

CAPITAL STRUCTURE AND FINANCIAL PERFORMANCE: EVIDENCE FROM NIGERIAN LISTED INDIGENOUS OIL AND GAS FIRMS

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Abstract

The combination of equity capital and debt capital forms the capital structure of an enterprise which in achieving firms' objective is the utmost aspect of managerial and financial decisions. It has the ability of manipulating the operating, non-financial and financial performances of a firm as well as risk exposure due to returns payable to the provider of capital in the form of interest and dividend. Hence, this study takes a look at how the capital structure impacts on the financial performance of listed indigenous oil and gas firms in Nigeria. The study adopted an ex-post facto research design and data was extracted from annual reports of the eight (8) sampled firms for periods of 2009 to 2018. The data was analyzed using panel data regression technique to examine the extent of the impact of the independent variables on the dependent variables. The study revealed that at 0.05 significant level, Short-term Debt (STD) and Equity (EQ) have a positive and significant impact on the financial performance of listed oil and gas firms in Nigeria in terms of Return on Assets (ROA) and Return on Equity (ROE) while Long-term Debt (LTD) had a negative significant impact on the financial performance in terms of Return on Assets (ROA) and Return on Equity (ROE) of listed indigenous oil and gas firms in Nigeria. Thus, the study concluded that capital structure has a positive impact on the financial performance of listed indigenous oil and gas firms in Nigeria. Therefore the study recommended that indigenous oil and gas firms in Nigeria should adopt a short term capital for short term financing to avoid the problem of over-capitalization, which will, in turn, lead to drop in the financial performance and a long term debt should be used to implement the capital projects to avoid the problem of over-trading by oil and gas firms in Nigeria because long term debt contribute less to financial performance.

Keywords: financial performance, capital structure, debt finance, equity finance

INTRODUCTION

Businesses require funds to carry out activities as no success is achievable in the absence of funds. The needed fund may be for daily running, business expansions and a merger or acquisition transaction. This articulates how essential fund/capital is within the lifetime of an enterprise. A firm's sourced capital translates to a burden on the organization because fund providers need to be compensated for postponing their consumption by investing in the organization. It is, therefore, a symbol of a company's financial liabilities (Ishaya & Abduljeleel, 2014). As fresh businesses desire capital for start-up and expansion, the needed fund may be sourced from various angles. Organizations may use equity capital or debt capital to execute capital budget decisions, but the prudent and optimal choice is a mixture of equity and debt capital. The major worry of financial managers is how to determine the best financing mix for an organization.

The oil and gas industry comprises two divergent refinements; the field and the corporate setting. Moreover, there are peculiarities in the oil and gas sector which make it different from other industries in the manner in which they are valued by the financial community (Bryan, 2014). There are various reasons

why firms are valued: to know the appropriate price in case of merger and acquisition, to scale its level of capital funding, and to determine its ideal corporate structure among others (Echekoba & Ananwude 2016). Setting up a firm's value is essential as it permits precise examination of its ability to manage debt, estimate investment return, and properly approximate its market value (Bryan, 2014). Though the oil sector in Nigeria was founded at the beginning of the 20th century, it was not until the end of the Nigerian civil war (1967-1970) that the sector started playing a substantial role in the economic life of the country (Azaiki & Shagari, 2007; Meade, 1973; Odularu, 2008).

Following the discovery of oil in Nigeria in 1956 and the subsequent collapse in agricultural production, crude oil sales became the mainstay of the economy. This has led some indigenous firms to invest in the oil and gas sector. However, the managers and funds providers place importance on how to finance an organization as a result of bad consequence if a wrong mix is adopted. The wrong mix may affect the performance of the organization (Osuji & Odita, 2012). An apposite capital structure may be a grave decision for any organization. The decision is vital not only due to the necessity to maximize shareholders' returns or varied organizational stakeholders but also due to the impact such a choice has on an organization's ability to affect its industry and competitive environment.

The difficulty facing firms in Nigeria has got to do more with the financing – whether to boost debt or equity capital (Ubesie, 2016). The debt capital could be long term or short term in nature. The firm's capital structure is paramount as it has been identified as the prompt and cogent reason why businesses fail to commence, let alone progress. Thus, firms in Nigeria, including indigenous oil and gas firms must pay attention to how to fund their operating and other activities, record brilliant performance and grow over time, and predominantly create value by maximizing wealth. Hence, it becomes important to examine how the financing choice of firms impact on their performance. In the light of above, there are few empirical studies in Nigeria concerning the relationship between capital structure and financial performance from the perspective of the indigenous oil and gas firms which motivated researchers to put their own contribution on the impact of capital structure on financial performance of Nigerian listed indigenous oil and gas firms. Specific objectives are to examine the impact of short term debt capital, long term debt capital and equity capital on the financial performance of indigenous oil and gas firms in Nigeria. To achieve this, the following hypotheses are formulated:

H₀₁: Short term debt capital has no significant impact on the financial performance of listed indigenous oil and gas firms in Nigeria

H₀₂: Long term debt capital has no significant impact on the financial performance of listed indigenous oil and gas firms in Nigeria

H₀₃: Equity capital has no significant impact on the financial performance of listed indigenous oil and gas firms in Nigeria.

LITERATURE REVIEW

Conceptual Review

A review of existing literature has confirmed that the term capital structure can be defined in so many ways. According to Pandey (2005), the capital structure is expressed as the extent to which total funds are available to finance the total assets of a firm and it comprises both the long term and short term sources (includes all the liabilities of a firm). By implication, a difference exists between financial structure and capital structure. The capital structure symbolizes the connection between equity and long term debt, while the various means adopted in raising fund implies financial structure. The financial structure is a blend of equity capital and debt capital which firms use to fund and finance operations.

Ali, Zia, and Razi, (2012) emphasized that capital structure is the blend of equity capital and debt capital of an organization. This is because the way an organization funds its activities and assets procurement by pooling debt, equity, or hybrid securities; that is the mixture of both debt and equity. Inanga and Ajayi (1999) opined that capital structure may be classified into equity capital, preference capital, and long-term loan (debt) capital. Equity capital, also known as ordinary shares, implies the money initially invested in the business is in exchange for shares and retained earnings. Preference capital refers to a hybrid that combines the features of debentures and equity shares except for the benefits while debt capital refers to the long term bonds used by the firm in financing its investment decisions while noting its principal and also return interest.

Farah, Farrukh, and Faizan (2016) define financial performance as the magnitude to which the financial health of an organization is measured over time. Alternatively, financial performance means the outcome of an organizational efforts in managing its non-current and current assets, getting higher sales, minimizing costs and appropriately managing its working capital. Its main purpose is to avail the shareholders and other stakeholders a complete information to encourage them in making decisions. There are various parameters in measuring financial performance in an organization. The obvious is the use of ratios by establishing relationships in the items of the financial statements and using data on stock market prices (Berger & Patti, 2006). These ratios indicate whether the owners' objectives of becoming wealthier are achieved or not and the trend of performance over time by comparing the ratios with that of previous years, competitors or industry average.

Also, Mandy (2009) views performance as the outcome of adapting an effective management process. From extant literature, firm performance does not have a consensus definition. Firm performance can be divided into non-financial and financial measures (Ittner & Larcker, 2008). Financial performance measures traditional accounting method such as Return on Asset (ROA), Return on Equity (ROE), Return on Capital Employed (ROCE), Earnings Before Interest and Tax (EBIT), Economic Value Added (EVA), Sales Growth, Profitability, Liquidity and Solvency and all these can be extracted from the financial statement and reports (Peter & Charles 2015).

Brigham and Gapenski (1996) argue that an optimal capital structure is often attained if there exists a tax sheltering benefits, as long as a rise in debt capital is adequate to the bankruptcy costs. They opined that optimum capital structure should be identified and maintained by the firms' financial managers. At the optimal level of capital structure, firms' value and performance tend to increase as the cost of capital and financing costs are minimized. Berger and Patti (2006) argue that higher returns can be recorded by efficient firms at a given level of capital structure which will later serve as a cushion against portfolio risk and enhance substitution of equity capital for debt capital. This is in tandem with the trade-off theory of

capital structure where the efficiency level of a firm leads to a change in their optimal capital structure either upward or downwards.

Theoretical Review

This study is anchored on three theories: market timing theory, pecking order theory, and trade-off theory. The static trade-off theory was propounded by Modigliani and Miller (1976). The theory asserts that “a firm will borrow up to the point (target debts-to-assets ratio) where the tax benefit from an extra Naira in debt is exactly equal to the cost that comes from the increased probability of monetary distress”. Hence, this theory postulates that firm’s trade-off the costs and benefits of equity and debt financing and bargain an optimal capital structure after taking cognizance of market imperfections such as agency costs, taxes, and bankruptcy costs. The theory states that financing firms through debt capital attracts benefits, specifically tax benefits.

The implication of static trade-off theory to this study is that indigenous oil and gas firms in Nigeria should expect a positive relationship between firms’ leverage and performance if this theory is adopted. Its adoption involves setting our target debt-to-value ratio taking into consideration the market imperfections such as taxes, bankruptcy costs, and agency costs. Thus, the theory maintains that all quoted oil and gas firms, which are maximizing value, should focus on choosing the volume of debts and equity needed to finance their operations.

The pecking order theory of financial structure was developed by Myers and Majluf (1984). The theory assumes that firms finance their business in three hierarchical order. The first order is the initial source of funds which is usually generated within the firm itself or by the owner of the business. The second are funds sourced through borrowing while the third order is funds sourced through external equity. The theory assumes that every business uses these three methods of financing in the order mentioned. The theory adds that if the first order cannot be provided by the firm, they move to the second order, if the second cannot be sourced for, they move to the third order in that sequential order.

The significance of the pecking order theory to this study is that selected indigenous oil and gas firms in Nigeria with financing choice of equity tend to have higher/positive financial performance than firms with financing options of debt or other financing strategies because firms with high profits tend to attain low debt profile. This is because a profitable firm will prioritize retained earnings as a means of financing to maximize the existing shareholders’ value. However, if the retained earnings is insufficient, firms may opt for debt capital and ultimately issuing new equity in that order.

Baker and Wurgler (2002) developed the market timing theory. They claim that market timing is the first order determinant of a corporation's capital structure use of debt and equity i.e. organizations care less about the choice of equity or debt, their focus at a point in time is to choose the form of financing that seems to be more valued by financial markets. This theory is seen as part of behavioral finance as it assumes that wrong pricing exists and firms can detect this better than the market. However, any theory with time varying costs and benefits is likely to generate time varying corporate issuing decisions. This is true whether decision makers are behavioral or rational.

Empirical Review

Abor (2005) conducted a research on the influence of capital structure on the profitability of listed companies on the Ghana Stock Exchange for a five year period. Data was extracted from financial statements and reports of the listed companies on the Ghana Stock Exchange. Results revealed a significantly positive relationship between the return on equity and the ratio of short-term debt to total assets. Conversely, a negative relationship between the return on equity and the ratio of long-term debt to total assets was found. Zeitun and Tian (2007) investigated the effect of capital structure on corporate performance employing a panel data sample representing 167 Jordanian companies between 1989 and 2003. The data used in the study were extracted from the Amman Stock Exchange (ASE) and included the traded companies for the period 1989-2003. The results showed that prime performance is related to a high rate. This indicated that profitable firms pay a high rate. Firm size was found to have a positive impact on a firm's performance as large firms have low bankruptcy costs. In other words, bankruptcy costs increased as firm size decreased and hence, bankruptcy costs negatively affects a firm's performance.

Ebaid (2009) investigated the impact of capital structure choice on firm performance in Egypt. Multiple correlation analysis was utilized in the study in estimating the connection between the leverage level and firm's performance. The sample of the study consisted of non-financial Egyptian listed firms from 1997 to 2005 and the result of the study showed that firm performance has a weak relationship with capital structure. Abu-Rub (2012) also analyzed the impact of capital structure on firm performance in Palestine. The results showed that firm's capital structure has a positive impact on performance measures in both the accounting and market's measures.

David and Olorunfemi (2010) looked into the impact of financial structure on corporate performance in the Nigerian Petroleum Industry. The study employed panel data analysis by using Fixed-effect estimation, Random-effect estimation, and Maximum likelihood estimation. It was acknowledged that there was a positive relationship between earnings per share and leverage ratio on one hand and a positive relationship between dividend per share and leverage ratio on the other hand. Based on these findings, the study concluded that the leverage ratio has a significant positive effect on both the earnings per share and dividend per share.

Olokoyo (2012) examined the relationship between capital structure and performance of Nigerian quoted firms from 2003 to 2007. The study employed panel data analysis by using fixed effect estimation, random effect estimation, and a pooled regression model. The study acknowledged among others that the leverage measures future debts to total assets, short term debts to total assets, and total debts to total assets have a positive and highly significant relationship with the performance of quoted firms in Nigeria. The maturity structure of debts affected the performance of firms significantly and therefore the size of the firm featured a significant positive effect on the performance of firms in Nigeria.

Ahmad, Abdullah, and Roslan (2012) examined the effect of capital structure on performance of public listed companies in Malaysia covering two major sectors- Consumers and industrials sectors. Fifty-eight (58) firms were used as the sample covering the year 2005 through 2010, having 358 observations. Their result indicated that there is a significant relationship between capital structure variables (Short-term debt and Total debt) and performance measure (return on assets, ROA). They found that short-term debt and total debt were negatively significant related to ROA. In the same vein, leverage (debt ratio) and firm performance were significantly negatively related.

Nirajini and Priya (2013) examined the effect of financial structure and financial performance during 2006 to 2010 financial year of listed trading firms in Sri Lanka. The data was extracted from the annual reports of sample firms. Correlation and multiple regression analyses were used for analysis. The results revealed that there is a positive relationship between financial structure and financial performance. Also, the financial structure which has a significant impact on the financial performance of the firms showed that debt asset ratio, debt-equity ratio, and long term debt were correlated with gross profit margin, net profit margin, return on capital employed, return on asset and return on equity at significant levels of 0.05 and 0.1.

Ogebe, Alewi, and Patric, (2013) investigated the impact of capital structure on corporate performance in Nigeria from 2000 to 2010. The study paid particular attention to macroeconomic variables (Gross Domestic Product and inflation) on firm performance. The conclusions of the study were; there was a strong relationship between leverage and corporate performance and there was a significant negative relationship between capital structure and corporate performance. The negative relationship was also confirmed by Mumtaz, Rauf, Bashir, and Noreen (2013) in their study in Pakistan. They established the relationship between leverage and firm performance. The findings from the study showed that the financial performance of firms was significantly negatively suffering from their capital structure.

Suleiman (2013) investigated the impact of capital structure on the performance of non-financial firms operating in Saudi Arabia for the period between 2008 and 2012. Sample data included 67 companies from 13 different sectors. The study analyzed the relationship between capital structure proxies that included short-term debt (STD), long-term debt (LTD) and total debt (TD) with operating performance measured by earnings per share (EPS), net profit margin (NPM), return on assets (ROA) and return on equity (ROE). A firm's size that was found by the literature to have an influence on the performance of a firm was used as a control variable. The study found that only LTD and TD had significant impacts on ROE while ROA had a statistically significant relationship with each level of debt. Both EPS and NPM were found to have positive relations with STD whereas they had inverse relations with LTD and TD.

Lawal, Edwin, Kiyanjui, and Kayode (2014) researched capital structure and firm performance of ten manufacturing companies in Nigeria from 2003 to 2012. They employed descriptive and regression techniques with key variables as Return on Assets (ROA) and Return on Equity (ROE) for profitability and total debt to total assets, total debt to total equity ratio for capital structure. The study revealed that capital structure (total debt and debt to equity ratio) was negatively related to the firm's performance.

Olaniyi, Elelu and Abdul Salam (2015) examined the impact of capital structure on corporate performance of selected firms in the US in the pre, during, and post-crisis periods (2003-2006), 2007-2008 and 2009-2012 respectively) to determine whether or not the relationship between the two variables was period related. The study found mixed results pointing that the impact of capital structure on corporate performance depended on the sort of performance measures used and was period related.

Jared (2015) examined the relationship between capital structure and financial performance of listed firms at Nairobi securities exchange for a six-year period between 2008-2013. The population of the study was all the 61 firms listed at the NSE but the study narrowed to a sample of 26 firms using the random selection sampling technique. The findings showed that all the variables were significant as their significance value was less than 0.05. The study concluded that increased financial leverage has a negative effect on firm performance as measured by Return on Equity (ROE) of companies listed in the NSE, Kenya.

Githire and Muturi (2015) carried out a study to examine the effect of capital structure on the performance of listed firms in the Nairobi Securities Exchange (NSE) in Kenya. Their study was based on all firms listed in NSE from the year 2008 to 2013. They used secondary data obtained from the published financial statements and annual reports. The data were analyzed by the use of the Statistical Program for Social Sciences (SPSS) and multiple regression analysis. They found out that long term loan and debenture financing had a positive and significant effect on return on assets (ROA) which was used as an accounting measure of financial performance. Based on their findings they concluded that long term loan and debenture financing enhanced financial performance.

Terzungwe and Abdulateef (2016) investigated the effect of capital structure on the operating performance of listed conglomerate firms in Nigeria. Data was collected from published financial reports for the period of 2004 to 2013 from a sample of 5 listed conglomerate firms. The study adopted a correlation research design using a fixed-effect regression model. The results revealed that total debts to total assets had a positive and significant impact on noncurrent asset turnover, while shareholders' funds to total assets had a negative and insignificant impact on noncurrent asset turnover.

Ubesie (2016) investigated the effect of capital structure on the financial performance of quoted conglomerates on the floor of the Nigerian stock exchange from 2011 to 2015. The study found that capital structure affected both returns on assets and asset turnover of the conglomerates but no effect on Return on Equity and Earnings per Share of the conglomerate. The result of the study was in agreement with most previous studies on other sectors that discovered mixed results on the effect of capital structure on financial performance.

Nwude, Itiri, Agbadua, and Udeh (2016) investigated the impact of debt structure on the performance of Nigerian quoted firms. It was conducted using 12-year annualized panel data spanning the period of 2001 to 2012 for a cross section of 43 firms from different sectorial classifications. The data was collated from the annual reports of the sampled firms and Nigeria Stock Exchange fact books. The study employed three regression estimations (Pooled OLS, Fixed Effects, and Random Effects) as a result of unobserved heterogeneity in the data set. The outcome from the regression estimations showed that debt structure had a negative and significant impact on the performance of Nigerian quoted firms within the amount under review. The study concluded that debt structure contributed negatively to the performance of Nigerian quoted firms; thereby agreeing with the pecking order theory.

Mahmud and Musa (2016) examined the impact of capital structure on the financial performance of listed firms in the Nigerian Oil and Gas industry. The study adopted an ex-post facto research design and utilized panel data collected from annual reports and accounts of the sampled firms for the periods of 2005 to 2014. The data was first analyzed using descriptive statistics to provide summary statistics of the variables. Subsequently, a panel data regression technique was used to assess the extent of the effect of the independent variables on the dependent variables. It was found that capital structure proxied by STD, LTD, and TD has a negative and significant relationship with financial performance (ROA and EPS) of listed petroleum marketing companies in Nigeria. Furthermore, the result also shows that firm size and tangibility had a positive and significant relationship with ROA and EPS.

Tran (2017) examined the relationship between capital structure and banks' performance in Thailand. The study utilized the quarterly data set containing firm-specific characteristics and profitability from 1997 to 2016. The random-effect model and robustness check were employed to tackle the endogeneity problem;

the result proved that capital structure was significant and negatively correlated with profitability which implied that pecking order theory is valid in the data set used.

Mwaniki, Oluoch, and Ndambiri, (2018).examined the effect of financial structure on the financial performance of Deposit Taking Savings and Credit Cooperatives in Kenya (DT-SACCOs). The financial performance was measured by return on equity (ROE). The study adopted a descriptive research design and used a sample size of 18 DT-SACCOs in Kenya that were ranked top in both asset base and deposit size in the financial year ended 31st December 2016. The findings of the study showed that a positive and significant relationship existed between equity financing, long term debt financing, short term debt financing, member deposits and financial performance of DT-SACCOs in Kenya.

From the reviewed empirical studies, efforts have been made globally on capital structure relating to performance in different sectors. Studies like David and Oloruntoba (2010); Echekeba and Ananwude (2016); Khanam, Nasreen and Pirzada (2014); Hasan, Ahsan, Rahaman, and Alam (2014); Nirajini and Priya (2013); Mwangi, Muturi and Ngumi (2016) and Mwaniki, Oluoch and Ndambiri, (2018) etc, have examined financial structure on financial performance in different sectors of the economy. However, little has been done in the oil and gas sector which created a gap to be filled. Also, previous studies have incorporated other firm-specific factors like size, efficiency, and asset growth into their model. Thus, there is need to examine the impact of capital structure on financial performance of listed indigenous oil and gas firms in Nigeria using macroeconomic factors such as interest rates and exchange rates which are said empirically to affect financial performance of firms of this nature (Oliver, 2000). In summary, the argument of capital structure decision and its effect on performance did not reach any consensus amongst most researchers leaving the doors open for upcoming studies and empirical tests. Moreover, not all the previous studies used equivalent parameters either as capital structure or financial performance proxies. To this effect, this study bridged the lacuna identified in the study by incorporating the issues raised in the study.

METHODOLOGY

The study uses the ex-post facto research design. The study also applied an experimental research design because it tested the accuracy of a theory by determining if the independent variable(s) has an impact on the dependent variable. The population of the study is made up of ten (10) indigenous oil and gas firms listed on the Nigerian Stock Exchange (NSE) out of which eight (8) were sampled. The eight (8) indigenous oil and gas firms considered for this study include; Capital Oil Plc, Con Oil Plc, Eterna Oil Plc, Forte Oil Plc, Mobil Oil Nigeria Plc, MRS Oil Nigeria Plc, Oando Oil Plc, and Total Nigeria Plc. For a firm to qualify for selection, two criteria were used. First, only those firms which report their financial statement consistently during the period under the study (2009 to 2018) were considered. Secondly, a firm must have been quoted without being delisted between 2009 and 2018. The two oil firms that were excluded from the sample population did not meet these two selection qualifications.

The data for the study was obtained from the audited annual reports and accounts of sampled firms for 10years from 2009 – 2018 from the NSE facts books for the period of reference and utilized panel data which consisted of time- series and cross-sections to determine the influence of financial structure variables on financial performance. Data was extracted from the statements of comprehensive income, financial position, and notes to the accounts.

Model specification

The economic model used is adopted from the study of Suleiman (2013) which was given as:

$$FP = f(CS) \dots\dots\dots (i)$$

$$FP = f(STD, LTD, TD, FSIZE, TAG) \dots\dots\dots (ii)$$

CP= Capital Structure proxy by Short Term Debt, Long Term Debt and Total Debt

FP= Financial Performance proxy by Return on Asset (ROA) and Return on Equity (ROE)

$$ROA_{it} = \beta_0 + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 TD_{it} + \beta_4 FSIZE_{it} + \beta_5 TAG_{it} + \mu_{it} \dots\dots\dots (iii)$$

$$ROE_{it} = \beta_0 + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 TD_{it} + \beta_4 FSIZE_{it} + \beta_5 TAG_{it} + \mu_{it} \dots\dots\dots (iv)$$

Where;

ROA_{it} = Return on asset,

ROE_{it} = Return On Equity,

STD_{it} = Short Term Debt,

LTD_{it} = Long Term Debt,

TD_{it} = Total Debt,

FSIZE_{it} = Firm Size and

TAG_{it} = tangibility, (are used as control variables)

B₀ represent the fixed intercept,

B₁-B₅ is the coefficient of the independent variables,

The subscript (i) represents the number of firms in the panel data while subscript (t) represents the time period of the panel data. μ_{it} is the error term.

Suleiman's 2013 model has a defect in that it does not include equity thus resulting in the model under fitting. Also the model makes use of specific factors such as firm size and firm tangibility. Therefore, to achieve the objectives of this study, the model is re-modified with the inclusion of equity, interest rates, and exchange rates and stated as:

$$FP = f(CS) \dots\dots\dots (v)$$

$$FP = f(STD, LTD, EQ, INT, EXH) \dots\dots\dots (vi)$$

FP = Financial Performance, proxy by Return on Asset (ROA) and Return on Equity (ROE)

FS = financial Structure, proxy by Short Term Debt (STD), Long Term Debt (LTD) and Equity (EQ)

$$FP_{it} = \beta_0 + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 EQ_{it} + \beta_4 INTR_{it} + \beta_5 EXHR_{it} + \mu_{it} \dots\dots\dots (vii)$$

Where;

ROA_{it} = Return on asset employed by firm i in year t

ROE_{it} = Return on equity employed by firm i in year t

STD_{it}= Short term debt of firm i in year t

LTD_{it}= Long term debt of firm i in year t

EQ_{it}= Equity of firm i in year t

INTR_{it} = borrowing interest rates of firm i in year t

EXHR_{it} = currency exchange rates of firm i in year t

β_0 is a constant term, μ is a random error/disturbance term and (it) indicates that the model is a panel model.

$\beta_0 - \beta_5$ are the parameters of the model

A-priori expectation, $\beta_1 < 0$; $\beta_2 < 0$; $\beta_3 > 0$; $\beta_4 < 0$; and $\beta_5 > 0$

RESULTS AND DISCUSSIONS

Table 1: Descriptive statistics

Variables	N	Mean	Std Dev	Minimum	Maximum
Return on asset (ROA)	80	0.2103	0.0484	0.0696	0.3373
Return on equity (ROE)	80	0.1561	0.1054	-0.1300	0.3215
Short term debt (STD)	80	6.9889	0.5361	5.8425	8.5278
Long term debt (LTD)	80	10.340	2.2371	7.9633	12.640
Equity (EQ)	80	6.5400	0.1256	4.2200	10.750
Interest rate (INTR)	80	16.907	0.4602	15.880	17.880
Exchange rate (EXHR)	80	269.44	90.158	87.280	321.60

Source: Author's Computations, 2020

Table 1 presents the descriptive statistics of the variables that include; Mean, standard deviation, Maximum, and Minimum value of selected oil and gas firms in Nigeria. The dependent variable is financial performance proxy with return on asset (ROA) and return on equity (ROE), while the independent variable is financial structure proxy with variables such as; short term debt, long term debt, and equity, with two control variables which are microeconomic variables proxy with interest rate and exchange rate ranging from 2009- 2018 for selected Nigerian companies.

As presented in Table 1, the average value of Return on asset of sampled firms is 21.03 percent; this implies that the average ratio of profit to total asset of selected indigenous oil and gas firms in Nigeria is 0.2103 with a minimum and maximum value of 0.0696 and 0.3373 respectively, while the standard deviation is 0.0484 variation the average value, which reflects the presence of moderate variation across the sampled firms. The average value of Return on equity of sampled firms is 15.61 percent; this implies that the average ratio of profit to total equity of selected indigenous oil and gas in Nigeria is 0.1054 with a minimum and maximum value of -0.1300 and 0.3215 respectively, while the standard deviation is 0.1054 variation the average value, which reflects the presence of moderate variation across the sampled firms. The average value of the short term debt of selected indigenous oil and gas firms is 6.9889. This implies that the log of short term debt amount of sampled the firms on the average is of 6.99 percent with a minimum and maximum value of 5.8425 and 8.5278 respectively, while the standard deviation is 0.5361 variation the average value, the average value of long term debt of selected indigenous oil and gas firms is 10.34. This points out that the log of short term debt amount of sampled the firms on the average is of 10.34 percent with a minimum and maximum value of 7.9623 and 12.640 respectively, while the standard

deviation is 2.2371 variations the average value, and the average value of equity of selected oil and gas firms is 6.54. This indicates that the log of short term debt amount of sampled firms on the average is of 6.54 percent with a minimum and maximum value of 4.22 and 10.75 respectively, while the standard deviation is 0.1251 variation on the average value. This reflects the presence of moderate variation across the sampled firms.

Table 2: Multi-Collinearity Test - Variance Inflation Factors

Variable	VIF	1/VIF
Short term debt (STD)	1.18	0.8441
Long term debt (LTD)	1.16	0.8629
Equity (EQ)	1.12	0.8904
Interest rate (INTR)	1.10	0.9091
Exchange rate (EXHR)	1.21	0.8264
Mean VIF	1.14	

Source: Author's Computations, 2020

Table 2 shows the result of multi-collinearity test. The result showed that the value of independent variables exceeds 1, therefore, there is an absence of multi-collinearity. In lieu of this, there are no multi-collinearity issues between the independent variables within this model as all the VIF are less than 5. The VIF and tolerance can be used interchangeably to determine multi-collinearity as the VIF is inversely related to tolerance. The VIF represents a measure of the amount of multi-collinearity in a multiple regression framework.

Table 3: Breusch-Pagan/ Cook-Weisberg Test for Heteroskedasticity

Variable	Chi ²	P-value
Model ROA	0.11	0.9109
Model ROE	0.28	0.5956

Source: Author's Computations, 2020

Heteroskedasticity shows in a model if there is a difference in the variances of the error- term of the different observations. This study analyses the Breusch-pagan test to check if there is a problem of heteroskedasticity. The Breusch-pagan tests of the null hypothesis that the error variances are all equal against the alternative that the error variance is a multiplicative function of one or more variables. The result of the p-value (0.9109 and 0.5956) respectively is greater than the 5% significance level respectively, the null hypothesis was rejected. Therefore, these models do not face any heteroskedasticity problem. This implies that the correlation coefficients between independent variables are fairly small.

Regression Results

Table 4: Hypothesis Testing – Financial Structure and Financial Performance

Dependent Variables	ROA			ROE		
Independent Variables	Pool OLS Model	Fixed-effects Model	Random-effects Model	Pool OLS Model	Fixed-effects Model	Random-effects Model
Constant	6.2568** (0.011)	5.8624** (0.018)	6.2467** (0.011)	6.0107 (0.683)	5.0024 (0.594)	5.1935 (0.849)
Short term debt (STD)	0.1196*** (0.001)	0.0349** (0.043)	0.1184*** (0.001)	0.2899*** (0.000)	0.1501*** (0.000)	0.1288*** (0.000)
Long term debt (LTD)	0.1351 (0.826)	-0.1260 (0.895)	0.1268 (0.837)	-0.0931** (0.019)	-0.0751*** (0.002)	-0.0699*** (0.002)
Equity (EQ)	0.1244** (0.019)	0.0850** (0.042)	0.1203** (0.037)	0.0798** (0.023)	0.0925** (0.017)	0.1968** (0.014)
Interest rate (INTR)	-0.3697** (0.042)	-1.4092** (0.048)	-0.3738** (0.041)	-0.1874** (0.041)	-0.0611** (0.038)	-0.0599** (0.044)
Exchange rate (EXHR)	0.1317** (0.036)	0.8108** (0.41)	0.1196** (0.039)	-0.0524** (0.084)	-0.0289* (0.097)	-0.0319* (0.066)
F-stat	10.29*** (0.0009)	14.63*** (0.0000)		13.19*** (0.0000)	16.62*** (0.0000)	
Wald X ²			17.71*** (0.0008)			31.41*** (0.0000)
Breusch and Pagan Lagrangian Multiplier Test	10.40*** (0.0042)			50.42*** (0.0000)		
Hausman Test		1.90 (0.7548)			1.67 (0.5174)	

Source: Author's Computations, 2020

Table 4 shows the linear relationship between financial structure and financial performance of selected indigenous oil and gas firms in Nigeria, with the use of panel regression analysis. The table shows the result of the pool OLS, fixed-effects and random-effects of the model.

Breusch and pagan Lagrangian multiplier test were computed to check the model that is appropriate between pool OLS model and random-effects model, the result confirms that the random-effects is appropriate as indicated by p-value (0.0042 and 0.0000) respectively less than 0.05 significance level.

Hausman was computed to check the model that is appropriate between fixed-effects and random-effects, the result shows that random-effects model is appropriate as indicated by P-value (0.7543 and 0.5174) respectively greater than 0.05 level of significance.

Discussion of Findings

The study hypotheses have been tested in the preceding sections. Analysis of the findings concerning each of the tested hypothesis is the focus of this sub-section. To achieve this, the discussion is based on the specific objectives which translate to the hypotheses formulated. The first objective of the study was achieved with the magnitude coefficient of variable short term debt on return on asset and return on equity; the result shows that Short Term Debt (STD) has positive significant effect on return on asset and return on equity of selected indigenous oil and gas firms in Nigeria as indicated by coefficient (0.1184 and 0.1288) with P-value (0.001 and 0.000) respectively lower than 0.05 significance level. This implies that the short term debt form of financial structure induced 11.8% positive impact on ROA and 12.9% on ROE. The rationale for inclusion of short term debt (STD) is to split the Total Debt (TD) ratio into short term debt (STD) and long term debt (LTD) of the firm's financial structure and be able to identify their (i.e. STD and LTD) effect separately on firm's financial performance. Based on the above result, the null hypothesis (H_{01}) which states that there is no significant relationship between short term debt and financial performance of selected indigenous oil and gas firms in Nigeria should be rejected. The result is not consistent with the a-prior expectation, but in tandem with the static trade-off theory which assumes that a firm will borrow up to the point (target debt to value ratio) where the tax benefit from an extra Naira in debt is exactly equal to the cost that comes from the increased probability of financial distress. From the result, it could be seen that short term debt of financial structure induces a positive impact on the firm's financial performance. Thus, all firms who are maximizing value should focus on when choosing the amount of debt and equity needed to finance their operation. This study is consistent with the findings of Githire & Muturi (2015), Anthony (2012), Olokoyo (2012) and Zeitun & Tian (2007) but against the result of Ebaid (2009), Ahmad, Abdullah, & Roslan (2012), Suleiman (2013), Khanam, Nasreen and Pirzada (2014) among others.

The second objective of the study was achieved with the magnitude coefficient of variable long term debt on Return on Asset and Return on Equity; the result shows that long term debt (LTD) has no significant effect on Return on Asset but has negative significant on Return on Equity of selected indigenous oil and gas firms in Nigeria as indicated by coefficient (0.1268 and -0.0699) with P-value (0.837 and 0.002) at 0.05 significance level. This implies that the long term debt form of financial structure does not contribute to the financial performance of indigenous oil and gas firms in Nigeria ranging from 2009 to 2018. Based on this finding, the null hypothesis (H_{02}) should be accepted. The result of the study does not meet our a-priori expectation but is in consonance with Market Timing Theory which states that firms prefer equity when they perceive that its relative cost is low otherwise debt finance would be appropriate. The implication of this market timing theory to the selected indigenous oil and gas firms in Nigeria is that these firms should use those financial tools that appear to be more favorable at the moment they need financing. In this scenario, long term debt seems not to be favorable, then alternative debt financing should be opted for. This is consistent with the findings of Mahmud & Musa (2016), Hawood (2014), Ebaid (2009), Ahmad, Abdullah, & Roslan (2012), Suleiman (2013), Khanam, Nasreen and Pirzada (2014) but against the result of Githire & Muturi (2015), Anthony (2012), Olokoyo (2012) and Zeitun & Tian (2007) among others.

Furthermore, the third objective of the study was achieved with the magnitude coefficient of variable equity on return on asset and return on equity; the result shows that equity (EQ) has positive significant effect on return on asset and return on equity of indigenous selected oil and gas firms in Nigeria as indicated by coefficient (0.1203 and 1968) with P-value (0.037 and 0.014) respectively lower than 0.05 significance level. This implies that the equity form of financial structure contributes 12.03% positive

impact on ROA and 19.68% on ROE. This result meets our a-priori expectation and led to the rejection of the hypothesis (H_{03}). The study is consistent with pecking order theory which states that firms finance their business in three hierarchical orders. The first order is the initial source of funds which is usually generated within the firm itself or by the owner of the business, the second order is the sources of funds through borrowing and the third order is the sources of funds through external equity. The theory assumes that every business uses these three methods of financing in the order mentioned, the theory further stated that, if the first order cannot be sourced for or provided by the firm, then, they move to the second order, if the second order cannot be sourced for, they move to the third order in that sequential order. The implication of this theory (pecking order theory) to this study is that selected indigenous oil and gas firms in Nigeria with financing choice of equity tend to have higher/positive financial performance than firms with financing option of debt or other financing strategies because firms having high profit tend to attain low debt profile. This study is consistent with the findings of Githire & Muturi (2015), Anthony (2012), Olokoyo (2012) and Zeitun & Tian (2007) but against the result of Ebaid (2009), Ahmad, Abdullah, & Roslan (2012), Suleiman (2013), Khanam, Nasreen and Pirzada (2014) and others.

Finally, for the control variables, interest rate has negative significant impact on both return on asset and return on equity, while exchange rate has positive significant impact on return on asset but negative significant impact on return on equity as indicated by coefficient (-0.3738 and 0.1196) and (-0.5999 and -0.0319) with P-value (0.041 and 0.039) and (0.044 and 0.066) respectively lower than 0.05 significance level. Overall, the result of the F-stat of (17.71) and (31.41) with P-value (0.0008) and (0.0000) respectively less than 0.05 level of significance, this shows that capital structure has a significant impact on the financial performance of selected indigenous Oil and gas firms in Nigeria.

CONCLUSION AND RECOMMENDATIONS

The study concluded that capital structure has a positive effect on the financial performance of selected indigenous oil and gas firms in Nigeria. However, when individual component of capital structure was considered, short term debt and equity capital have a positive significant effect on the financial performance. But long term debts do not significantly affect the financial performance of indigenous oil and gas firms in Nigeria.

Based on findings of this study, it is recommended that indigenous oil and gas firms in Nigeria should use short term capital obtained for short term financing to avoid the problem of over-capitalization, which will, in turn, lead to a drop in the financial performance. Also, long term debt should be used to implement capital projects to avoid the problem of over-trading by oil and gas firms in Nigeria, because long term debts contribute less to financial performance. Lastly, indigenous oil and gas firms in Nigeria should use more equity in capital structure since it has less financial risk, it is easily accessible, and it also contributes positively to the financial performance.

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