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Capital Structure and the Operating Performance of Quoted Firms in the Nigerian Stock Exchange

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ABSTRACT
This study attempts to investigate the impact of capital structure on performance of quoted firms in the Nigerian Stock Exchange for thirty two firms for the period 2005-2011 resulting in a total of 224 observations by analyzing the relationship between operating performance measured by return on asset (ROA) and return on equity (ROE) and capital structure variables with short-term debt (STD), long-term debt (LTD) and total debt (TD). Four variables that influence firm operating performance, namely, tangibility (TAN), liquidity (LIQ), non debt tax (NTD) and efficiency (EFF) are used as control variables. To achieve this objective, econometric framework was adopted for the purposes of data analysis. The result reveals that short term debt, long term debt and total debt have significant negative relationship with performance using return on asset and return on equity and tangibility and efficiency have significant positive relationship with performance while non tax debt and liquidity shows negative relationship with performance. On the basis of result, the paper concludes that capital structure affects the performance of firms. Therefore, useful recommendations were provided to improve the capital structure and performance architecture of quoted firms using the optimal capital structure model.

Keyword: ROA, ROE, Capital Structure, quoted firm, Nigeria

INTRODUCTION

Research in the field of capital structure and corporate performance have drawn extensive debate as a result of the relevance of capital in the success and survival of business as a going concern. Abu-Tapanjeh (2006) reported that considerable amount of research have been conducted on the relationship between capital structure and performance of firms in developed and developing economies. These studies have documented several arguments on the need to improve the capital structure as a need to enhance the performance of firms (Gleason, et al., 2000; Mesquita and Lara, 2003; Philips and Sipahioglu, 2004; Abor, 2005; Carpentier, 2006; Abor, 2007; Madan, 2007; Chen et al., 2008; Ahmad et al., 2012; Shubita and Alsawallah, 2012). Capital structure decisions represent another important financial decision of a business organization apart from investment decisions. Ali et al (2011) stressed that the decision regarding the use of debt and equity modes of financing is not an easy job, with the fact that a number of benefits and costs are associated with the management decisions regarding the optimal use of capital structure. It is important because it involves a huge amount of money and has long- term implications on firms. Capital structure is one of the important financial decisions for any business organization. This decision is important because the organization need to maximize return to various organizations and also have an effect on the value of the firm (Ahmad, 2012). A new business requires capital and still more capital is needed if the firm is to expand. The required funds can come from many different sources and by different forms. Firms can use either debt or equity capital to finance their assets. The best choice is a mix of debt and equity. One of the most perplexing issues facing financial managers is the relationship between capital structure, which is the mix of debt and equity financing and stock prices (Azhagaiah and Gavoury, 2011). Al-Qudah (2011) explains that the relationship between capital structure and firm value, how firms choose their capital structure and how much they should borrow based on various trades –off between the cost and benefit of debt versus equity.

Numerous studies suggest a negative relationship between capital structure and firm performance (Booth et al., 2001; Deesomsak et al. 2004; Huang and Song, 2006; Karadeniz et al., 2009; Chakraborty, 2010) while others indicate a positive relationship between financing choices and firm performance (Gosh et al., 2000; Hadlock and James, 2002; Frank and Goyal, 2003; Saeedi and Mahmoodi, 2011), moreover a number of studies find either poor or no significant

relation between debt level and performance (Tang and Jang, 2007; Ebaid, 2009). Though many research studies have been undertaken in the field of capital structure and performance, very few studies have been undertaken to find the impact of capital structure on performance. Therefore, to fill this gap in the literature and shed light, the present study attempts to investigate the impact of capital structure and performance of quoted firms in Nigerian Stock Exchange.

The objective of this study therefore, is to examine the impact of capital structure on the operating performance of firms quoted on the Nigerian Stock Exchange. To achieve this objective, the paper is divided into five interconnected sections. The next section presents the review of relevant literature. Section three examines the materials and methods used in the study. Section four presents the results and discussion and the final section examines the conclusion and recommendations.

LITERATURE REVIEW

Theoretical Framework

The theory of capital structure was pioneered by Modigliani and Miller (1958). They found that the value of a firm is not affected by its financing mix when the study of financing choices initially received little attention. Modigliani and Miller concluded to the broadly known theory of "capital structure irrelevance" where the financial leverage does not affect the firm's market value under perfect market condition.

Pecking order theory is a capital structure model based on asymmetry of information amongst insiders and outsiders. This theory predicts that due to the information asymmetry between a firm and outside investors regarding the real value of both current operations and future prospects, debt and equity will always be relatively costly compared to retained earnings (Zurigat, 2009; Ebadi et al., 2011). Azhagaiah and Govoury (2011) reported that the issue of external equity is seen as being the most expensive and also dangerous in terms of potential loss of control of the enterprise by the original owner-managers. The information advantage of the corporate managers will be minimized by issuing debt. Optimistic managers, who believe the shares of their firms are undervalued, will prefer immediately to issue debt and to avoid equity issue. Ahmad et al (2012) documents that firms that are profitable and therefore generate high earnings are expected to use less debt capital than those who do not generate high earnings. Hence, internal funds are used first, and when that is depleted, debt is issued, and when it is not sensible to issue any more debt, equity is issued (Ali et al., 2011).

Static Tradeoff Theory (STT), which explains that a firm follows a target debt-equity ratio and then behaves accordingly. The benefits and costs associated with the debt option sets this target ratio. These include taxes, cost of financial distress and agency costs. trade-off theory attempts that the optimal debt ratio is set by balancing the trade-off between the benefit and cost of debt, through this theory we can achieve the optimal capital structure when the marginal value of the benefits associated with the debt issues exactly offsets the increase in the present value of the costs associated with issuing more debt (Al-Qudah, 2011, Ebadi, et al., 2011; Ali et al, 2011).

Jensen and Meckling (1976) developed agency theory where agency costs are defined as the sum of the monitoring expenditures by the principal, bonding costs by the agent, and a residual loss. The existence of agency problem will arise due to the conflicts either between managers and shareholders (agency cost of equity) or between shareholders and debt holders (agency costs of debt). Thus, a reliable tool to control agency cost can be the use of debt capital. Leverage will force managers to generate and pay out cash, simply because interest payments and compulsory. Interest payments will reduce the amount of remaining cash flows. Thus, debt can be viewed as a smart device to reduce the agency costs (Zurigat, 2009

Empirical Evidence

Booth *et al*. (2001) assess whether capital structure theory is portable across developing countries with different institutional structures. The sample firms in their study are from Malaysia, Zimbabwe, Mexico, Brazil, Turkey, Jordan, India, Pakistan, Thailand, and Korea. Booth *et al*. (2001) use three measure of debt ratio; total debt ratio, long-term book debt ratio, and long-term market debt ratio with average tax rate, assets tangibility, business risk, size, profitability, and the market to book ratio as explanatory variables. The study showed that the more profitable the firm, the lower the debt ratio, regardless of how the debt ratio was defined. It also showed that the more the tangible assets, the higher the long-term debt ratio but the smaller the total debt ratio. Booth *et al*. (2001) conclude that the debt ratio in developing countries seemed to be affected in the same way by the same types of variables that were significant in developed countries. However, they pointed out that the long-term debt ratios of those countries are considerably

lower than those of developed countries. This finding may indicate that the agency costs of debt are significantly large in developing countries or markets for long term debt are not effectively functioning in these countries.

Bevan and Danbolt (2002) who extend the work of Rajan and Zingales (1995) tested the determinants of capital structure in the UK non-financial firms by using four measures of financial leverage. They used non-equity liabilities to total assets, total debt to total assets, total debt to capital (where capital is defined as total debt plus common shares with preferred shares), and adjusted debt to adjusted capital.20 All the measures were regressed on market-to-book value, natural logarithm of sales (size), profitability, and tangibility of assets. They found that determinants of gearing were significantly changed with respect to each measure of debt used. With the same gearing definition as Rajan and Zingales, Bevan and Danbolt (2002) report similar results. However, they provide evidence suggesting that the determinants of gearing established by Rajan and Zingales are dependent on the definition of gearing used.
In their later paper, Bevan and Danbolt (2004) provide evidence suggesting that the relationship between leverage and its determinants is affected by the methodology used to analyse the sample data, specifically whether it controls for firm and time-specific heterogeneity or not. They found that there have been significant differences in the results of pooled data and panel data analysis. Bevan and Danbolt (2004) as Bevan and Danbolt (2002) use market-to book value, natural logarithm of sales (size), profitability, and tangibility of assets as determinants of capital structure. In addition to the time invariant and firm specific heterogeneity, the focus was on the variety of long - run and short run debts components rather than on the aggregate measures. They found that large firms use long and short term debt more than small ones. Tangibility is found to be positively related to both short and long-term debt, while profitability is found to be negatively related. However, they find that profitable firms tend to use short-term debt more than less profitable one. Strebulaev (2003) argued that even though a positive relation between profitability and the optimal leverage ratio can be expected, there is a negative relation between profitability and the actual leverage ratio. Because of transaction costs, firms do not rebalance their leverage ratios constantly; instead, they allow them to move within a range surrounding the optimal leverage ratios. Mesquita and Lara (2003) stated that the choice between the ideal proportion of debt and equity can affect the value of the company, as much as the return rates can. The results indicate that the return rates present a positive correlation with short-term debt and equity, and an inverse correlation with long-term debt. Azhagaiah and Premgeetha (2004) suggested that the rapid ability to acquire and dispose of debt provides the desired financial flexibility of firms with a goal for growth. The non-debt tax shield and growth rate are statistically significant, which means that these variables are the major determinants of the capital structure in India.

Chen (2004) suggested that some of the insights from the modern finance theory of capital structure are transferable to China in that certain firm-specific factors that are relevant for explaining capital structure in a developed economy are also relevant in China. The significant institutional differences of financial constraints in the banking sector in China are the factors influencing firms' leverage decision. Chen and Zhao (2004) suggested that dynamic tax considerations are unlikely to be the main reason for the negative relation between profitability and leverage either. Deesomsak (2004) suggested that the capital structure decision of firms is influenced by the environment in which they operate, and finds a significant but diverse impact on firms' capital structure decision. Loof (2004) found the ideas that the more unique a firm's asset, is the thinner the market is for such assets. Hence one may expect that uniqueness be negatively related to leverage. Voulgoaris, et al (2004) found that the profitability is one of the major determinants of capital structure for both small and medium enterprises and large scale enterprises size groups. However, efficient assets management and assets growth are found essential for the debt structure of large scale enterprises as opposed to efficiency of current assets , size, sales growth and high fixed assets, which were found to affect substantially the credibility of small and medium enterprises.

Huang and Song (2005) investigate the determinants of capital structure in Chinese market. They find that leverage (long-term debt ratio, total debt ratio, and total liability ratio) decreases with profitability, non-debt tax shield and managerial shareholdings, while it increases with firm size and tangibility. In addition, the tax rate positively affects long-term debt ratio and total debt ratio. Furthermore, they find a negative relationship between leverage and firm growth opportunities.

Hennessy and Whited (2005) argued that the dynamic tax considerations can also cause a negative relation between profitability and leverage ratios. Therefore, these firms are more likely to face internal fund-debt financing decisions. On the other hand, less profitable firms, due to lack of internal funds, are more likely to face the debt-equity financing

decisions, and show that debt financing is relatively less attractive in the debt-equity financing decision because of different tax rates. Therefore, a negative relation between profitability and leverage ratio can be induced when firms facing internal fund-debt and debt-equity decisions are mixed together. Chen and Zhao (2004) suggested that dynamic tax considerations are unlikely to be the main reason for the negative relation between profitability and leverage either.

According to Abor (2005) had performed an empirical study on the twenty two sampled firms which were listed in the Ghana and found short term debt has significantly positive relationship with ROE. He argues that short term debt to be less expensive leading to an increase in profit levels. The results also show profitability increases with size and sales growth. For long term debt, the result shows a significantly negative relationship. Thus, it implies that an increase in the long term debt is associated with decrease in profitability due to more expensive. For total debt, the result shows a significantly positive relationship. This implies that, an increase in the debt position is associated with an increase in profitability thus; the higher the debt will be the higher profitability.

Zeitun and Tian (2007), study of capital structure and corporate performance: evidence from Jordan using 167 Jordanian companies over fifteen year period shows that firm's capital structure was found to have significant negative impact on the firm's performance measures in both accounting, ROA and ROE.

Abor (2007) found significantly negative relationship between all the measures of capital structure and firm performance (ROA) in the case of Ghana. In the South African sample the result between short term debt and return on asset is statistically significant positive relationship. Thus, it indicates that short term debt is seemed to be relatively less costly. Hence, increasing short term debt is due to low interest rate and could result in high profit levels. For long term debt and total debt, the result show significantly negative association with ROA.

Ebaid (2009) examined the influence of capital structure on the performance of the firms in Egypt. The study employed three accounting measure (return on equity, return on assets, and gross profit margin) for the non-financial Egyptian listed firms. The study covered a time period of 1997 to 2005. Filtering of the firms returned 64 firms as a sample for this study. Using multivariate regression analysis the study reported that the selection of capital structure has no impact of the performance of the firms in Egypt.

Chakraborty (2010) employed two performance measures, including ratio of profit before interest, tax and depreciation to total assets and ratio of cash flows to total assets, and two leverage measures, including ratio of total borrowing to asset and ratio of total liability to sum total of liability and equity, and reported a negative relation between these ones.

Onaolapo and Kajola (2010) study of the impact of capital structure on firm's financial performance using sample of thirty non- financial firms listed on the Nigerian Stock Exchange during the seven- year period, 2001- 2007. The result shows that a firm's capital structure surrogated by Debt Ratio, DR has a significantly negative impact on the firm's financial measures (Return on Asset, ROA and Return on Equity, ROE). The study by these findings, indicate consistency with prior empirical studies and provide evidence in support of Agency cost theory.
Therefore, on the basis of the reviewed literature, the following research questions and hypotheses were analysed:

Research Questions

1. Do capital structure relate to the return of assets of quoted firms in Nigeria?
2. Do capital structure relate to the return on equity of quoted firms in Nigeria?

Research Hypotheses

The following hypothesis will be tested:

H1: There is no significant relationship between capital structure and return of assets of quoted firms in Nigeria.

H2: There is no significant relationship between capital structure and return on equity of quoted firms in Nigeria.

MATERIALS AND METHODS

This section provides information about the research design, source of data, population and sample selection, research variables, and model specification.

1. ***Research Design:*** The study used ex post facto research design. Two attributes of time element (2005-2011) and cross sectional element (thirty-two firms) qualify this as a panel study or cross sectional time series study.

2. **Sources of Data:** The data used in this study were sourced from the Annual Reports and Accounts of the various firms from 2005-2011. Historical details concerning the sampled firms were derived from the Nigerian Stock Exchange Fact Book from 2005-2011.

3. **Population and Sample Selection:** A total of one hundred and eighteen (118) companies quoted on the Nigerian Stock Exchange (NSE) represent the population of this study. The firms included in the sample were selected using simple random sampling technique to arrive at the thirty-two (32) firms selected from fifteen (15) sectors for the study.

Table 1: Research variables

Variable	Indicator	Measurement Level	Proxy	A priori expectation	Literature
Capital structure	Long term debt	Ratio	Long term debt/equity + debt	Negative	Ahmad et al (2012), Saeedi and Mahmoodi (2011) Mesquita and Lara (2003) and Abor (2005), Ebaid (2009)
Capital structure	Short term debt	Ratio	Short term debt/equity +debt	Negative	Ahmad et al (2012), Saeedi and Mahmoodi (2011) Mesquita and Lara (2003) and Abor (2005), Ebaid (2009)
Capital structure	Total debt	Ratio	Total debt /total asset	Negative	Gleason *et.al* (2000), Jermias (2008), Ahmad et al (2012), Saeedi and Mahmoodi (2011) Mesquita and Lara (2003) and Abor (2005). Ebaid (2009)
Performance	ROA	Ratio	Net profit/total asset		Mathur *et. al*

					(2001) and Abor (2007), Onaolapo and Kajola (2010), Gleason *et.al* (2000), Jermias (2008), Ahmad et al (2012), Saeedi and Mahmoodi (2011) Mesquita and Lara (2003) and Abor (2005). Ebaid (2009)
Performance	ROE	Ratio			Azhagaiah and Gavoury (2011), Gleason *et.al* (2000), Jermias (2008), Ahmad et al (2012), Saeedi and Mahmoodi (2011)
Control variables					
1.	Tangibility	Ratio	Total Gross Fixed asset/Total Asset	Positive	Bevan and Danbolt, (2004), Onaolapo and Kajola (2010),
2.	Liquidity	Ratio	Capital/total asset	Negative	
3.	Non tax shield	Ratio	Depreciation/Total asset	Negative	Ali et al., (2011)
4.	Efficiency	Ratio	Sales/Total asset	Positive	Ahmad et al (2012),

Source: adapted from several authors

Model Specification: Koutsoyianis (2003) Greene, (2002), Wooldridge, (2006); Asterious and Hall, (2007); Brooks (2008); Gujarati and Porter, (2009); Kozhan, (2010) report that model specification is the determination of the endogenous and exogenous variables to be included in the model as well as the a priori expectation about the sign and the size of the parameters of the function. Excel software helped us to transform the variables into format suitable for analysis, after which the econometric view (E-view) was used for data analysis. The ordinary least square was adopted for the purpose of hypothesis testing. The ordinary least square was guided by the following linear model:

$Y = f(X1, X2, X3, X4, X5, X6, X7)$ …… (1)
$ROA = f(STD, LTD, TD, TAN, LIQ, NDT, EFF)$ …..... (2)
$ROE = f((STD, LTD, TD, TAN, LIQ, NDT, EFF)$ …… (3)
$ROA = \beta_0 + \beta_1 STD_1 + \beta_2 LTD_2 + \beta_3 TD_3 + \beta_4 TAN_4 + \beta 5 LIQ5 + \beta 6 NDT6 + \beta 7 EFF7 + \varepsilon$…..... (4)
$ROE = \beta_0 + \beta_1 STD_1 + \beta_2 LTD_2 + \beta_3 TD_3 + \beta_4 TAN_4 + \beta 5 LIQ5 + \beta 6 NDT6 + \beta 7 EFF7 + \varepsilon$…..... (5)

Where: ROA =return on assets, ROE = return on equity, STD = short term debt, LTD = long term debt, TD = total debt, TAN = tangibility, LIQ = liquidity, NDT = non debt tax, EFF = efficiency, β1- β7 are the coefficients of the regression, while ε is the error term capturing other explanatory variables not explicitly included in the model.

RESULTS AND DISCUSSION

This section of the paper presents the results and discussion obtained from the secondary data obtained from the sampled quoted firm's (see appendix) financial reports for the period the study covered Nigeria.

Results for model four

Table 2: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	6.929189	Probability	0.121336
Obs*R-squared	13.34731	Probability	0.101264

Source: e-view output

Table two above shows the Breusch – Godfrey Serial Correlation LM test for the presence of auto correlation. The result reveals that the probability values of 0.12 (12%) and 0.10 (10%) is greater than the critical value of 0.05 (5%). This implies that there is no evidence for the presence of serial correlation.

Table 3: White Heteroskedasticity Test:

F-statistic	0.942165	Probability	0.496821
Obs*R-squared	9.519861	Probability	0.483577

Source: e-view output

Table three above shows the White Heteroskedasticity test for the presence of heteroskedasticity. The econometric result reveals that the probability values of 0.496 (50%) and 0.483 (48%) are considerably in excess of 0.05 (5%). Therefore, there is no evidence for the presence of heteroskedasticity in the model.

Table 4: Ramsey RESET Test:

F-statistic	0.067894	Probability	0.794795
Log likelihood ratio	0.071133	Probability	0.789695

Source: e-view output

Table four above shows the Ramsey RESET test for misspecification. The econometric result suggests that the probability values of 0.794 (79%) and 0.789 (79%) are in excess of the critical value of 0.05 (5%). Therefore, it can be seen that there is no apparent non-linearity in the regression equation and so it would be concluded that the linear model for the accounting services is appropriate.

Table 5: Augmented Dickey-Fuller Unit Root Test

Variable	ADF	1%	5%	Test for Unit root
ROA	-3.816986	-3.5864	-2.9842	I(0)
STD	-3.759500	-3.5864	-2.9842	I(0)
LTD	-4.792773	-3.5864	-2.9842	I(0)
TD	-3.105035	-3.5864	-2.9842	I(0)
TAN	-3.912048	-3.5864	-2.9842	I(0)
LIQ	-4.355909	-3.5864	-2.9842	I(0)
ND	-3.531538	-3.5864	-2.9842	I(0)
EFF	-3.847519	-3.5864	-2.9842	I(0)

Source: e-view output

Table five above shows the Augmented Dickey-Fuller unit root test for stationarity of the variables. The result suggests that ROA, STD, LTD, TD, TAN ND, LIQ, EFF with ADF of -3.816986, -3.759500, -4.792773, -3.105035, -4.355909, -3.912048, -3.847519 and -3.531538 is either less than 1% of -3.5864 or 5% of -2.9842. The result reveals that the variables are stationary at I(0). Therefore, pooled least square can be applied in the analysis of data when data is stationary at I(0) (Greene, 2002; Wooldridge, 2006; Asterious and Hall, 2007; Brooks 2008; Gujarati and Porter, 2009; Kozhan, 2010).

Table 6: Least Square

Dependent Variable: ROA
Method: Pooled Least Squares
Date: 07/07/11 Time: 19:20
Sample: 1 224
Included observations: 224

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.557195	0.684467	3.736036	0.0003
STD	-0.229324	0.083437	-2.748467	0.0068
LTD	-0.219431	0.097147	-2.258752	0.0089
TD	-0.185294	0.080908	-2.290181	0.0096
TAN	0.205913	0.075930	2.711879	0.0084
LIQ	-0.037549	0.080684	-0.465387	0.6424
ND	-0.005071	0.066366	-0.076412	0.9392
EFF	0.399857	0.159178	2.512012	0.0013
R-squared	0.432253	Mean dependent var		2.856209
Adjusted R-squared	0.384744	S.D. dependent var		0.969389
S.E. of regression	0.934269	Akaike info criterion		2.771076
Sum squared resid	123.9460	Schwarz criterion		2.988951
Log likelihood	-200.9873	F-statistic		5.164216
Durbin-Watson stat	2.192711	Prob(F-statistic)		0.000284

Source: eview program

Table six (6) shows the pooled multiple regression analysis for capital structure and firm performance of quoted firms in Nigeria. The result suggests that short term debt (STD) with a probability of 0.0068 is less than 0.05, that is (0.68%<5%) with a t-statistic of -2.74867, therefore, there is a significant negative relationship between short term debt and return on assets; long term debt (LTD) with a probability of 0.0034 is less than 0.05, that is (0894<5%) with a t-statistics of -2.258752 therefore, there is a negative significant relationship between long term debt (LTD) and return of assets; total debt (TD) with a probability of 0.0096 is less than 0.05, that is (0.96%<5%) with a t-statistics of -2.290181 ; therefore, there is a negative significant relationship between total debt and return on assets; tangibility (TAN)) with a probability of 0.0084 is less than 0.05, that is (0.84%<5%) with a t-statistics of 2.711879 therefore, there is a significant positive relationship between tangibility (TAN) and return on assets (ROA); liquidity (LIQ) with a probability of 0.6424 is greater than 0.05, that is (64%>5%) with a t-value of -0.465387, therefore there is no significant relationship between liquidity and return on assets; non debt tax (ND) with a probability of 0.9392 is greater than 0.05, that is (94%>5%) with a t-value of -0.076412, therefore there is a negative significant relationship between non debt tax and return on assets; efficiency (EFF) with a probability of 0.0013 is less than 0.05, that (0.13%,5%) with a t-value of 2.512012, therefore, there is a significant positive relationship between efficiency and return on assets. Hence, we deduce that there is a significant relationship between selected capital structure and return on assets.. The R^2 (coefficient of determination) of 0.43 and adjusted R^2 of 0.38 shows that the variables combined determines about 43% and 38% of changes in capital structure. It implies that about 57% and 62% of capital structure is not as a result of the variables in the model. The F-statistics and its probability shows that the regression equation is well formulated explaining that the relationship between the variables combined of capital structure and return on assets are statistically significant (F-stat = 5.164216; F-pro. = 0.000284). This result is consistent with the study conducted by Ahmad et al (2012), Saeedi and Mahmoodi (2011) Mesquita and

Lara (2003) and Abor (2005), Ebaid (2009), Bevan and Danboll (2004), Onalapo and Kajola (2010) that there is a significant relationship between capital structure and return on assets of firms.

Table 7: Pairwise Granger Causality Tests
Date: 01/07/13 Time: 18:43
Sample: 1 224
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
STD does not Granger Cause ROA	224	0.71026	0.00265
ROA does not Granger Cause STD		2.03826	0.15849
LTD does not Granger Cause ROA	224	0.56297	0.04595
ROA does not Granger Cause LTD		3.04915	0.08581
TD does not Granger Cause ROA	224	0.00286	0.04753
ROA does not Granger Cause TD		0.05943	0.80822
TAN does not Granger Cause ROA	224	1.63316	0.00611
ROA does not Granger Cause TAN		0.21490	0.64461
LIQ does not Granger Cause ROA	224	0.06984	0.02047
ROA does not Granger Cause LIQ		3.78473	0.05633
NTD does not Granger Cause ROA	224	0.01033	0.01939
ROA does not Granger Cause ND		2.00662	0.16187
EFF does not Granger Cause ROA	224	0.75292	0.03895
ROA does not Granger Cause EFF		0.21673	0.64320

Source: e-view output

Table seven (7) presents the econometric analysis of capital structure and the performance of quoted firms in Nigeria using Granger Causality test. The result suggests that short term debt (STD) granger cause return on assets (ROA) because the probability of 0.00264 is less than the critical value of 0.05, that is (0.00265<0.05), but return on asset (ROA) does not granger cause short term debt because the probability value is greater than the critical value of 0.05 (0.15849>0.05); long term debt (LTD) granger cause return on assets because the probability value of 0.04595 is less than the critical value of 0.05 (0.04595<0.05), but return on asset does not granger cause long term debt (LTD) because the probability is greater than critical value (0.08581>0.05); total debt granger cause return on assets because the probability value is less than the critical value (0.00611<0.05), but return on assets does not granger cause total debt because probability is greater than critical value (0.80822>0.05); tangibility (TAN) granger cause return on assets (ROA) because the probability of 0.00611 is less than the critical value of 0.05, that is (0.00611<0.05), but return on asset (ROA) does not granger cause tangibility (TAN) because the probability value is greater than the critical value of 0.05 (0.64461>0.05); liquidity (LIQ) granger cause return on assets because the probability value of 0.02047 is less than the critical value of 0.05 (0.02047<0.05), but return on asset does not granger cause liquidity (LIQ) because the probability is greater than critical value (0.05633>0.05); non tax debt (NTD) granger cause return on assets because the probability value is less than the critical value (0.01939<0.05), but return on assets does not granger cause liquidity because probability is greater than critical value (0.16187>0.05); and efficiency (EFF) granger cause return of assets because the probability value is less than the critical value 0.03895 and return on assets (ROA) does not granger cause efficiency. Therefore, the Granger Causality analysis suggests that the capital structure affects the performance of quoted firms. This result is consistent with the multiple regression output that capital structure variables are statistically significant with performance.

Results for model five

Table 8: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	6.929189	Probability	0.121336
Obs*R-squared	13.34731	Probability	0.101264

Source: e-view output

Table eight above shows the Breusch – Godfrey Serial Correlation LM test for the presence of auto correlation. The result reveals that the probability values of 0.12 (12%) and 0.10 (10%) is greater than the critical value of 0.05 (5%). This implies that there is no evidence for the presence of serial correlation.

Table 9: White Heteroskedasticity Test:

F-statistic	0.942165	Probability	0.496821
Obs*R-squared	9.519861	Probability	0.483577

Source: e-view output

Table nine above shows the White Heteroskedasticity test for the presence of heteroskedasticity. The econometric result reveals that the probability values of 0.496 (50%) and 0.483 (48%) are considerably in excess of 0.05 (5%). Therefore, there is no evidence for the presence of heteroskedasticity in the model.

Table 10: Ramsey RESET Test:

F-statistic	0.067894	Probability	0.794795
Log likelihood ratio	0.071133	Probability	0.789695

Source: e-view output

Table four above shows the Ramsey RESET test for misspecification. The econometric result suggests that the probability values of 0.794 (79%) and 0.789 (79%) are in excess of the critical value of 0.05 (5%). Therefore, it can be seen that there is no apparent non-linearity in the regression equation and so it would be concluded that the linear model for the accounting services is appropriate.

Table 11: Augmented Dickey-Fuller Unit Root Test

Variable	ADF	1%	5%	Test for Unit root
ROE	-3.816986	-3.5864	-2.9842	I(0)
STD	-3.759500	-3.5864	-2.9842	I(0)
LTD	-4.792773	-3.5864	-2.9842	I(0)
NTD	-3.105035	-3.5864	-2.9842	I(0)
TAN	-3.912048	-3.5864	-2.9842	I(0)
LIQ	-4.355909	-3.5864	-2.9842	I(0)
ND	-3.531538	-3.5864	-2.9842	I(0)
EFF	-3.847519	-3.5864	-2.9842	I(0)

Source: e-view output

Table eleven above shows the Augmented Dickey-Fuller unit root test for stationarity of the variables. The result suggests that ROA, STD, LTD, NTD, TAN ND, LIQ, EFF with ADF of -3.816986, -3.759500, -4.792773, -3.105035,

-4.355909, -3.912048, -3.847519 and -3.531538 is either less than 1% of -3.5864 or 5% of -2.9842. The result reveals that the variables are stationary at I(0). Therefore, pooled least square can be applied in the analysis of data when data is stationary at I(0).

Table 12:

Dependent Variable: ROE
Method: Pooled Least Squares
Date: 07/07/11 Time: 19:20
Sample: 1 224
Included observations: 224

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.557195	0.684467	3.736036	0.0003
STD	-0.229324	0.083437	-2.748467	0.0068
LTD	-0.219431	0.097147	-2.258752	0.0089
NTD	-0.185294	0.080908	-2.290181	0.0096
TAN	0.205913	0.075930	2.711879	0.0084
LIQ	-0.037549	0.080684	-0.465387	0.6424
ND	-0.005071	0.066366	-0.076412	0.9392
EFF	0.399857	0.159178	2.512012	0.0013
R-squared	0.432253	Mean dependent var		2.856209
Adjusted R-squared	0.384744	S.D. dependent var		0.969389
S.E. of regression	0.934269	Akaike info criterion		2.771076
Sum squared resid	123.9460	Schwarz criterion		2.988951
Log likelihood	-200.9873	F-statistic		5.164216
Durbin-Watson stat	2.192711	Prob(F-statistic)		0.000284

Source: eview program

Table six (6) shows the pooled multiple regression analysis for capital structure and firm performance of quoted firms in Nigeria. The result suggests that short term debt (STD) with a probability of 0.0068 is less than 0.05, that is (0.68%<5%) with a t-statistic of -2.74867, therefore, there is a significant negative relationship between short term debt and return on assets; long term debt (LTD) with a probability of 0.0034 is less than 0.05, that is (0894<5%) with a t-statistics of -2.258752 therefore, there is a negative significant relationship between long term debt (LTD) and return of assets; total debt (TD) with a probability of 0.0096 is less than 0.05, that is (0.96%<5%) with a t-statistics of -2.290181 ; therefore, there is a negative significant relationship between total debt and return on assets; tangibility (TAN)) with a probability of 0.0084 is less than 0.05, that is (0.84%<5%) with a t-statistics of 2.711879 therefore, there is a significant positive relationship between tangibility (TAN) and return on assets (ROA); liquidity (LIQ) with a probability of 0.6424 is greater than 0.05, that is (64%>5%) with a t-value of -0.465387, therefore there is no significant relationship between liquidity and return on assets; non debt tax (ND) with a probability of 0.9392 is greater than 0.05, that is (94%>5%) with a t-value of -0.076412, therefore there is a negative significant relationship between non debt tax and return on assets; efficiency (EFF) with a probability of 0.0013 is less than 0.05, that (0.13%,5%) with a t-value of 2.512012, therefore, there is a significant positive relationship between efficiency and return on assets. Hence, we deduce that there is a significant relationship between selected capital structure and return on assets.. The R^2 (coefficient of determination) of 0.43 and adjusted R^2 of 0.38 shows that the variables combined determines about 43% and 38% of changes in capital structure. It implies that about 57% and 62% of capital structure is not as a result of the variables in the model. The F-statistics and its probability shows

that the regression equation is well formulated explaining that the relationship between the variables combined of capital structure and return on assets are statistically significant (F-stat = 5.164216; F-pro. = 0.000284). This result is consistent with the study conducted by Ahmad et al (2012), Saeedi and Mahmoodi (2011) Mesquita and Lara (2003) and Abor (2005), Ebaid (2009), Bevan and Danboll (2004), Onalapo and Kajola (2010) that there is a significant relationship between capital structure and return on assets of firms.

Table 13: Pairwise Granger Causality Tests
Date: 01/07/13 Time: 18:43
Sample: 1 224
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Probability
STD does not Granger Cause ROE	224	0.71826	0.00282
ROE does not Granger Cause STD		2.53826	0.16840
LTD does not Granger Cause ROE	224	0.51237	0.02595
ROE does not Granger Cause LTD		3.04915	0.09581
TD does not Granger Cause ROE	224	0.00286	0.03847
ROE does not Granger Cause NTD		0.05943	0.12528
TAN does not Granger Cause ROE	224	1.63316	0.04173
ROE does not Granger Cause TAN		0.21490	0.64461
LIQ does not Granger Cause ROE	2244	0.04984	0.02647
ROE does not Granger Cause LI		3.78473	0.06438
NTD does not Granger Cause ROE	222	0.01033	0.03029
ROE does not Granger Cause ND		2.00662	0.11874
EFF does not Granger Cause ROE	224	0.75292	0.03895
ROE does not Granger Cause EFF		0.21673	0.45320

Source: e-view

Table thirteen (13) presents the econometric analysis of capital structure and the performance of quoted firms in Nigeria using Granger Causality test. The result suggests that short term debt (STD) granger cause return on equity (ROE) because the probability of 0.00282 is less than the critical value of 0.05, that is (0.00282<0.05), but return on equity (ROE) does not granger cause short term debt because the probability value is greater than the critical value of 0.05 (0.16840>0.05); long term debt (LTD) granger cause return on equity because the probability value of 0.02595 is less than the critical value of 0.05 (0.02595<0.05), but return on equity does not granger cause long term debt (LTD) because the probability is greater than critical value (0.09581>0.05); total debt (TD) granger cause return on assets because the probability value is less than the critical value (0.03347<0.05), but return on equity does not granger cause total debt because probability is greater than critical value (0.12528>0.05); tangibility (TAN) granger cause return on equity (ROE) because the probability of 0.04173 is less than the critical value of 0.05, that is (0.04173<0.05), but return on equity (ROE) does not granger cause tangibility (TAN) because the probability value is greater than the critical value of 0.05 (0.64461>0.05); liquidity (LIQ) granger cause return on equity because the probability value of 0.02647 is less than the critical value of 0.05 (0.02647<0.05), but return on equity does not granger cause liquidity (LIQ) because the probability is greater than critical value (0.06438>0.05); non debt tax granger cause return on equity because the probability value is less than the critical value (0.01939<0.05), but return on equity (ROE) does not granger cause non tax debt because probability is greater than critical value (0.11874>0.05); and efficiency (EFF) granger cause return of equity because the probability value is less than the critical value 0.03895 and return on equity (ROE) does not granger cause efficiency. Therefore, the Granger Causality analysis suggests that the capital structure

affects the performance of quoted firms. This result is consistent with the multiple regression output that capital structure variables are statistically significant with performance.

CONCLUSION AND RECOMMENDATIONS

The study examined the impact of capital structure on the performance of quoted firms in Nigeria. The review of literature provides strong theoretical and empirical evidence of the relationship between capital structure and the performance of firms. Our research empirically substantiated the results of prior studies of the relationship between capital structure variables measured using short term debt, long term debt and total debt and some control variables (tangibility, liquidity, efficiency and non tax debt). The empirical analysis provided a linkage between short term debt, long term debt and total debt and the performance of quoted firms. On the basis of the empirical result, the paper concludes that capital structure of a firm determine the level of corporate performance taking into consideration the dynamic nature of the business environment. On the basis of the conclusion, the paper recommends that firms should use an optimal capital structure, listed firms in Nigeria should employ an appropriate capital structure model that meets the corporate long term survival and growth, An optimal capital structure includes the best mix of debt and equity that maximize shareholders wealth; also the study gives a better picture to show the importance of capital structure in influencing firm operating performance from shareholders' perspective (ROE) even though higher use of debt significantly increase the performance from the total firms perspective (ROA). The paper suggests that future research on capital structure and operating performance using comparative analysis of listed firms in the various sectors.

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APPENDIX

Sampled Firms based on Sector Classification

1. **Construction and Allied Sector**
   Julius berger Nig plc
   Cappa and D'alberto plc
   Roads Nig plc

2. **Conglomerates Sector**
   A J Leventis Nig. Plc
   SCOA Nig plc
   UAC of Nig plc
   Unilever Nig plc
   PZ cussons Nig plc
   Nestle Nigeria Plc
   John Holt Plc

3. **Petroleum Marketing Sector**
   Mobil oil Nig plc
   Cheveron oil Nig plc
   Total Nig plc
   Conoil plc
   Oando plc

4. **Breweries Sector**
   Guiness Nig plc
   Nigerian breweries plc
   Jos international breweries plc
   International breweries plc

5. **Food Beverages and Tobacco Sector**
   Cadbury Nig plc
   Nestle Nig plc
   Nigerian bottling company plc
   7-up bottling co. plc
6. **Health Care**
   Fidson Health Plc
   Evans Medical Plc
   Glaxo Smithline Consumer Nig. Plc
7. **Building Materials**
   Ashaka Cement Plc
   Berger Paints Plc
   Cement Company of Northern Nigeria Plc
   Portland Paints and Products Nigeria
8. **Food Products**
   Flour mills Nig. PLC
   UTC Nig. PLC