

## **CORRELATION BETWEEN CAPITAL STRUCTURE AND OPERATING EFFICIENCY OF LISTED NIGERIAN OIL AND GAS INDUSTRIES**

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**Abstract:** *The exact combination of leverage utilized to fund a company's assets and activities is referred to as its capital structure. Equity is a much costlier, long-term form of financing with greater financial flexibility from a company standpoint. Borrowing, on the other hand, is a less costly source of capital with a limited term, which legally obliges the company to commit to fixed, promised outflows of funds. These financial choices, that could be influenced by capital structure policies as well as goals established by management and the board of directors, determine a company's capital structure. The sample size is drawn from eight listed oil and gas marketing and producing companies in Nigeria. The ordinary least square method (OLS) of multiple regressions was utilized in this study. The data was then analyzed using econometric tools like multiple regressions to ascertain the impact of capital structure on performance of listed oil and gas companies in Nigeria. It was discovered that all oil and gas firms fund their operations with more debt rather than equity because of the huge capital outlay involved. Additionally, it was discovered that STD, LTD, TDE, and INC had a positive but insignificant impact on Nigeria's quoted oil firms' performance. The study's findings recommend adding more factors to the model when assessing how capital structure affects company performance.*

**Key Words:** *Oil, Gas, Capital, Efficiency, Investment.*

### **Introduction**

Nigeria began producing oil in 1908, began oil prospecting in the region along the coast between Okitipupa and Lagos. As a result of the First World War in 1914, NBC folded up activities even after the company had drilled wells, and could not obtain oil from the well. As time passed on, the Anglo-Dutch consortium developed and became the company we all know today as Shell Petroleum Development Company of Nigeria (SPDC). It obtained exploration rights under the mineral oil ordinance 17 of 1914 and as a result of the 1925 and 1950 amendments the company was granted the singular right for exploration license over the entire Nigerian soil. Just as NBC's oil exploration was affected and eventually truncated by the First World War in 1914, the Second World War came in 1939 and intercepted the company's exploration adventure and it could not carry out any oil activities up until 1946 when oil exploration activities were restarted. After fifty years of exploration, oil was discovered in Nigeria in 1956, close to Oloibiri in the Niger Delta. Shell-BP, the only concessionaire at the time, made the discovery. Nigeria became an oil exporter when its first oil field began producing 5,100 barrels per day in 1958 (NNPC, 2021). The exact combination of leverage utilized to fund a company's assets and activities is referred to as its capital structure. Equity is a much costlier, long-term form of financing with greater financial flexibility from a company standpoint. Borrowing, on the other hand, is a less costly source of capital with a limited term, which legally obliges the company to commit to fixed, promised outflows of funds with the need for refinancing at a later date at unknown costs. These financial choices, that could be influenced by capital structure policies as well as goals established by management and the board of directors, determine a company's capital structure. The size and longevity of the firm, which affect a company's financing alternatives, also have an impact on the capital structure. The capital structure can be greatly impacted by merger and acquisition (M and A) operations in addition to the issue of stock and bonds. M and A activities can be financed by cash, borrowing, share and/or debt assumptions, and revenues from sales and asset sales. Its activities, which may produce funds, as well as corporate preferences concerning dividends and share repurchases, all have an impact on the capital structure over time. The selling prices of debt and equity look to be the key concern of this discussion because we are looking at ways an organization might reduce its average capital cost. As a result, changes in the economic worth of a business or entity over time, particularly the stock price, have an impact on the capital structure as well. Chartered Financial Analyst" (CFA, 2021). The parts, factors, and makeup of capital structure have been defined, described, and highlighted throughout history. These efforts have given rise to many points of view. The first work on the notion of "capital structure" was written and published in 1958 by Modigliani and Miller. However, after another research was carried out, Modigliani and Miller (1963), reviewed the aforementioned premise and concluded that "interest rates are tax deductible and therefore a firm with higher debt variable ratios would increase its value" (as cited in Vätavu, 2015). There has also been contemplation about the perfect and optimal capital mix. But over the past few decades, a number of concepts have surfaced that have attempted to explain how the capital structures of enterprises affect their market prices. Such concepts comprise the agency costs theory, the trade-off theory, the Modigliani and Miller (1963) capital structure relevancy theory, the pecking order theory, and others (Bokpin and Isshaq, 2008). Modigliani and Miller (1963), also pointed out that the capital structure will include both debt and equity capital. Investment planning must recognize that over time, all of the firm's assets are

financed by a merge of debts and equity financing, even if only one type of capital is raised in any given year. The rationale of this investigation is to examine how capital structure influences listed gas and oil in Nigerian firms' performance.

Investment decision made by the gas and oil sector after gaining license from the NNPC to import refined crude oil (gas, diesel, aviation fuel etc.) to Nigeria is tremendously capital-intensive, and gas and oil firms does not have enough capital. In a bid to finance the investment decision, they have to approach the bank to borrow money which is a form of debt to the company. The financing cost has been on the high side relative to the inflation, exchange rates and other macro-economic variables amidst the current poor economic circumstances of the country which is worsening the situation. Apart from the effect of the macro-economic variables on the cost of capital, other unsystematic risks like financial mismanagement could also attribute to the high cost of capital in Nigeria. A rise in the value of debt at a given level of earnings may increase the capital cost. The financial intermediaries' disposition towards lending to the oil and gas sector is abysmal. The debt was so huge that they were not able to achieve/ determine optimum capital structure because they were over-gearred. They could not refund the money borrowed; the sector has been so porous to excessive borrowing from banks breeding many credit defaults that brought about the interference of the Asset Management Company of Nigeria (AMCON).

Companies in all sectors, whose aim is to maximize profit will need to finance the business in whatever ways it can either by using equity alone, or debt alone or both equity and debt which is common for most organizations. They do this in the most optimal way to harness the resources they have at hand or borrow to finance the company by debts. Several pieces of literature emphasized the manufacturing sector dealing with consumer goods. Therefore, by emphasizing on the impact of capital structure on Nigeria's quoted oil and gas firms' performance, this study would close the existing gaps, and find out to what extent the excessive borrowings from banks have affected the performance of firms and the effect of the equity and the debt acquired on the performance of the companies. The study will aid in determining how bankruptcy costs affect the capital structure of publicly traded oil businesses. Additionally, it will highlight how important leverage is to the profitability of quoted oil enterprises. Additionally, many people would benefit from this study by learning about and comprehending how Nigerian listed oil and gas firms' performance is impacted by their capital structure. It would help the management of oil and gas businesses plan and forecast how their capital structure choices would affect achieving the firm's goals of maximizing profit and lowering cost of capital.

## **Background Study**

### *Concept of Capital Structure*

Capital Structure is defined as the blend of different forms or sources of finance either by equity or by borrowing (debts) to keep a company up and running and financially alive. It entails the combination of sources of capital to finance its activities and operations. Capital structure refers to the money that a company uses to run its operations and finance its assets. It usually consists of two components: debt and equity. It's also known as debt equity ratio or debt capital ratio" (Mazeed et al., 2019). Pandey's research in 1999 cited in Akeem et al. (2014) argued that a firm's capital structure and its financial structure differs, concluding that the financial structure represents the means in generating funds, whereas the capital structure represents the correlation between long-term debt and equity. Zeitun and Tian (2007) argued that firm whose managers are able to discover the optimal capital structure get their reward by minimizing of firm's cost of finance (capital) thereby maximizing firm's revenue. If a firm's performance is influenced by its capital structure, then it is likely that the firm's financial health would also be affected by its capital structure. Mazeed et al. (2019) also argued that to optimize the capital structure, a company must determine its priorities and determine which expenses are debt-based and which are equity-based, and which one is required. Ahmadimousaabad et al. (2013) stated that the financial decision of capital structure is concerned not only with finding the right kind of finance, but also with selecting the best overall combination of these funding options for business start-up and operations. As a result, financial decisions are thought to play an important role in financial management in forming a firm's capital structure, which affects its overall operations, growth, and value. Capital structure refers to the term used to represent a combination of long-term debt and equity. Long-term debt is defined as debt that is not due to be repaid within the next twelve months. This debt is mostly made up of bonds or similar obligations, such as notes, capital lease obligations, and mortgage issues. In general, debt is money borrowed from another party that must be repaid at an agreed-upon date. Interest is the cost of using this money, which must also be paid. In addition to the requirement to pay interest, debt may include restrictive agreement that the borrower must fulfill in order to avoid default (As cited in Antwi et al., 2012)"However, the capital structure of a company is made up of essentially the equity and debt components of the company's capital (the amount used to finance the business). A firm has three main sources of financing, also known as capital components (at its disposal to fund new investment opportunities. It includes the use of retained earnings (internal equity), the issuance of new shares (external equity), and the borrowing of funds through debt instruments (debt capital). These sources of financing constitute a firm's capital structure and also reflect the firm's ownership structure" as cited in Modugu.(2013).

### *Trade-off Theory*

It was first initiated by Modigliani and Miller (1958). According to this, a firm decides how much debt financing and how much equity financing to utilize by weighing the advantages and disadvantages. The trade-off theory states that it is possible for a firm to attain a point where its capital structure is said to be at an optimal level. The trade-off theory's suggested dimension, the

financial determinant, was created in light of Modigliani and Miller's irrelevance thesis. The trade-off theory takes into account some aspects of an imperfect market and explains how firms choose their ideal capital structure by striking a balance between the advantages and disadvantages of debt. The idea of trade-off primarily considers how corporate tax, personal tax, non-debt tax shielding, and bankruptcy costs affect capital structure. (Ahmadimousaabad et al., 2013) According to the capital structure trade-off theory, taxes, bankruptcy costs, and agency conflicts are three competing forces that influence a firm's target leverage. The firm's debt level strikes a balance between the tax benefit and potential financial distress and agency conflicts. As a result, a company sets the ideal leverage ratio and gradually moves toward it (Babu, 2014)

#### *Signaling Theory*

Ross in 1977 proposed the signaling theory, which states that if managers have inside information, their capital structure choice will notify the market with that information. Signaling theory asserts that the firm's financial choices are signals to investors delivered by the management of the firm to disrupt these discrepancies. These models are predicated on the notion that the company's top executives, who have access to internal information, have an incentive to share this information with outside investors in order to drive up the stock price. However, managers cannot just inform investors of the good news because they will view it suspiciously. By implementing a financial policy, one way to address this issue (for the undervalued enterprises) is to send a signal to investors that contains this information. This approach is prohibited from a cost perspective for a less valuable company. The expense of the signal is what gives it credibility to outside consumers (Markopoulou and Papadopoulos, 2009). Babu (2014) stated that an increase in debt capital is a reliable indicator of strong future cash flows and management confidence. Smaller signaling companies must refrain from following the larger signaling companies' lead and issuing more debt because they incur higher bankruptcy costs regardless of debt level. Conclusion was made that profitability and leverage are positively correlated, and that higher levels of debt are perceived as indicating higher quality by investors.

#### *Agency Theory*

For established businesses, debt of free cash flows lowers the amount of cash available for managers to spend at their discretion. The agency cost theories suggest that corporate leverage is therefore chosen, in a more complicated way, to limit shareholders' ability to act against the welfare of bondholders and managers' ability to act against the interests of the shareholders. The firm's responsibility is to balance the costs of bankruptcy and agency issues with the benefits of increased leverage tax (Babu, 2014).

#### *Empirical Review*

Several empirical studies have been made by different researchers on the impact of capital structure on firms' performance using a variety of research tools. In this section, we shall review some of these studies carried out by researchers, the method used by the researchers, and the outcome of the study. Research on the impact of capital structure on organizational performance was conducted by Akeem et al. (2014) using a case study of Nigerian manufacturing enterprises. The descriptive and regression research technique were used to determine the effect of some important variables such as Returns on asset (ROA), Returns on equity (ROE), Total debt to total asset (TD), Total debt to equity ratio (DE) on the performance of firms. The investigation utilized secondary data from the annual reports of ten (10) Nigerian manufacturing enterprises during a ten-year period (2003 to 2012). The result of the study concluded that capital structure measures (total debt and debt-to-equity ratio) are related to firm performance in a negative way. Insofar as the value of a business can be increased using debt capital, it is recommended that firms use more equity than debt in financing their business activities. As a result, companies should determine the minimum weighted average cost of capital and maintain that gearing ratio to ensure that the company's value is not lost, as the capital structure is optimal at this time. Basit and Irwan (2017) looked at how capital structure affected the performance of quoted industrial product enterprises in Malaysia. Explanatory research design was used; the convenience sampling technique was also used in this research to select 50 industrial product companies out of 268 industrial product companies quoted on the Bursa Malaysia main exchange market over a period 5 years (2011 to 2015). The research made use of independent variables which are debt to equity ratio, total debt ratio and total equity ratio. ROA, return on equity and earning per share were used as dependent element to evaluate firm performance. The research employed descriptive statistics and multiple regression for data analysis. This empirical study shows that industrial goods organizations' capital structures heavily rely on equity financing. Moreover, the regression results revealed that debt to equity has a negative impact on ROA, total debt ratio and total equity ratio have insignificant impacts on ROA, debt to equity has a negative impact on ROE, total debt has a positive impact on ROE, and total equity has an insignificant impact on ROE. Furthermore, debt to equity has a negative influence on ROE, while overall debt has a positive impact on ROE and total equity has no impact. Finally, debt to equity has a negative significant impact on earnings per share, the total debt ratio has a positive significant impact on earnings per share, and total debt has an insignificant influence on earnings per share. Salim and Yadav (2012), examined the connection between capital structure and business efficiency. A panel data technique was used to examine 237 Malaysian listed companies on the Bursa Malaysia Stock Exchange during the course of 17 years, from 1995 to 2011. As a dependent variable, the study used four performance measures: return on equity, ROA, Tobin's Q, and earnings per share. The five capital structure metrics (long term debt, short term debt, overall debt ratios, and growth) were employed as an independent variable. The six sectors into which the data is divided are: construction, consumer products, industrial products, plantations, real estate, trading, and services. The result depicted that short term debt (STD), long term debt (LTD), and total debt (TD) as independent variables have a negative association with company performance as assessed by ROA, return on equity, and earning per share. Furthermore, all industries have a positive association

between growth and performance. Short-term debt (STD) and long-term debt (LTD) have a considerable positive association with the Tobin's Q. It also showed that total debt (TD) has a substantial negative link with the firm's performance. Antwi et al. (2012) studied how capital structure impacts a company's value. The study took into consideration all 34 businesses listed on the Ghana Stock Exchange (GSE) as at the 31st of December 2010. The study adopted the ordinary least squares regression approach for data analysis. It demonstrated that long-term debt is the most significant indication of a firm's worth in a developing nation like Ghana, and equity capital as an element of a firm's capital structure is vital. In the light of this study, corporate financial decision makers were advised to use long-term debt rather than equity capital to finance their operations because it does have a larger influence. Vătavu (2015) performed research on 196 Romanian industrial businesses registered on the Bucharest Stock Exchange to determine the association between capital structure and financial performance over an eight-year period (2003-2010). Cross-sectional regressions were used in the analysis. Long-term debt, short-term debt, total debt, and total equity are the capital structure indicators, whereas ROA and return on equity are the performance indicators. The empirical result showed that when Romanian companies avoid debt and run-on equity, they perform better. Manufacturing companies, on the other hand, appear to lack sufficient internal capital to make lucrative investments and to make good use of their assets. Profitable corporations sell a portion of their assets to lower their costs as taxes and inflation rise. Across the manufacturing industry, there is evidence of risk-taking behavior. This demonstrates a preference for debt when they are in financial trouble and face high business risks, or when they are unable to repay their loans owing to a cash shortage. The regression results are not statistically significant due to missing data on long-term debt ratios. Nathan and El Hadidi (2020) investigated the impact of capital structure on non-financial enterprises' financial performance in Egypt. They used a panel econometric technique known as the fixed effects model, which is based on the results of the Hausman test, the impact of capital structure indicators such as long-term debt and short-term debt on firm performance variables such as returns on asset, returns on equity, and Tobin-Q was estimated. Firm size, firm age, asset tangibility, and sales growth were the key control factors in this study. All of the tests in this paper were based on data extracted from the yearly financial reports of the 50 most active businesses on the Egyptian stock exchange over a 13-year period (2003 to 2015). The statistical findings revealed that long-term debt and short-term debt have a considerable negative impact on the ROA. The effect of short-term debt on the Tobin-Q ratio, on the other hand, is positive and considerable, whereas the effect of long-term debt on the Tobin-Q ratio is small. Long-term debt and short-term debt on the other hand, have a negligible impact on the ROE.

### **Methodology**

The research design used in this study is the explanatory research design. The study employs a panel data policy from both time series and cross-sectional data obtained from eight listed oil and gas companies' annual reports spanning over a period of 13 years (2009-2021). The study also used descriptive statistics to evaluate the behavior of the data by use of (mean, mode, median, max, min, standard deviation, variance, kurtosis, and skewness). The association between changes in these variables was examined using multiple regression models because they are simple, provide results that are more accurate and precise, and can also take lag into account. The population size of this research was eight listed oil and gas companies in Nigeria. They include; Total Nigeria Plc, Oando Nigeria Plc, MRS Oil Nigeria Plc, Conoil Nigeria Plc, Ardova Nigeria Plc (formerly AP), Eterna Oil Nigeria Plc, Seplat Nigeria Plc, and Japaul Gold and Venture. The census sampling technique was used for the purpose of this study. The ordinary least square method (OLS) of multiple regressions was utilized in this study because it is well known as the best linear unbiased estimator (BLUE) because it gives coefficients that are unbiased estimators. The data was then analyzed using econometric tools to ascertain the impact of capital structure on performance of listed oil and gas companies in Nigeria. The ordinary least square is the most commonly used technique for econometric data analysis reason being that it is easy to compute, gives unbiased estimators in relation to other econometrics techniques. Secondary data was employed for the purpose of this research which was extracted from annual reports of the eight listed oil and gas marketing and producing companies in Nigeria for a period of five years (2018 till 2022) which is gotten from the companies.

### **Results and Discussion**

The descriptive statistics involved computation of means and standard deviations for all the variables of the study. The descriptive statistics are presented in Table 1. The mean score obtained for return on asset is very low (Mean = 0.0128, Min = -0.56, Max = 1.51, SD = 0.18755). In other words, a mean of 1.28% was obtained for return on asset. This value suggests that the profitability of an average company in the sector sampled for this study is very low. The mean score obtained for short-term debt to total debt is very high (Mean = 0.7866, Min = 0.17, Max = 1.00, SD = 0.23815). This outcome implies that most of the companies sampled for this study make use of more short-term debt in their capital structure. The mean score obtained for long-term debt is very low (Mean = 0.2134, Min = 0.00, Max = 0.83, SD = 0.23815). This finding signifies that the majority of the companies sampled for this study make use of less long-term debt in their capital structure. The mean score obtained for interest coverage ratio is about 10 times (Mean = 9.83, Min = -13.03, Max = 662, SD = 66.11131). This value signifies that an average company in the sector sampled can pay their interest 10 times from their profit. This result suggests that an average company sampled in that sector is creditworthy.

**Table 1: Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	104	-.56	1.51	.0128	.18755
STD	104	.17	1.00	.7866	.23815
LTD	104	.00	.83	.2134	.23815
TDE	104	-21.35	15.91	2.4876	3.68816
INC	104	-13.03	662.00	9.8326	66.11131

Four research questions were asked in this study. The questions link corporate profitability with the four proxies of capital structure investigated in this study. Therefore, correlation analysis was used to answer the research questions. The outcomes of this statistical analysis are presented in the following sub-sections. The first research question focuses on how ROA of listed oil and gas firms in Nigeria is affected by the ratio of STD. The correlation between short-term debt and total debt on ROA for listed oil and gas businesses in Nigeria is shown in Table 2. The correlation results show a relationship between short-term debt to total debt and ROA, which is positive but not statistically significant ( $r = 0.064$ , Sig. = 0.520). According to this finding, the ratio of short-term to long-term debt may not significantly affect the ROA of Nigerian listed oil and gas firms.

		ROA	STD
ROA	Pearson Correlation	1	.064
	Sig. (2-tailed)		.520
	N	104	104
STD	Pearson Correlation	.064	1
	Sig. (2-tailed)	.520	
	N	104	104

The second research question looks at the effect of long-term debt to total debt ratio on ROA of listed oil and gas businesses in Nigeria. The correlation between long-term debt to total debt and ROA of quoted oil and gas firms in Nigeria is shown in Table 3. The correlation results show that a negative but non-significant relationship exists between LTD and ROA ( $r = -0.064$ , Sig. = 0.520). This result signifies that long-term debt to total debt may not have a significant impact on ROA of listed oil and gas companies in Nigeria

		ROA	LTD
ROA	Pearson Correlation	1	-.064
	Sig. (2-tailed)		.520
	N	104	104
LTD	Pearson Correlation	-.064	1
	Sig. (2-tailed)	.520	

	N	104	104
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The third research question considers the influence of the TDE ratio on the ROA of Nigeria's publicly traded oil and gas firms. The correlation between the TDE and ROA of quoted oil and gas businesses in Nigeria is shown in Table 4. The correlation results show that a positive but non-significant relationship exists between TDE ratio and ROA ( $r = 0.121$ ,  $\text{Sig.} = 0.222$ ). According to this finding, the TDE ratio may not significantly affect the ROA of listed oil and gas businesses in Nigeria.

		ROA	TDE
ROA	Pearson Correlation	1	.121
	Sig. (2-tailed)		.222
	N	104	104
TDE	Pearson Correlation	.121	1
	Sig. (2-tailed)	.222	
	N	104	104

The fourth research question examines the effect of INC on Nigerian listed oil and gas firms' ROA. Table 5 below contains the correlation results for the listed Nigerian oil and gas enterprises' INC and ROA. The correlation results indicate that a positive but non-significant relationship exists between INC and ROA ( $r = 0.042$ ,  $\text{Sig.} = 0.672$ ). This finding implies that the INC may not significantly affect the ROA of Nigerian listed oil and gas firms.

		ROA	INC
ROA	Pearson Correlation	1	.042
	Sig. (2-tailed)		.672
	N	104	104
INC	Pearson Correlation	.042	1
	Sig. (2-tailed)	.672	
	N	104	104

Source: Researcher's Computation (2022)

*Test of Hypotheses*

Four hypotheses were formulated for this study. Multiple regression analysis was explored to test the hypotheses of the study. The output of multiple regression analysis excluded the independent variable in the first hypothesis, STD. Therefore, basic linear regression was considered to assess the first hypothesis. The assets return of Nigerian quoted oil and gas businesses is not considerably impacted by the fraction of STD. The overall model demonstrates that the ratio of STD and asset return have a positive but non-significant association ( $r = 0.064$ ). The resulting R square value is very low (R square = 0.004). This result suggests that the STD ratio only explain for 0.4% of the variation in asset return. Therefore, more variables are needed to be able to predict the profitability among the sampled companies.

<b>Table 6: Model Summary</b>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.064	.004	-.006	.18808
a. Predictors: (Constant), STD				

Table 7 contains the analysis of variance (ANOVA) results. The F-Value obtained is very small and insignificant (F-Value = 0.418, Sig. = 0.520). This result implies that the model is not of good fit and cannot predict the variation in return on asset accurately.

<b>Table 7: ANOVA</b>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.015	1	.015	.418	.520
	Residual	3.608	102	.035		
	Total	3.623	103			
a. Dependent Variable: ROA						
b. Predictors: (Constant), STD						

Source: Researcher’s Computation (2022)

The computed beta value (Beta = 0.064, t-value = 0.646, Sig = 0.520) is positive but not statistically significant. This finding implies that the asset return is not considerably impacted by the short-term debt to overall debt. The hypothesis was accepted, leading to the conclusion that the assets return of Nigerian quoted oil enterprises is not significantly impacted by the ratio of STD

<b>Table 8: Regression Coefficient</b>						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.027	.064		-.419	.676
	STD	.050	.078	.064	.646	.520
a. Dependent Variable: ROA						

*Hypotheses Two, Three and Four*

Hypotheses two, three and four were tested with multiple regression analysis. The model summary shows that a positive but non-significant relationship exists between the three independent variables (LTD, debt to equity ratio and INC) and ROA (r = 0.135). The R square value obtained is also very small (R = 0.018). This outcome implies that only 1.8% of the variation in ROA can be accounted for by LTD, debt to equity ratio and INC. This outcome suggests that more variables are needed to be able to predict the profitability among the sampled companies accurately.

<b>Table 9: Model Summary</b>
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Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.135	.018	-.011	.18860
a. Predictors: (Constant), INC, TDE, LTD				

Source: Researcher’s Computation (2022)

The F-Value obtained is also very small and insignificant (F-Value = 0.618, Sig. = 0.605). This result implies that the model is not of good fit and cannot predict the variation in ROA accurately.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.066	3	.022	.618	.605
	Residual	3.557	100	.036		
	Total	3.623	103			
a. Dependent Variable: ROA						
b. Predictors: (Constant), INC, TDE, LTD						

Source: Researcher’s Computation (2022)

The multi-collinearity statistics and the regression coefficients are contained in Table 11 below. The multi-collinearity results show that all the tolerance values obtained for all the independent variables are greater than 0.2 (Mernard, 1993) and all the variance inflation factors (VIFs) obtained for all the independent variables are less than 10 (Belsely, 1991). These outcomes suggest that there is no multicollinearity problem among the independent variables of the study. Therefore, the results of the multiple regression results can be interpreted with high level of confidence. However, in relation to hypothesis two, the beta value obtained is negative but insignificant (Beta = -0.043, t-value = -0.417, Sig. = 0.678). This outcome suggests that the ratio of long-term debt to total debt does not significantly affect ROA. The null hypothesis was therefore accepted, and it became reasonable to draw the conclusion that the long-term debt to total debt ratio has an insignificant influence on the ROA of quoted oil and gas organizations in Nigeria.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.005	.030		.155	.877		
	LTD	-.034	.082	-.043	-.417	.678	.911	1.098
	TDE	.006	.005	.110	1.076	.284	.933	1.072
	INC	.000	.000	.050	.503	.616	.975	1.026
a. Dependent Variable: ROA								

Source: Researcher’s Computation (2022)

Moreover, concerning hypothesis three, the beta value obtained is positive but non-significant (Beta = 0.110, t-value = 1.076, Sig. = 0.284). This outcome suggests that TDE ratio does not have a significant impact on ROA. As a result, the null hypothesis



was accepted, and it was feasible to draw the conclusion that the TDE ratio did not significantly affect ROA of listed oil and gas firms in Nigeria. Nevertheless, in connection with hypothesis four, the beta value obtained is negative but insignificant (Beta = 0.050, t-value = 0.503, Sig. = 0.616). This study indicates that ROA is not significantly impacted by INC. The null hypothesis was accepted, leading to the conclusion that among Nigeria's publicly traded oil and gas businesses, INC had no significant effect on ROA. The result of hypothesis one demonstrates that the ratio of STD has no significant effect on the ROA of listed oil and gas enterprises in Nigeria. This finding is contrary to the outcome of the study of Nathan and El Hadidi (2020) which revealed that short-term debt had a considerable negative impact on ROA. Similarly, the study of Salim and Yadav (2012), which showed that short term debt had a negative association with company performance, is not in consonance with this finding. In addition, the study of Amin and Jamil (2015), which found that a significant positive relationship existed between short-term debt and corporate performance, does not align with the outcome of the current study. With regard to hypothesis two, this study found that among Nigeria's listed oil and gas corporations, the ratio of long-term debt to total debt did not significantly affect ROA. The study of Vatavu (2015), which revealed that the relationship between long-term debt ratio and corporate profitability is not statistically significant, gave support to the outcome of this study. Further support was derived from the study of Basit and Irwan (2017) which revealed that total debt had insignificant impact on ROA. However, the study of Antwi et al. (2012) which posited that long-term debt had positive significant impact on firm's value does not support the outcome of this study. Also, the study of Nathan and El Hadidi (2020), which revealed that long-term debt had a considerable negative impact on ROA, is contrary to the result of this study. Similarly, the study of Salim and Yadav (2012), which showed that long term debt had a negative association with company performance does not support the finding of this study. Moreover, concerning hypothesis three this study discovered that among Nigeria's publicly traded oil and gas firms, the TDE ratio had no significant effect on ROA. The outcome of this study is contrary to the study of Vatavu (2015) showed that debt to equity ratio had significant positive impact on corporate performance. Also, the study of Antwi et al. (2012) which posited that debt-to-equity capital had positive significant impact on firm's value, is not in agreement with the outcome of this study. The outcome of this study is also contrary to the study of Akeem et al. (2014) which documented a significant negative relationship between total debt-to-equity ratio and firm performance. In addition, the study of Basit and Irwan (2017), which revealed that debt to equity ratio has a negative impact on ROA, does not align with the result of this study. Nevertheless, in connection with hypothesis four, this study observed that INC does not have significant impact on ROA among listed oil and gas companies in Nigeria. This result is not in tandem with the finding in the study of Singh and Bagga (2019) which showed that capital structure had a strong favorable impact on a firm's profitability. Also, the study of Zeitun and Tian (2007), which showed that a company's capital structure had a considerable negative influence on its performance indicators, does not support the outcome of this study

## Conclusion

This study paper is segmented into five chapters. The first chapter introduces the study and includes the history to the study, the statement of problem, the research objectives, the research questions, the research hypotheses, the significance of the research, the scope of the research, and the definition of important concepts vital to this research project. The purpose of this study was to investigate the correlation between the capital structure and operating efficiency of Nigerian listed oil and gas businesses. It was discovered that all oil and gas firms fund their operations with more debt rather than equity because of the huge capital outlay involved. Additionally, it was discovered that STD, LTD, TDE, and INC had a positive but insignificant impact on Nigeria's quoted oil firms' performance. The study's findings recommend adding more factors to the model when assessing how capital structure affects company performance.

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