

# Influence of Capital Structure on Firms Performance in Nigeria (Evidence from the Pharmaceutical Industry)

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**Abstract:-** Capital structure has been engrossed with a lot of attentions and still lingers as a source of controversies among researchers and academia. To this end, this study examined the influence of capital structure on firm performance with evidence from selected quoted firms in the pharmaceutical industry in Nigeria over the period of 2009 to 2017. The study adopted the panel regression analysis with dependent variables proxied financial performance as return on asset (ROA) and return on equity (ROE), while independent variables are debt to equity ratio (DER), long term debt ratio (LDR), short term debt ratio (SDR), total asset (SIZE) and inflation rate (INF). The fixed effect results in the two models indicate that only firm size was significant and negatively connected to pharmaceutical firms' performance using return on asset. From the outcomes, there is evidence of no significant rapport between capital structure and performance of firms in the pharmaceutical industry in Nigeria. However, the significance of the two models adopted connotes that there are other variables outside the models that predict performance in the pharmaceutical industry, these variables can further be explored by other researchers. However, based on the findings from the study, it was recommended that, pharmaceutical firms should be cautious with their funding mix.

**Keywords:-** Capital structure, Debt, Equity, Financial Performance.

## I. INTRODUCTION

Maximising shareholders' wealth is the most critical objective organisations strive to achieve through their various decision making (Eniola, Adewunmi & Akinselure, 2017). One of those decision making pertains to financing decision as every business are in need of funds to carry out their various activities in order to ensure their survival and growth (Chechet & Olayiwola, 2014). Financing decision is essentially about how an investment activity is to be funded in a corporate organization. In trying to finance an investment project, managers are confronted with two sources of funds which are: internal sources and external sources of funds. The internal sources of fund have to do with the funds generated within the operations of the organisation and notably includes retained earnings. On the other hand, external sources of fund deal with funds generated outside the operations of the organisation. Funds may be generated externally either

through increasing the number of co-ownership in the business which is termed equity financing or through outright borrowing in form of loans which is termed debt financing. However, these external sources have various implications on the operations of the business. Abu-Rub (2012) as cited by Nwude Itiri, Agbadua & Udeh (2016) asserted that financing decision is determined by the rate of risk linked with each options of financing as well as the relationship between risk and return. The use of equity financing will dilute firms' ownership while debt financing will create an obligation on the firm through interest payment from the cash flows generated. The combinations of these various sources of finance are generally referred to as capital structure.

Hence, capital structure can be defined as the mix of debt and equity. However, its relationship with a firm's value and performance has been one of the most controversial and puzzling issue in corporate finance ever since the contribution of Modigliani and Miller (1958). The cause of disagreement in literature has been whether a firms' capital structure matters in deciding the value and performance of the firm or not. However, the contribution of Modigliani and Miller (1958) sparked off several theories with varying views on the attainment and contribution of an optimum capital structure. These theories include the trade-off theory (Kraus & Litzenberger, 1976; Myer, 1977); pecking order theory (Myers, 1984); agency cost theory (Jensen & Meckling, 1976) and market timing theory (Baker & Wurgler, 2002).

Over the years, the performance of the pharmaceutical firms in Nigeria have continued to decline as a result of several challenges which ravage the industry and environment where they operate. Most importantly, pharmaceutical firms are faced with financing problem and therefore seek to utilise various financing channels in order to meet up with the expectation of the shareholders and other third-party stakeholders. For this reason, a question about the relevance of capital structure to the performance of pharmaceutical firms comes up. Why pharmaceutical firms? More than every other firm in the manufacturing industry, pharmaceutical firms require a huge amount of financing which is important for several purposes, particularly research and development because they deal with life.

There is no doubt that there are conflicting views as to the relevance of capital structure and the direction of its effect on firms' profitability from the reviewed theories. While empirical literature in trying to solve the puzzle of capital

structure and its relationship on firms' value and profitability have improved our understanding of capital structure, little have been done in reaching a theoretical consensus. Various studies both in developed and developing countries have documented mixed results. While some studies recorded a positive relationship between capital structure and firms' profitability (Akhtar, Bano, Bano, Zia & Jameel, 2016; El-Maude *et al.*, 2016; Mujahid, Zuberi, Rafiq, Sameen & Shakoor, 2014; Nikoo, 2015; Simon-Oke & Afolabi, 2011; Saeed, Gull & Rasheed, 2013; Taani, 2013), others have provided evidence of negative relationship (Allahham, 2015; Awunyo-Vitor & Badu, 2012; Chinaemerem & Anthony, 2012; Dumont & Svensson, 2014; Gohar & Rehman, 2016; Hoffman, 2010; Ogebe, Ogebe & Alewi, 2013; Siddik, Kabiraj & Joghee, 2017). Interestingly, others studies find no significant relationship between capital structure and profitability (Anarfo, 2015; Siddiqui & Shoaib, 2011; Oladele, Omotosho & Adeniyi, 2017).

Studies in Nigeria are no different because results remain inconclusive and diverse. One group of studies find positive relationship between capital structure and profitability (Adesina, Nwidobie & Adesina, 2015; El-Maude *et al.*, 2016; Eniola, Adewunmi & Akinsulire, 2017; Nwude & Anyalechi, 2018; Simon-Oke & Afolabi, 2011; Zafar, Zeeshan & Ahmed, 2016) while another group showed a negative interaction between capital structure and profitability (Chinaemerem & Anthony, 2012; Nwude, Itiri, Agbadua & Udeh, 2016; Nwaolisa & Chijindu, 2016; Ogebe, Ogebe & Alewi, 2013; Olaniyan, Soetan & Simon-Oke, 2017). The inconclusive and unclear nature of empirical findings necessitate further empirical studies into the subject matter as many aspects remain unexplored.

Most of these empirical studies in Nigeria failed to control for the possible significant effect of macroeconomic conditions on firms' profitability in assessing the impact of capital structure on firms' profitability. Macroeconomic conditions could be very important in explaining the performance of firms in an economy (Marandu & Sibindi, 2016; Ogebe *et al.*, 2013; Oladele & Omotosho, 2017). Current theory like the market timing theory by Baker and Wurgler (2002) suggests that a firms' financing mix depends on the prevailing economic circumstances in which the firm operate. Although, a study by Ogebe *et al.* (2013) included macroeconomic issues in their analysis, however, their analysis was based on non-financial firms. So therefore, this study would account for the effect of macroeconomic conditions in its analysis base on non-financial firms by including inflation rate and interest rate. Inflation rate is included to measure instability in the economy (Yartey, 2008).

In addition, to the best of the researchers' knowledge, there is still dearth of published research in Nigeria on how the capital structure affect non-financial firms' profitability in specific industries. It is against this backdrop that this study assesses the influence of capital structure on firms' profitability in Nigeria using the Pharmaceutical industry selected from the stock exchange as a case study.

## II. LITERATURE REVIEW

Capital structure describes the financing behaviour of firms as relates to where does a firm arrange finances for investment with mindset to decreasing the cost of capital for the purpose of minimizing shareholders' risk and maximizing shareholder worth. Research in capital structure is dominated by two theories: trade-off theory and pecking order theory. prominent amongst the theorist are Modigliani and Miller (1958) that is MM-I, Jensen & Meckling, 1976, pecking theory by Myers and Majluf (1984) and their various supporters and antagonists in the likes of Ross (1977), Hatfield, Cheng, and Davidson (1994), Boodhoo (2009), Aghion, Dewatripont and Rey (1999) and Akintoye (2008) among others.

Talal and Ahmad (2015) opine that, with the information advantage available to managers on capital structure of firms, signaling effect may set in which may further erode the confidence of shareholders. This could effortlessly be resolve by managers by using higher level of debt to equity in the capital structure.

Nwude and Anyalechi (2018) adopted the pooled OLS regression analysis to evaluate the influence of financing mix on the performance of commercial banks. Their findings revealed that debt finance influence a negative but significant effect on return on asset, while debt-equity ratio exert a positive and significant influence on return on equity.

Schulz (2017) studied the effect of capital structure on firm performance in Netherlands between 2008 and 2015. The study used return on asset as the dependent variable and also used total leverage, and short-term debt as independent variables coupled with the use of regression techniques, it was revealed that capital structure has a negative effect on firm performance.

Ameen and Kiran (2017) studied the impact of capital structure on firm profitability in Pakistan between 2006 and 2015. The study used return on asset as the dependent variable and also used debt to equity ratio, interest coverage ratio, short term debt ratio and long-term debt ratio as independent variables coupled with the use of regression techniques, it was revealed that capital structure has negative effect on profitability. Hence, it was recommended that firms should use a proper mix of debt and equity in funding the resources of the firm.

Eniola *et al.* (2017) analyzed the impact of capital structure on the profitability of quoted banks over the period 2004 to 2015 using descriptive and Pearson correlation coefficient. Their result showed a positive and significant relationship between capital structure and profitability of the selected banks.

Basit and Hassan (2017) studied the impact of capital structure firm performance in Pakistan between 2010 and 2014. The study used debt to equity as the independent variable and also used return on equity as dependent variable coupled with the use of regression techniques, it was revealed

that capital structure has significant effect on performance. Hence, it was recommended that more knowledge should be provided on the issue of capital structure to improve performance.

Umar (2016) studied the relationship between profits, firm size, growth opportunities and capital structure of firms in the UAE between 1990 and 2012. The study used Leverage as the dependent variable and used profitability, tangibility, sales, cash flow volume and abnormal returns as independent variables. The study further used regression analytical technique and revealed that there exists a negative relationship between leverage and profits.

El-Maude et al (2016) using a sample of 4 listed companies from cement industry, examined the effect of capital structure on financial performance. The study revealed that there is a statistically significant effect between long-term and short-term liability on ROA and ROE. They however, concluded that the failure of the firms to utilize debt in their capital structure led to below optimum performance.

Nwude et al (2016) empirically investigated the impact of debt structure on the performance of firms from different sectorial classifications over a 12 years annual period. The pooled OLS was adopted for analysis as a result of unobserved heterogeneity in the dataset. Their result showed that debt structure has negative and significant influence on the performance of the quoted firms within the period under review. Thereby, providing evidence in line with the pecking order theory.

Kartikasari and Merianti (2016) studied the effect of leverage and firm size on profitability of 100 listed manufacturing firms in Indonesia between 2009 and 2014. The study which used profitability measured by return on assets as the controlled variable also used firm size proxied by total assets and total sales and leverage proxied by debt ratio as the independent variables coupled with the use of panel data regression techniques, it was revealed that leverage has a significant positive effect on profitability and size.

Nguyen and Hung (2016) studied the determinants of capital structure of 420 non-financial firms in Vietnam between 2010 and 2014. The study adopted leverage as the dependent variable and also used profitability, risk, size, growth, tangibility, non-tax debt shields, effective tax rate, lending interest rate, long term ratio, short term debt ratio, total debt ratio as predictors. The study further adopted descriptive, correlation and regression techniques to this end. This study reveals that financial leverage has a negative relationship with profitability, business risk, non-debt tax shields and liquidity have a positive relationship with firm growth and firm size.

Birru (2016) using two accounting-based measures of financial performance (return on equity (ROE) and return on asset (ROA), investigated the effect of capital structure decision on performance of commercial banks over a five-year period (2011-2015) in Ethiopia. The result of the study

indicated that debt-equity ratio, size and asset tangibility have a negative and significant effect on ROA.

Abeywardhana (2015) examined the relationship between capital structure and profitability of non-financial small and medium scale enterprises in the United Kingdom between 1998 and 2008. Abeywardhana proxied dependent variables as return on assets and return on capital employed, while liquidity ratio, size, gearing ratio, short term debt ratio and sales growth were used as the independent variables. The study further used panel data regression technique which revealed that leverage has a negative relationship with profitability. However, capital structure as a whole has a significant influence on the profitability of firms.

Ahmadu (2015) studied the relationship between financial leverage and financial performance of 11 deposit money banks in Nigeria between 2005 and 2013. The study used return on equity as an index of profitability being the dependent variable and used debt to equity ratio and debt ratio as proxies for leverage twinned with the use of descriptive and correlational analysis, the study laid it bare that there exists no significant relationship between leverage and profitability. The study recommended that a proper debt-equity mix should be adopted by firm managers and that a way of improving the return on equity should be devised.

Adesina et al (2015) attempted to determine the impact of post-consolidation capital structure on the financial performance of Nigeria quoted banks. They proxied performance with profit before tax as a dependent variable while equity and debt were used as capital structure proxies. The data of 10 quoted Nigerian banks were selected for the study and analyzed using the ordinary least square. Their result showed that capital structure has a significant positive relationship with financial performance of the selected banks.

Tooba and Faiza (2015) studied the relationship between financial leverage and profitability of five firms in the oil and gas sector in Pakistan between 2007 and 2012. The study used degree of operating leverage, degree of financial leverage, degree of combined leverage as explanatory variables while earning per share was used as the dependent variable. The study also adopted the correlation and regression techniques to this end and revealed that financial leverage has no significant effect on profitability. Hence, firms should utilize the financial leverage in ways that will improve the value of the owners.

Kunga (2015) scrutinized the relationship between financial leverage and profitability of 47 firms listed at the Nairobi Stock Exchange, Kenya between 2010 and 2015. The study adopted profitability as the dependent variable and also used financial leverage, size of the firm and liquidity as the control variables. The study further employed descriptive statistics, correlation and regression analytical techniques which revealed that, leverage and liquidity has a negative relationship with profitability of the firm whereas size has a positive effect on the profitability of the firm. The study further recommended that firms as represented by managers should devise means of sourcing for funds rather than

depending on financial leverage to spur profitability of the firm.

Nawaf (2015) studied the impact of financial leverage, growth and size on the profitability of 25 industrial firms in Jordan between 1995 and 2005. The study which used ratio of fixed assets to total assets, debt to assets ratio (leverage), firm size and firm's growth as independent variables also used return on asset as the index for profitability. The study further used descriptive statistics and regression techniques and revealed that financial leverage and growth has significant effect on the profitability of industrial companies in Jordan.

Nawaz, Atif and Aamir (2015) explored the influence of financial leverage on profitability of 18 firms in the cement sector in Pakistan spanning from 2005 to 2010. The study adopted return on assets as the dependent variable and total debt as financial leverage coupled with the use of the ordinary least square technique; it was revealed that there exists a significant negative relationship between financial leverage and profitability.

## 11. METHODOLOGY

This study adopted pooled regression technique through the use of the ordinary least square technique in the analysis of the impact of capital structure on firm performance. The study gathered panel annual data of six (6) selected pharmaceutical industries for the period spanning through 2005 to 2017.

The model for the study is adapted from the study of Ameen and Kiran (2017). This is stated below as:  
 $ROA = f(DER, LDR, SDR, SIZE, INF, \mu)$

ROA refers to Return on Assets while ROE refers Return on Equity with both as proxy for firm performance. Meanwhile, DER refers to Debt to Equity Ratio, LDR refers to Long Term Debt Ratio, SDR refers to Short Term Debt Ratio, SIZE refers to firm size proxied by total asset and INF refers to inflation rate.

On average, our selected sample of firms obtained a return on asset (ROA) of 12.92% and return on equity (ROE) of 35.21% during the entire period from 2009 to 2017. The standard deviation of both ROA and ROE are 13.68 and 28.72 respectively. While their minimum and maximum values are -23.89% and 41.25% for ROA and -15.42% and 94.30% for ROE. For debt to equity ratio (DER), its mean is 147.39%, with a standard deviation of 104.94% and its maximum and minimum are 430.99% and -115.81% respectively. The average value of long term debt ratio (LDR) is 15.50%, its standard deviation is 104.94%, while its maximum and minimum values are 55.99% and -50.44%. For short term debt ratio (SDR), its mean value is 41.34%, standard deviation is 21.04%, while its maximum and minimum values are 106.89% and 4.06% respectively. The average value of inflation rate (INF) is 11.33%, standard deviation is 2.96%, minimum value is 8% and maximum value is 16.5%. The average total asset value is 11,298,957 million naira over the sample period, the minimum value is 1,936,994 million naira and maximum value of 31,121,864 million naira.

**TABLE I. Data Analysis and Findings  
Presentation of Descriptive Statistics**

STAT	ROA	ROE	DER	LDR	SDR	SIZE	INF
Mean	12.9224	35.2138	147.386	15.5046	41.34247	11298957	11.32683
Median	11.4650	39.3042	145.614	19.5083	38.87864	8275862.	10.80000
Maximum	41.2528	94.3023	430.995	55.9930	106.8908	31121864	16.50000
Minimum	-23.8988	-15.4171	-115.808	-50.4403	4.06E-05	1936994.	8.000000
Std. Dev.	13.6825	28.7164	104.938	20.2007	21.04371	8050179.	2.955844
Skewness	0.00552	0.11210	0.22844	-1.23919	1.268545	0.990845	0.503456
Kurtosis	3.05114	1.97998	4.37865	5.88379	5.639454	2.939970	1.911226
Jarque-Bera	0.00467	1.86327	3.60363	24.7003	22.89772	6.714941	3.757136
Probability	0.99766	0.39390	0.16499	0.000004	0.000011	0.034823	0.152809
Sum	529.821	1443.76	6042.84	635.6896	1695.041	4.63E+08	464.4000
Sum Sq. Dev.	7488.43	32985.3	440484.1	16322.88	17713.50	2.59E+15	349.4805

Source: Author's Computation (2019).



**TABLE II: ORDINARY LEAST SQUARES RESULT:  
Dependent Variable: ROA (Model 1)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	0.028196	0.043736	0.644692	0.5240
LDR	-0.223035	0.312704	-0.713245	0.4812
SDR	-0.279980	0.159513	-1.755214	0.0894
SIZE	-1.40E-06	4.57E-07	-3.061449	0.0046
INF	-0.470871	0.596323	-0.789623	0.4359
C	44.95811	15.86716	2.833406	0.0082

$R^2 = 0.690673$      $F\text{-Stat} = 6.698471$      $Prob. (F\text{-Stat.}) = 0.000022$

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Source: Author’s Computation (2019).

From the tableII above, all variables except debt to equity ratio exert negative influence on return on asset while size was the only variable exerting significant influence on return on asset at 5% significance level. However, the R2, F-statistics and probability of F-statistics all implies that the model is significant and reliable for meaningful conclusion and policy recommendation.

**TABLE III: ORDINARY LEAST SQUARES RESULT  
Dependent Variable: ROE (Model 2)**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	0.095203	0.100444	0.947822	0.3508
LDR	-0.885503	0.718163	-1.233010	0.2271
SDR	-0.433029	0.366342	-1.182035	0.2465
SIZE	-8.96E-07	1.05E-06	-0.852780	0.4005
INF	-0.078013	1.369530	-0.056964	0.9550
C	63.82133	36.44088	1.751366	0.0901

$R^2 = 0.629604$      $F\text{-Stat} = 5.099433$      $Prob. (F\text{-Stat.}) = 0.000240$

Source: Author’s Computation (2019).

From the table III above, all variables except debt to equity ratio exert negative influence on return on equity while all variables exert insignificant influence on return on equity at 5% significance level. However, the R<sup>2</sup>, F- statistics and probability of F-statistics all implies that the model is significant and reliable for meaningful conclusion and policy recommendation.

**SUMMARY AND RECOMMENDATIONS**

This study examined the influence of capital structure on the performance of selected quoted firms in the pharmaceutical industry in Nigeria over the period 2009 to 2017. The study adopted the panel regression analysis with return on asset and return on equity as dependent variables proxying for financial performance while independent variables are debt to equity ratio (DER), long term debt ratio (LDR), short term debt ratio (SDR), total asset (SIZE) and inflation rate (INF). The results revealed that the variables exert no significant effect on firm performance which implies that there is evidence of no significant relationship between capital structure and performance of firms in the pharmaceutical industry. Although, the results reveal that the variables exert no significant effect on performance in both models, the significance of the model connotes that there are other variables outside the model that predicts performance in the pharmaceutical industry, these variables can further be explored by other researchers. However, based on the findings, the study recommended that firms should use debt only when the expected return exceeds the cost of debt and not because of the associated tax benefits after taking into consideration the anticipated and unanticipated economic conditions.

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