Capital Structure And Performance Of Manufacturing Firms In Nigeria

Makwe, Emmanuel Uzoma (Ph.D)

Department of Finance and Banking, Faculty of Management Sciences, University of Port Harcourt, Rivers State, Nigeria

Oladele, Akeeb Olushola

Department of Economics, Faculty of Social Sciences, School of Graduate Studies, University of Port Harcourt, Rivers State, Nigeria

Obiaga, Johnson Chinedu (Ph.D)

Department of Accounting and Finance, Faculty of Humanities, Social and Management Sciences, Edwin Clark University, Kiagbodo, Delta State, Nigeria

Ibechiole, Onyekachi Chikamnele

Department of Banking and Finance, Faculty of Management Sciences, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

Abstract: This study examined capital structure and firms performance using selected manufacturing firms quoted in the Nigerian Stock Exchange. To achieve the objectives of this study, four hypotheses were proposed which formed the basis for collection and analysis of the data used in this work. The Auto Regressive Distribution Lag analysis and the Bond Test were conducted on the data obtained from the Nigerian Stock Exchange to determine the short run and long run relationship which existed between the independent and dependent variable, and the result of the analysis revealed that a significant relationship exist between the dimensions of the independent variables and the measured of the dependent variable, however the analysis also revealed that there is a negative relationship between debt financing and return on assets and return on investment and a positive relationship between equity financing and return on assets and return on investment of the quoted manufacturing firms under studied. Based on the finding, the following recommendations were proffered; every policy to reduce debt financing by the management of the firms must be pursued vigorously, because reduction in debt financing will increase the returns on investments and assets; Increased in equity financing has a positive and significant relationship with return on assets and return on investment, therefore, management of these firms should make every effort to increase equity capital structures so as to increase the return on assets and return on investment of the firms; in building the capital structure of the manufacturing firms, there should be more mix of equity financing and less use of debt financing so as to increase the potential profits of the firms overtime.

Keywords: Capital Structure; Firm Performance; Equity Financing; Debt Financing; Return on Assets; Return on Investment

I. INTRODUCTION

A. OVERVIEW

Financial performance refers to the degree to which a company has achieved its financial objectives and plays an important role in measuring the company successes (Erasmus 2008). Financial performance can be judged by variables such productivity, profitability, increase or even the satisfaction of consumers (Tian & Zeitun, 2007).

A corporation needs capital to pursue its goals, whether private or public. Capital structure is the financial framework of a company consisting of the debt and capital utilized for financing the company. Financially, the structure of capital means how companies finance their assets by mixing equity, debt or hybrid securities (Saad, 2010). The structure of capital

is the way a company finances its operation via debt or equity or combined (Brigham & Ehrhardt, 2011).

Companies in Nigeria seek to ensure optimal combination and maximizing of shareholder wealth across different sources of loan and equity financing, and reduce the overall weighted average cost of capital. This implies that the structure of capital can alter corporate value (hence performance). The Modigliani and Miller's suggestion in 1958 and 1963 is that the various combinations of debt and equity (capital structure) do not have any effect on the company's worth. Therefore, in the absence of Modigliani Miller's premise, other research were carried out to examine the ideal capital structure.

The theories of capital structure function in perfect conditions on the market according to Modigliani and Miller's theorem. Different perfect market assumptions, including absence of taxes, rational investment, perfect competition, lack of bankruptcy costs, and efficient market have been identified and included. The theory says that an organization's capital structure is not linked to its value in the ideal market. Actually, an organization's capital structure cannot be easily defined (Ogbulu & Emeni, 2012). The appropriate capital structure is hard for financial managers to decide.

Here we are concerned with whether the financing of investment plans is important and, if so, what is the appropriate capital structure. Does the company's worth depend on financing from one mix of securities instead than another? The aim of this study is to define the structure of capital as the interaction between long-term debt, preferred share and net capital (ordinary share capital plus reserves and surplus).

B. STATEMENT OF THE PROBLEM

A firm has to issue various securities in countless mixture to come across particular combinations that can maximize its overall value. In Nigeria, investors and stake holders do not look in details the effect of capital structure in measuring their firms' performance as they assume that attribution of capital structure is not related or does not contribute to the performance of a firm.

The effect of capital structure on firms performance has been subject to lots of arguments, several attempts have been made to discover which of the theories best reflects the financial decision of firms. For instance, In Nigeria, attempts have being made to research in this field as seen in the work of Eboh (2004), Adesola (2011), Akintoye (2008), Onalapo & Kokoto (2010) and many others.

Shareholders are always desirous to maximize their expected utility and to realize the desired results, firms need to plan for an optimum capital structure, this is so because, it is the optimum capital structure that maximizes the value of the firms. However, despite the efforts made by financial manager to maximize owners' expected value in term of their financing decisions, there remains a problem on how best these expected utilities can be attained optimally.

Despite many researchers having conducted studies on capital structure and firm performance of manufacturing companies, there has been no consensus on the relationship between corporate capital structure and the firm performance of manufacturing companies in Nigeria. It is against this

backdrop that this study seeks to examine the relationship between capital structure and firm performance of manufacturing companies in Nigeria.

C. OBJECTIVES OF THE STUDY

The general objective of the study is to examine the relationship between capital structure and the performance of firms in the Nigerian Manufacturing Industry.
The specific objectives include;
- ✓ To examine the effect of equity financing on return on assets of quoted manufacturing firms in Nigeria.
- ✓ To determine the effect of equity financing on return on investment of quoted manufacturing firms in Nigeria.
- ✓ To investigate the effect of debt financing on return on assets of quoted manufacturing firms in Nigeria.
- ✓ Examine the effect of debt financing on return on investment of quoted manufacturing firms in Nigeria.

II. SYNOPSIS OF CONCEPTUAL, THEORETICAL AND EMPIRICAL LITERATURE

A. CONCEPTUAL FRAMEWORK

a. CONCEPT OF CAPITAL STRUCTURE

Capital structure means the nature and proportion of the parts that form the capital invested in an enterprise. They relate to the continued funding of companies with preferred stock and net value of long-term debt. Capital structure may also include a mix of long-term financial sources such as debentures, long-term debt, share capital preference and equity capital, including reserves and excesses; (i.e. retain earnings).

The finance manager should theoretically plan for his organization an optimal capital structure. When the market value per share is maximized, the optimal capital structure is achieved. There are considerable changes in capital structure between industries and enterprises in an industry. Because several factors have a bearing on a company's capital structure decision, it is important to judge the individual who decides on the capital structure. If decision-makers differ in their assessment of the importance of various criteria, two similar companies can have distinct capital structures. Perhaps all those aspects that affect the decision on the capital structure cannot be dealt with appropriately by a fully theoretical model. These are extremely psychological, complicated, and qualitative elements and not always theory that has been accepted because capital markets are not flawless and the decision must be decided under imperfect knowledge and risk.

When a company is incorporated, the capital structure will originally be anticipated to be extremely carefully developed. The company's management should establish a target capital structure and then decide on the financing to accomplish the target capital structure. The financial manager also has a current capital structure to cope with. The company need funding to constantly finance its operations. Financial manager weighs the pros and disadvantages of different financial sources every time the funds are procured and selects the best resources in the light of the target capital structure.

So, the decision on the capital structure is on-going and must be addressed whenever a company needs additional resources.

✓ *EQUITY FINANCE:* Equity is the variance amid the asset/interest value and the liability cost of a property. In accounting, shareholder equity (stock holders, shareholder fund, shareholder capital or the like) is a stake of a corporation devised amongst common or preferred stock stockholders (Khalaf, 2013).The shareholders who deal with the general public are the lowest-priced risk bearers. Equity of the owners is the net asset that is the differential between the company's entire assets and all its obligations in financial accounting.

Capital generally appears as one of the four key financial statements of the financial situation. In tangible and intangible objects the assets of an entity are possible. Items like brand names, copying rights or goodwill include intangible assets. Land, equipment and currency are tangible assets (Akinsulire, 2014). Equity, after deducting all liabilities, is the residual interest in the company's assets. It was the investments the company owners have made in a company. It shows what the company owes its owners. It reflects the capital left in the company after the company's assets have been used to disburse any outstanding liabilities. In case of the insolvency of a company, the owners take home (Erasmus, 2008).

In the value of an item or group of assets, equity is the owners' worth, which is sometimes referred to as the value of the investments of the owners. This is added to the firm's overall income, which gives the total value of the company.

✓ *DEBT FINANCE:* This is when a firm borrows money to be repaid with interest on a future date. thus known as debt financing. It can be both a secured and an unsecured loan. A company accepts a loan to finance either a working or an acquisition capital (Akinlo, 2011). Debt finance can however come in form of short time debt or longtime debt. Debt finance can therefore be source in the following ways;

✓ Loans.
✓ Installment Purchase.
✓ Asset Based Lenders.
✓ Bonds.
✓ Factoring.
✓ Insurance Companies.

b. CONCEPT OF FIRM PERFORMANCE

The company's performance involves the corporate functionality including the production of products and services, the working of different business units, the performance of its staff and the results of its work (Babalola, 2012). A good-performing company can provide additional returns that can in turn create jobs and enhance people's wealth, deliver better products or services to customers and build greater goodwill in the operating environment (Mubeen & Kalsoom, 2014).

It is also vital to note that the performance of the company is an important metric for investors and stakeholders and also monetarily. What is indicated here is that the performance of companies indicates the value of the company or not. Investors are, for instance, prepared to invest money in companies with a successful marketing performance, but poor marketing performance is evidence of business development challenges for companies. As a consequence investors avoid investing in under performing companies because they are unsure of returns on investment and because these investments are associated with significant risks.

✓ *Dimensions and Sample Indicators for Firms Performance*

Current study on the relationship between the structure of capital and financial performance utilizes numerous methodologies to measure financial performance of companies. Earlier studies on financial performance of companies examined firm performance via financial performance measurement procedures based on accounting or market-based measurement methods. Accounting measurements include: return on assets (ROA), return on assets (ROE), return on investment return (ROI) and Tobin's Q. These performance indicators are most widely utilized.

The most commonly utilized is accounting-based performance measurement. The studies of Abbasali, Esfandiar, Milad and Mohammed (2012), Babelola (2012), Muhammad, Zaighum, Muhammad, Osuji and Odita (2012), Khalaf (2013), Raheel, Shahnaz, Bashir and Umara have been commonly reported on: Return on assets (ROA) (2013). However, only returns on assets (ROA) and return on investment were used in this research (ROI).

B. THEORETICAL FRAMEWORK

a. THE NET OPERATING INCOME APPROACH

This work was based on the approach for net operating income. Under the Net Operation Income (NOI) approach, capital structure changes do not influence the company's market value. The market value of the company is determined by capitalizing on the net operating income in total or on the weighted average capital cost (Kd), which is constant. The market worth of Company V is as follows.

$$V = (STD) = \frac{NOI}{KOKD} = \underline{X}$$

Ko is the overall rate of capitalization and depends on the company's business risk. The financial mix is independent. If NOI and KO are not financially combined, V will remain constant, irrespective of changes in the structure of the capital. NOI method essential assumptions are:-

✓ The entire worth of the enterprise is capitalized on the market. Therefore, no significant division between debt and equity.
✓ The total capitalization rte is used by the market. KD is supposed to be steady in order to capitalize on net operating income (NIO), Kd is a constant dependent on the company risk.
✓ The utilization for shareholders of lower-cost debt funds increases risk. This results in an increase in the rate of equity capitalization. The benefit of debt, therefore, is precisely compensated by a rise in the capitalization rate Ke.
✓ Kd is a continuous debt capitalization rate.

✓ There are no corporate revenue taxes. In short, the weighted average capital cost remains unchanged and the company's overall value remains constant when its leverage changes.

C. EMPIRICAL REVIEW

Dare and Sola (2010), conducted a study to examine the relationship between capital structure and corporate performance in Nigeria petroleum industry. The study used the random-effect estimate, the random-effect estimate and the highest probability estimate. The investigation showed that the earnings per share and the levy ratio had a positive association, and that the dividend per share and leverage ratio had a favorable relationship.

Iwarere and Akinleye (2010), adopted the descriptive survey to examine capital structure determinants in the Nigerian banking industry. As a key component in assessing suitable debt financing for the bank, the results of the study found credit ratings, volatility of cash flow, financial distresses, transaction costs and financing flexibility.

Omorogie and Erah (2010) conducted a study on capital structure and corporate performance in Nigeria between the periods 1995 and 2009, using Ordinary Least Square (OLS) techniques of model estimation. The conclusion showed that the capital structure did not provide adequate financing for corporate growth and development.

Akinlo (2011), studied the determinants of capital structure of 66 firms listed on the Nigerian stock exchange within the period of 1997 to 2007 using panel data. The results from the empirical investigation showed that there is a negative link between the opportunities for leveraging and growth while the reading of leverage and the size of the business are negatively connected.

Akinleye (2012), employed panel data in investigate the speed of adjustment towards the target capital structure by Nigerian listed firms. The results of the investigation revealed that companies are adjusting to moderate speed target leverage with an average book leverage life of 3.9 years.

Babalola (2012), studied the effects of optimal capital structure on firms' performance in Nigeria using the ordinary least square method of analysis. The conclusion of his study showed that the optimal capital structure in the theory of trade-offs is related to the optimal capital structure of production companies.

Michael (2012), conducted a study on capital structure determinant of quoted firms in Nigeria and lessons for corporate financing decisions, in which he made use of regression analysis to analyse the data retrieved from Nigeria stock exchange fact book. Analysis showed that the equity cost, the existence of the debt tax shield, covenant restrictions in debt agreements, firm dividend policy, the equity structure or mix of competitors and profitability have been positive determinants of the capital structure and also linked negativity to the debt cost.

Ogbulu and Emeni (2012), carried out an empirical study on the determinants of corporate capital structure in Nigeria employing the ordinary least-square method of analysis as well as the cross sectional survey; from the outcome, it was revealed that firm size has a negative and significant influence on capital structure

Olokoyo (2012) investigated the relationship between capital structure and corporate performance of quoted firms in Nigeria. The investigator used the panel data approach, which included an estimate of the fixed effect, random effect and a grouped regression model. This showed that the maturity structure of debts has a strong direct effect on the performance of companies and that the size of the company has a considerable favorable effect on Nigerian business performance.

Tinusa and Babalola (2012), adopted the panel data methodology to study the impact of corporate governance on capital structure decision of Nigeria firms. The study concluded that the major effects on the financial decisions of a company are corporate governance.

Ugwunta , Ani , Ugwuanyi and Ugwu (2012), carried out a study the structure of Nigerian banking sector and bank performance. They used overall deposit, deposit concentration, the ratio of demand deposits to overall bank deposit, the ratio of foreign assets to total assets, and the number of banks as explanatory factors, while the profitability measurement variable is utilized as a Return on Assets (ROA). The methodology employed for the regression was used to analyze the information and it was shown that the Nigerian banking sector is oligopolistic in structure.

Onwumere, Onudugo and Imo (2013), studied the relationship between financial structure and economic growth in Nigeria using regression analysis. The study has demonstrated a good and considerable effect on economic growth in Nigeria on the overall financial structure. The study also found that the bank and capital markets have more impact on economic growth, while the insurance industry has shown that its effect on economic growth is minor.

Patrick, Joseph and Kemi (2013), conducted a study on the impact of capital structure on firms performance in Nigeria adopting the fixed effect regression estimation model as their tool of analysis. The results show that over the ten years analyzed a positive association is established between the return on investment and the leverage of the company. Their findings therefore confirm the standard capital structure theory which claims that leverage is a major predictor of company success.

Mustafa and Osama (2013) In investigating the impact of the structure of capitals and business performance on 76 Jordanian enterprises for the period 2001-2006, Jordon provided evidence that the capital structure was negatively and statistically associated to the company's performance using the multiple regression model represented by Ordinary Least Square (OLS). Their analysis also shown that the performance effect of gear is insignificant in highly geared and low geared companies.

Mubeen and Kalsoom (2014) assessed 155 companies in the Pakistan Textile Sector and concluded that the influence of capital structure on financial performance and wealth sampling on shareholders had a beneficial impact on financial performance of the companies and on the shareholder wealth.

Nirajini and Priya (2013) also investigate the impact of capital structure on financial performance. The study used correlation and analysis of multiple regressions. The findings

demonstrate a favorable link between capital structure and financial performance and a significant impact on performance on capital structure.

D. RESEARCH HYPOTHESES

Ho1: There is no significant relationship between equity financing and return on assets of quoted manufacturing firms in Nigeria.

Ho2: There is no significant relationship between equity financing and return on investment of quoted manufacturing firms in Nigeria.

Ho3: There is no significant relationship between debt financing and return on assets of quoted manufacturing firms in Nigeria.

Ho4: There is no significant relationship between debt financing and return on investment of quoted manufacturing firms in Nigeria.

III. METHODOLOGY

The study adopted the *ex-post facto* design. This is adopted because the data for this study already exists on the financial reports of the manufacturing firms used. More so, the time series data involved have dependent and independent variables. The researcher focused majorly on the Nigerian Manufacturing Companies that are listed on the Nigeria Stock Exchange (NSE) which comprises of two hundred and thirty nine firms (239) and it covered the years 2009 – 2019.

Initially, the researchers picked all of the publicly cited companies consisting of 239 firms in total from 32 subsectors. They then removed firms that have not been updated and (31 companies) from the service sector which have been categorized as financial institutions or which have financing enterprises in nature (95 firms). The final sample size of the total of 239 companies in 32 sub-sectors listed on the Nigerian stock exchange (NSE) market consists of a balanced panel of data from 10 manufacturing firms in 16 sub-sectors from 10 manufacturing firms over a 10-year period.

A. MODELS SPECIFICATIONS

The analysis was based on multiple linear regression models. Therefore, the models used for the purpose of this study are stated below:

Functional forms of the models are stated:

$EQT_t = f(ROA_t, ROI_t)$ ....equ(1)

$DBT_t = f(ROA_t, ROI_t)$ ....equ(1)

These are further stated in econometric forms below:

$EQT_t = b_0 + b_1 ROA_t + b_2 ROI_t + U_i$ ……………equ(2)

$DBT_t = b_0 + b_1 ROA_t + b_2 ROI_t + U_i$ ……………equ(2)

Apriori expectations: Model I: $b_1 - b_2 > 0$; Model I: $b_1 - b_2 < 0$

Where:

Dependent Variables are:

EQT = Equity of the firms

DBT = Debt of the firms

Independent Variables are:

ROA – Return on Assets

ROI – Return on Investments

U is the stochastic term that captures all the other variables not included in the models.

B. METHOD OF DATA ANALYSIS

The study used three econometric models to obtain the empirical results, following the lead of comparable studies. The initial econometric model looked at the control panel, followed by the variable stationary by utilizing the Dickey and Fuller Augmented Dickey-Fuller (ADF), panel root tests (1979, 1981). By employing co-integration tests, the third econometric model investigated long-term relationships between variables.

✓ *PANEL REGRESSION*

The standard regression outputs were estimated in two sections which included the Coefficient Results and the Summary Statistics:

✓ *FIXED EFFECTS*

The fixed effects focused on whether there are differences by using a fixed intercept for each of the different cross-sectional structures. If we assume that the dummy variable for a manufacturing firm is either 1 or 0, then D_i, which is the dummy variable for firm i, can be expressed as:

$$D_i = \begin{cases} l, & j-1 \\ 0, & otherwise \end{cases} \quad D_2 = \begin{cases} l, & j-2 \\ 0, & otherwise \end{cases} \cdots D_N = \begin{cases} l, & j-1 \\ 0, & otherwise \end{cases} \ldots\ldots(3)$$

The regression of total samples can be expressed as:[1]

$$Y_{it} = \sum_{j=1}^{N} \beta_{oj} D_j + \beta_i D_s + \beta_2 D_{ma} + \beta_3 s_1 + \beta_{oj} D_4 s_2 + \varepsilon_{it} \ldots\ldots(4)$$

The dummy variables are expressed as follows: if $j = i$, then $Dj = 1$; otherwise $Dj = 0$.[2]

Because the fixed effects account for both cross-sectional and time-series data, the increased covariance caused by individual-firms differences is eliminated, thereby increasing estimation-result efficiency.

✓ *RANDOM EFFECTS*

Focused on the relationship with the study sample as a whole; thus, the samples are randomly selected, as opposed to using the entire population.

✓ *HAUSMAN TEST*

The Hausman test is the most popular method of evaluation for fixed and random effects (Yair Mundlak 1978). Where variables are correlated statistically, the estimation of fixed effects is consistent and effective, whereas the estimation of the random effects is non-consistent and the model of fixed effects should be taken. On the contrary, if the variables are statistically unrelated, the estimation is consistent and effective for random effects, whereas the estimation for fixed effects is consistent but ineffective, and the model should be used.

Hausman test has been used to decide between fixed effects and random effect models. House-man test statistics, which compute that it is possible to distinguish whether the difficulties between the sectional units are fixed or random; (explanatory).

✓ *PANEL UNIT ROOT TEST*

The stationarity of time series was used in this study to evaluate unit root attributes of the time series. The decision is to reject the null hypothesis if the ADF test statistic is absolutely higher than the Mackinnos Critical Values at 1%, 5% and 10% level of significance. Augmented Dickey Fuller

(ADF) test might be estimated from the following forms of equations, based on the following regression equation:

$$\Delta Y_t = \alpha + \beta T + \delta Y_{t-1} + \gamma_i \Delta Y_{t-i} + \varepsilon_t$$

Hypothesis:

H_0: $\beta > 0$ (there is unit root in the series).

H_1: $\beta_0 - \beta_1 < 0$ (the series are stationary)

The hypothesis will be tested on the basis of t-statistic of the coefficient

Decision rule: Reject H_0 if test statistic is greater than critical values, otherwise do not reject.

✓ *PANEL CO-INTEGRATION*

The survey was based on the Panel Co-Integration Rank Test, used as a precondition to model with the vector error correction model, to determine how the variables are co-integrated into each model. It says there needs to be a connection of co-integration. The cointegration test is used to determine the presence of a long-term balance between two variables and is expressed as;

$$Y_t = \mu + T\, Y_{t-1} + \mathcal{E}_t$$

$$\Delta x_t = k_{X-1}\ i{=}1\ \Gamma i \Delta x_{t-i} + \Pi x_{t-1} + \mu 0 + \Psi D t + \varepsilon t.$$

Decision rule: Accept H_0: (there is no significant co integration relationship) if t-statistic is greater than asymptotic critical - value or if the p − value is below the significance level, otherwise accept H_1: (there is significant co integration relationship) if test statistic is less than the asymptotic critical values or if the p- value is greater than the level of significance.

✓ *ANALYTICAL SOFTWARE*

For the purpose of this researcher, the researcher used the E-views 10.0 version software to analyze the data.

IV. ANALYSIS AND RESULTS

The descriptive statistics specifies the mean, median, standard deviation, skweness, kurtosis and normality of the table. For the model I, the descriptive statistics showed that the Jarque-Bera, which measures the normality of the trend analysis, has EQT to be normally distributed. In model II, the descriptive statistics showed that debt is normally distributed while ROA and ROI are not as shown by the Jarque-Bera statistics.

MODEL I

	ROA	ROI	EQT
Mean	3.510433	1.96927	11707.61
Median	1.170000	0.741800	3681.911
Maximum	32.61100	23.6600	16024.5
Minimum	0.018000	-8.989000	3.070000
Std. Dev.	5.42567	3.353246	11698.57
Skewness	2.477282	2.430798	1.77165
Kurtosis	9.756790	12.10671	6.6869
Jarque-Bera	877.5239	632.092	281.5225
Probability	0.000000	0.00473	0.126601
Sum	1053.60	574.7780	4472283.
Sum Sq. Dev.	8800.112	3362.033	1.28E+11
Observations	180	180	180

Source: Author's computation using E-views 10.0

MODEL II

	DBT	ROA	ROI
Mean	180450.2	0.380944	21.28992
Median	86.8600	0.180000	13.83189
Maximum	33014664	6.510000	135.7911
Minimum	4.018000	-0.530000	0.002466
Std. Dev.	2679576.	0.543180	22.70361
Skewness	0.67982	5.015188	1.696733
Kurtosis	0.197548	45.98212	3.24083
Jarque-Bera	18.73746	40584.82	328.6641
Probability	0.18309	0.007819	0.003231
Sum	1.711208	190.4719	84332.96
Sum Sq. Dev.	3.581215	147.2230	835947.7
Observatios	180	180	180

Source: Author's computation using E-views 10.0

Table 4.1: Descriptive Statistics results for the models

A. PANEL REGRESSION ANALYSIS

The panel and pool data (cross-sectional data) for the model is presented, compared and analysed below. Researcher used the Hausman test to choose the best fit model between fixed and random analysis. This was used to analyse the hypotheses as stated in the introduction.

	Pooled OLS		Panel OLS (Fixed effects)		Panel OLS (Random effects)	
Variables	Coeff	Prob.	Coeff.	Prob.	Coeff.	Prob.
C			11801.24	0.0000	61415.05	0.0005
ROA	118.4308	0.0000	2..32850	0.0080	117.9283	0.6173
ROI	3355.773	0.0000	5.488918	0.0066	703.8778	0.0436
EQT	188.8946	0.0000	NA	NA	548.8918	0.1266
R-Square	-0.102855		0.582764		0.014166	
F-Test			24.70456	0.000000	2.63811	0.11196
DW	0.525374		2.321127		0.57729	

Source: Author's computation

Table 4.2: Multiple Regression Tests: Model I

	Pooled Estimates		Random Effects		Panel OLS (Fixed effects)	
Variables	Coeff	Prob.	Coeff.	Prob.	Coeff.	Prob.
C			-6.67797	0.9158	56.06374	0.7915
ROA	-558359.2	0.0000	-2.72388	0.8706	-1.372977	0.0397
ROI	112525.3	0.0000	-12.2387	0.8712	11.86584	0.0000
R^2	0.722114		0.46745		0.64946	
F-Test			0.557971		24.07896	0.000000
DW	0.107365		0.870998		2.965156	

Source: Author's computation

Table 4.3: Multiple Regression Tests: Model II

B. HAUSMAN TEST

A widely used class of tests in econometrics is the Hausman test. The underlying idea of the Hausman test is to compare two sets of estimates, one of which is consistent under both the null and the alternative and another which is consistent only under the null hypothesis. A large difference between the two sets of estimates is taken as evidence in favour of the alternative hypothesis. In the models I and II, the

analysis below showed that the fixed model of the panel data analysis is a better model and therefore, was used in the interpretation of the hypotheses.

Equation: Untitled
Test cross-section random effects
Model I

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.321719	2	0.0424

Source: E-views

Table 4.4: Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects
Model II

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.718071	4	0.0055

Source: Eviews

Table 4.5: Correlated Random Effects - Hausman Test

C. GRANGER CAUSALITY TESTS

Correlation does not necessarily imply causation in any meaningful sense of that word. The econometric graveyard is full of magnificent correlations, which are simply spurious or meaningless. However, granger causality tests show the direction of cause between variables even if the variables are not significantly related.

Model I
Date: 11/05/20   Time: 14:22
Sample: 2009 2019
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
ROA does not Granger Cause EQT	178	11.0060	0.0022
EQT does not Granger Cause ROA		8.178691	0.0066
ROI does not Granger Cause EQT	178	0.43271	0.5151
EQT does not Granger Cause ROI		1.16779	0.2875
ROA does not Granger Cause ROI	178	0.02310	0.8801
ROI does not Granger Cause ROA		1.83271	0.1847

Table 4.6: Pairwise Granger Causality Tests
Model II
Date: 11/05/20   Time: 18:22
Sample: 2009 2019
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
ROA does not Granger Cause EQT	178	4.006011	0.0001
DBT does not Granger Cause ROA		2.178691	0.0018
ROI does not Granger Cause EQT	178	2.41271	0.0051
DBT does not Granger Cause ROI		2.10079	0.0235
ROA does not Granger Cause ROI	178	0.02310	0.8801
ROI does not Granger Cause ROA		0.00271	0.7747

Source: E-views

Table 4.7: Pairwise Granger Causality Tests

From the tables above, it is clear in model I, that there is causality between the dependent (EQT) and the independent variable returns on assets (ROA). The data also showed that there is no causality between the EQT and ROI over the period. The data shows that there is bidirectional causality between ROA and EQT over the period. In model II, the result shows that there is bidirectional causality between the dependent and the independent variables over the period.

D. STATIONARITY TESTS

In an attempt to confirm the order of integration of the series under study, thereby confirming their suitability for a linear combination in the form of a model, the panel unit root test following the form specified as ADF – Fisher Chi-Square.

Model I

Variables	ADF	Prob.V	INT	REMARK
ROA	6.42911	0.0079	I (1)	stationary
EQT	83.0195	0.0000	I (1)	stationary
ROI	2.24534	0.0041	I (1)	stationary

Source: Researcher's computation (E-view 10, 2020)
Panel Unit Root Tests for all the Variables using ADF –
Fisher Chi Square

Coefficients	ADF Values	Probability	Comments
DBT	432.472	0.0000	I(0)
ROA	63.8818	0.0003	I(0)
ROI	236.307	0.0000	I(0)

Source: Researcher's computation (E-view 10, 2020)
Table 4.8: Panel Unit Root Tests

The tables above shows the results of the ADF-Fisher Chi Square Panel Unit Root Tests of all the variables in the models. For models I and II, the results are found to be integrated of the same order. At second difference, the p-values are found to be less than 5% which is the level of significance. The analyses show that the variables in the models are stationary over the period. Unlike Philip-Peron statistics which follows the precondition for the Engle and Granger residual based approach for co-integration tests (PP ≤ critical value), emphasis on ADF-Chi Square statistics is on P-value. This has proven to be useful in this study.

E. JOHANSEN CO-INTEGRATION TESTS

The co-integration test helps to test for a long term relationship between the dependent and the independent variables over the period of the study. As the results in the analyses show, there are long term relationships among the variables over the period of the study.

Series: DBT ROA ROI
Date: 11/05/20   Time: 11:26
Sample: 2009 2019
Included observations: 180
Cross-sections included: 6 (1 dropped)
Null Hypothesis: 1 co-integration eqn(s)
Trend assumption: No deterministic trend
User-specified lag length: 1
Newey-West automatic bandwidth selection and Bartlett kernel

Alternative hypothesis: common AR coefs. (within-dimension)

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-0.544540	0.0070	-0.52400	0.706
Panel rho-Statistic	-0.332485	0.3646	0.64206	0.5711
Panel PP-Statistic	-1.368044	0.0856	-1.14450	0.1280
Panel ADF-Statistic	-0.036476	0.4853	-0.60140	0.1036

Source: E-views, (2020)

Table 4.9: Pedroni Residual Co-integration Test

Multi-Co-linearity Tests

Date: 11/05/20   Time: 6:35
Sample: 1 180
Included observations: 180

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	2165443.	1.760755	NA
ROI	109773.6	1.327950	1.000301
ROA	41937.97	1.411526	1.000301

Source: Eviews

Table 4.10: Variance Inflation Factors for Model I

Date: 11/05/20   Time: 02:09
Sample: 1 180
Included observations: 180

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	9.901211	72.98710	NA
ROA	5.141210	1.664540	1.111807
ROI	112525.3	4.354044	1.11096

Source: Eviews

Table 4.11: Variance Inflation Factors for Model II

In models I and II, the variance inflation factors (VIF) showed that both variables do not have multi-colinearity based on the cantered VIF (1.0). For model II, the VIF also shows that the cantered VIF is less than 10 and therefore, there is no presence of multicolinearity.

F. SERIAL CORRELATION TESTS

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	225.422	Prob. F(2,295)	0.3550
Obs*R-squared	181.226	Prob. Chi-Square(2)	0.2400

Source: Eviews

Table 4.12: Serial Correlation Test for Model I

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	431.8422	Prob. F(2,151)	0.5431
Obs*R-squared	455.8182	Prob. Chi-Square(2)	0.1330

Source: Eviews

Table 4.13: Serial Correlation Test for Model II

The analyses of the models show that there is no serial correlation among the variables as their probability values are more than the threshold of 5%.

G. HETEROSCEDASTICITY TESTS

Model I

F-statistic	4.291708	Prob. F(2,297)	0.1145
Obs*R-squared	8.432768	Prob. Chi-Square(2)	0.1148
Scaled explained SS	22.02586	Prob. Chi-Square(2)	0.0000

Source: E-views

Table 4.14: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Model II

F-statistic	3.368287	Prob. F(8,151)	0.6449
Obs*R-squared	26.01264	Prob. Chi-Square(8)	0.0010
Scaled explained SS	10180.520	Prob. Chi-Square(8)	0.0000

Source: E-view

Table 4.15: Heteroskedasticity Test: Breusch-Pagan-Godfrey

The analyses in the models also showed that there is constant variance over the period with the heteroskedasticty probabilities being more than the 5% threshold for the models.

H. TEST OF HYPOTHESES

H_{01}: *There is no significant relationship between equity financing and return on assets of listed Manufacturing firms in Nigeria.*

The analysis in the model was based on the fixed effects as shown by the significance of the hausman test. The analysis shows that the goodness-of-fit, $R^2 = 0.58$. Therefore, 58% of the changes in the dependent variable are caused by the changes in the independent variable. The f-test of 24 showed that the model is statistically significant.

The analysis shows that return on assets is positively related to equity financing. The result shows that as equity financing increases by a unit, return on assets increases by 2.132850 and vice versa. The result also shows that return on assets is statistically significant using the t-test = 3.989128. We therefore reject the null hypotheses, accept the alternative hypothesis and conclude that there is a significant relationship between equity financing and return on assets within the period studied.

H_{02}: *There is no significant relationship between equity financing and return on investment of listed Manufacturing firms in Nigeria.*

Again, the analysis showed that return on investment is positively related to equity financing as expected apriori. The result shows that as equity financing increases by a unit, return on investment increases by 5.488918 and vice versa. The result also shows that return on investment is statistically significant using the t-test = 0066. We therefore reject the null hypothesis, accept the alternative hypothesis and conclude that there is a significant relationship between equity financing and return on investment over the period studied.

H_{03}: *There is no significant relationship between debt financing and return on assets of listed Manufacturing firms in Nigeria.*

Further, the analysis showed that return on assets is negatively related to debt financing as also expected apriori. The results revealed that as debt financing increases by a unit, return on assets decreases by -1.372977 and vice versa. The result also shows that return on assets is statistically significant using the t-test = 0.0397. We therefore reject the null hypothesis, accept the alternative hypothesis and conclude that there is a significant relationship between debt financing and return on assets over the period studied.

H_{04}: *There is no significant relationship between debt financing and return on investment of listed Manufacturing firms in Nigeria.*

Finally, the analysis showed that return on investment is negatively related to debt financing as also expected apriori. The results show that as debt financing increases by a unit, return on investment decreases by -11.86584 and vice versa. The result also shows that return on investment is statistically significant using the t-test=0.000. We therefore reject the null hypothesis, accept the alternative hypothesis and conclude that there is a significant relationship between debt financing and return on investment over the period studied.

V. SUMMARY, CONCLUSION AND RECOMMENDATIONS

A. SUMMARY

This study was carried out to determine the impact of capital structure on the manufacturing firms' performance (2009 – 2019). The study was able to establish the relationship between equity financing, debt financing, return on assets and return on investment. The researchers discovered that:

✓ In model I, causality exists between the dependent variables and the equity financing using the Granger Causality Test. The test shows that equity financing is caused by return on assets and vice versa. Specifically, this implies that return on assets (ROA) can increase to a very significant level if the equity financing is also increased.

✓ For model II, it was discovered that there is bidirectional causality among the dependent and the independent variables used. Return on assets (ROA), return on investment (ROI) and debt financing were found to granger cause themselves.

✓ There is a positive and significant relationship between equity financing and return on assets and return on investment. This shows that as equity financing increases by a unit, return on assets and return on investment also increases by multiple units.

✓ The result shows that there is a negative and significant relationship between debt financing and return on assets and return on equity. Here, we concluded that as debt financing increases, return on assets and return on investment are expected to decrease by multiple units.

B. CONCLUSION

This study has been able to provide empirical information on the nature of the relationship between capital structure and performance of manufacturing firms in Nigeria, 2009 – 2019. Time series data over the period of 2009 to 2019 were obtained from the Nigerian Stock Exchange as well as the annual returns of the companies used. The tool of panel data analysis employed in the study included a priori test (test of signs of the variables) and the goodness-of-fit (R^2). The statistical and econometric tests included test of individual significance of the variables using t-test and f-test for the overall significance of the variables used. The econometric test was based on Durbin-Watson test to ascertain if the error terms of the independent variable are correlated. The hausman test was used in determining the optimal model between the fixed and the random models. It was discovered that the fixed model was a better fit model for the analysis.

C. RECOMMENDATIONS

Sequel to the existence of positive and significant relationship between capital structure and manufacturing performance (2009 – 2019) established by this study, it is important for all stakeholders to recognize the importance of increasing returns on investments and returns on assets Therefore, the study recommends the following:

✓ Every policy to reduce debt financing by the management of the firms must be pursued vigorously. Reduction in debt financing will increase the returns on investments and assets.

✓ Again, increased in equity financing has a positive and significant relationship with return on assets and return on investment. Therefore, management of these firms should make every effort to increase equity capital structures so as to increase the return on assets and return on investment of the firms.

✓ It is also recommended that in building the capital structure of the manufacturing firms, there should be more mix of equity financing and less use of debt financing so as to increase the potential profits of the firms overtime.

REFERENCES

[1] Abbasali, P, Naser, A., Alakbar, R., Elham, M, Milad, E. & Pejman, M (2012). The Relationship Between Capital Structure and Firm Performance Evaluation Measures: Evidence from Tehran Stock Exchange. International Journal of Business and Commerce, 1(9):166-181.

[2] Adesola W. A.(2009) Testing Static Trade off Theory against Pecking Order Models of Capital Structure in

Nigerian quoted firms. Global Journal of Social Sciences Vol 8, No. 1, 2009: 61-76

[3] Akinleye, A. K. (2012). Speed of adjustment towards the target capital structure by Nigerian listed firms. Journal of Emerging Trend in Economics and Management Science (JETEMS), 3(5): 419-494.

[4] Akinlo, O. (2011). The determinants of capital structure evidence from Nigeria panel data. African Economy and Business Review,9(1):1-16

[5] Akinsulire, O. (2014). Financial Management (8th ed.). Lagos: Eltoda Ventures Ltd.

[6] Akintoye, I. R. (2008). Sensitivity of Performance of Capital Structure. European Journal of Social Science, 7(11), 225-366.

[7] Babalola, T. A., (2012). The effects of optimal capital structure on firms' performance in Nigeria. Journal of Emerging Trend in Economics and Management Sciences (JETEMS), 3(2):131-133

[8] Brigham, E.F. and Ehrhardt, M.C. (2011), Financial Management: Theory and Practice, (13thed). Mason: South-Western Cengage Learning.

[9] Dare, F. D. and Sola, O. (2010). Capital Structure and Corporate Performance in Nigeria Petroleum Industry: Panel Data Analysis. Journal of Mathematics and Statistics, 6(2): 168-173

[10] Eboh, D. C., (2004). The Influence of Capital structure theories on corporate financing choice in Nigeria.(Unpublished MSc thesis)

[11] Erasmus, P. D. (2008). Value based financial performance measures: An evaluation of relative and incremental information content. Corporate Ownership and Control 6(1):66-77

[12] Iwarere, H. T. and Akinleye, G. T. (2010). Capital Structure Determinants in the Nigeria Banking Industry: Financial Managers Perspective. Pakistan Journal of Social Sciences, 7(3): 205-213.

[13] Khalaf, A., (2013). The relationship between capital structure and firm performance: Evidence from Jordan. Journal of Finance and Accounting 1(3), 41-45

[14] Micheal, N. B. (2012). Capital structure determinants of quoted firms in Nigeria and lesson for corporate financing decisions. Journal of Finance and Investment Analysis, 1(2):61-81.

[15] Modigliani F. and Miller M. (1958). The Cost of Capital, Corporation Finance, and The Theory of Investment. American Economic Review 48, 261-297.81.

[16] Modigliani F. and Miller M. (1963). Corporate Income Taxes and Cost of Capital: A Correction. American Economic Review53, 433-443.

[17] Mubeen, M. & Kalsoom, A., (2014). Impact of capital structure on firms financial performance and shareholders wealth: Textile sector of Pakistan. International Journal of Learning and Development 4(2):27

[18] Muhammad, U., Zaighum, T & Muhammad, S. (2012). Impact of capital structure on firm's performance: Evidence from Parkistan. Research Journal of Finance & Accounting, 3(1), 338-351.

[19] Mustafa M. S. and Osama S. H. (2007). Capital structure and corporate performance: Empirical study on the public Jordanian shareholdings firms listed in the Amman Stock Market. European Scientific Journal, 8(22), 1857-7881

[20] Nirajini, A. & Priya, K. B., (2013). Impact of capital structure on financial performance of the listed trading companies in Sri Lanka. International Journal of Scientific and Research Publications, 3(5), 2250-3153

[21] Ogbulu, O. M. and Emeni, F. K. (2012). Determinants of corporate capital structure in Nigeria. International Journal of Economics and Management Sciences, 1(10):81-96.

[22] Olokoyo, F. O. (2012). Capital Structure and Corporate Performance of Nigerian Quoted Firms. A Panel Data Approach. Published Ph.D Thesis presented to the Department of Banking and Finance, School of Business, College of Development Studies, Covenant University, Ota, Ogun State Nigeria.

[23] Omorogie, A. N. and Erah, D. O. (2010). An Empirical Investigation of Capital Structure and Corporate Performance in Nigeria. Journal of Management Sciences, 1(1): 43-52

[24] Onalapo, A.A and Kokoto, S.O (2010). Capital Structure and Firms Performance: Evidence from Nigeria and Administrative Science.

[25] Onwumere, J. U. J., Onudugo, V. and Imo, G. I. (2013). Financial Structure and Economic Growth: Evidence from Nigeria. Global Journal of Management and Business Research Finance, 13(5):1-9

[26] Osuji, C.C. and Odita, A. (2012). Impact of Capital Structure on the Financial Performance of Nigeria Firms. Arabian Journal of Business and Management Review Vol.1, No.12.

[27] Patrick, O., Joseph, O. and Kemi, A. (2013). The impact of capital structure on firms' performance in Nigeria. Munich Personal REPEC Archive (MPRA)1-24.

[28] Raheel, M., Shahnaz, A., Rauf, Bashir, A., & Umara, N. (2013). Capital structure and financial performance: Evidence from Pakistan, Journal of Basic and Applied Scientific Research. 115.

[29] Saad, N. (2010). Corporate governance compliance and the effects to capital structure in Malaysia. International Journal of Economics and Finance 2(1)

[30] Tian, G. G. & Zeitun, R., (2007). Capital structure and corporate performance: Evidence from Jordan'

[31] Tinusa, O. G. and Babalola, A. Y. (2012). The Impact of Corporate Governance on Capital Structure Decision of Nigerian Firms. Research Journal in Organisational Psychology and Educational Studies, 3(2):121-128

[32] Ugwunta, D. O., Ani, W. U., Ugwuanyi, G. O. and Ugwu, J. N. (2012). The Structure of Nigeria Banking Sector and its impact on bank performance. Journal of Economics and Sustainable Development, 3(7): 30-40