. dependent var		26477384
S.E. of regression	6859965.	Akaike info criterion		24.84775
Sum squared resid	6.85E+34	Schwarz criterion		24.75886
Log likelihood	-205.7586	Hannan-Quinn criter.		24.36574
F-statistic	11.85938	Durbin-Watson stat		1.495848
Prob(F-statistic)	0.001384			

Source: E-Views 11 result, 2021

Table 4.4 shows the Coefficient of TETA is in line with the apriori expectations (TETA > 0). TETA has a positive coefficient of 38577.35 significant at 5% level which means that a percentage increase in Total Equity to Total Asset will increase the Return on Capital Employed by 38577.35. The P-value is 0.0345 and since the P-value (0.0345) < 0.05 (5% level of significance), we reject the null hypothesis 1 (H_0) and conclude that the level of TETA has significant relationship with ROCE. This shows that the objective one (1) of this study has been covered.

The Coefficient of TDTA is in line with the apriori expectations (TDTA > 0). TDTA has a positive coefficient of 29576.78 significant at 5% level which means that a percentage increase in Total Debt to Total Asset will increase the Return on Capital Employed by 29576.78. The P-value is 0.7343 and since the P-value (0.7343) < 0.05 (5% level of significance), we reject the null hypothesis 1 (H_0) and conclude that the level of TDTA has significant relationship with ROCE. This shows that the objective one (1) of this study has been covered. Total Debt to Total Asset

The coefficient of determination as revealed by R-square (R^2) indicates that 71% of the variations observed in the dependent variable (ROCE) were explained by combined influence and variations in the

explanatory variables (TETA and TDTA) and the other 29% is attributed to other factors not included in the model.

The F-statistics which test the goodness of fit confirms that the model employed in the study is statistically significant given the value as 11.85938, and the equation is useful in explaining a unit change in Return on Capital Employed of the oil and gas companies in Nigeria. On the whole, the overall probability (F-statistics) is 0.001384 significant at 5% i.e. (0.001384 < 0.05). The Durbin-Watson (DW) statistics is equal to 1.4; thus implying the absence of serial auto-correlation. This is because when the DW value is closer to two, it is an evidence of the absence of serial correlation.

4.2 DISCUSSION OF FINDINGS

The findings on the study of nexus between capital structure and firm's performance of the oil and gas companies in Nigeria shows that the Total Equity to Total Asset and Total Debt to Total Asset have positive impact and are significant in determining a variation change in Return on Capital Employed. This study findings support the submissions of Nenu et al. (2017), and Magara (2012) as they have submitted a positive relationship between capital structure and firm's performance but disagrees with the findings of Nassir (2016) and Meero (2017) as they have submitted a negative relationship between capital structure and firm's performance.

ROCE, TETA and TDTA are all positive; the skewness decision rule (if skewness Value is > 0, it is said to be positively skewed and if <, it is said to be negatively skewed). The Kurtosis decision rule is -3 to +3. A value equal to 3 is said to be normally distributed, a value less than 3 is said to have few outlier while a value greater than 3 is said to have more outlier which will negatively disrupt the true results. All the variables value are between -3 to + 3. Total Equity to Total Asset has a positive co-efficient of 2.42 while Total Debt to Total Asset has a co-efficient of 2.04, this means that a one (1) unit increase in Total Equity to Total Asset and Total Debt to Total Asset will increase the Return on Capital Employed by 2.42 and 2.04 units respectively.

5. CONCLUSION AND RECOMMENDATIONS

In conclusion from the study on the nexus between capital structure and firm's performance of quoted oil and gas companies in Nigeria, shows that Total Equity to Total Asset (TETA) has a positive and significant impact on the financial performance (ROCE). Also, Total Debt to Total Asset (TDTA) has a positive and significant impact on the firm's performance (ROCE). The study further concludes that the capital structure variables considered in this study are important variables in explaining the firm's performance of the quoted oil and gas companies in Nigeria.

5.1. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are presented:

i. The oil and gas companies in Nigeria should increase their total equity to total asset as it increases the return on capital employed; they should focus on utilizing the existing equity effectively and increase the percentage to aid in the improvement of the financial performance, and

ii. The oil and gas companies in Nigeria should maintain the level of total debt to total equity as it increase the financial performance of the firm, however, the percentage of total debt to total asset should be less in compare to the percentage of total equity to total asset.

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