

## EVALUATING THE EFFECT OF CAPITAL STRUCTURE AND PROFITABILITY OF SELECTED NIGERIAN QUOTED CONSTRUCTION COMPANIES

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### ABSTRACT

*The capital structure decision is the vital one since the profitability of an enterprise is directly affected by such decision. Hence, proper care and attention need to be given while determining the capital structure decision. The choice of capital structure of a firm is determined by a number of factors which include the market forces, type of industry, internal policies of the firm, size of the firm, profitability, corporate tax and bankruptcy costs. The aim of the study is to evaluate the effect of capital structure on profitability of selected construction companies listed on the floor of the Nigerian Stock Exchange in Nigeria. The data collected was for three construction companies for a period of ten years (2009-2018). The study adopted convenience sampling, as the information needed are restricted to available documents. Secondary data were obtained and used for analysis. Inferential statistics of ANOVA, Regression analysis were carried out at 5% level of significant. The major findings from this study are that equity financing has no significant impact on return on equity, debt to asset ratio has a significant impact on the profitability of Nigerian firms and it was established that debt to equity ratio has no significant impact on profitability of Nigerian firms. It was among other things recommended that the management of Nigerian quoted firms should work very hard to optimize the capital structure of their quoted firms to increase the returns on equity, assets and investment.*

**KEYWORDS:** *Capital Structure, Construction, Profitability, Quoted Companies*

### 1.0 INTRODUCTION

The capital structure according to Sibindi (2016) is “defined as the permanent source of capital in the form of long-term debt, preference shares, ordinary shares, reserve and surplus”. Decisions about a company's financial and capital structure play a significant role in its management. This is because firms' decisions on which forms of funding to use result in diverse capital structures, which can have varying effects on a firm's performance (Pandey & Sahu, 2019). As a result, the capital structure decision is critical because it directly affects an

enterprise's profitability. Therefore, adequate care and attention must be paid while deciding on a capital structure. A combination of financing and equity is the best option. Firm owners would be agnostic about whether they utilized debt or equity if interest was not tax deductible, but if interest was deductible, they would maximize the value of their firms by employing 100 percent debt financing (Azhagiaiah & Gavoury, 2011).

One of the main reasons capital structure is essential is because it has a number of ramifications for corporate performance, which is why numerous

studies have been conducted. Modigliani and Miller (1958) emphasized that a firm's capital structure has no impact on its performance under perfect conditions and without bankruptcy expenses. Modigliani and Miller's (1958) idea of capital structure's irrelevance is supported by various research such as Cheng *et al.* (2010) and Myers (2001). These authors argue that a company's capital structure has no bearing on its success. However, recent research by Goh *et al.* (2018), Nenu *et al.* (2018), and Wu (2019) has shown that capital structure is important and affects company performance and value. According to these experts, combining money in an unsuitable way might be difficult for managers and organizations' prospects. While the argument regarding the relevance of capital structure is inconclusive, some research, such as Vu *et al.* (2018) and Elmagrhi *et al.* (2018), believe that an argument about capital structure's relevance is useless unless it is done in conjunction with a firm's ownership structure. There is a case to be made that a company's ownership structure influences the amount of capital available. Indeed, according to Vu *et al.* (2018) and Elmagrhi *et al.* (2018), enterprises managed by owners have the optimal capital mix and will eventually reap the rewards. This shows that the capital structure chosen has little impact on a firm's performance unless certain management traits are present. As a result, Migliori *et al.* (2018) propose that enterprises managed by owners would make a superior capital structure choice than firms managed by non-owners. The paradox is that Modigliani and Miller's (1958) argument, which is backed up by Cheng *et al.* (2010), claims that capital structure has no bearing on a company's financial success. However, studies such as Maina and Ishmail (2014), Suardi and Noor (2015), Akomeah *et al.* (2018), Nguyen (2019), and Doorasamy (2021) demonstrate that capital structure

has an impact on a firm's performance. San and Hang (2011), on the other hand, claim that the benefits of enough capital are tied to the management structure of a company.

Capital structure can influence a company's valuation, with more leveraged companies being riskier and thus valued lower than less leveraged companies. If the goal of a firm's manager is to maximize shareholder wealth, capital structure is a critical decision because it can lead to an optimal financing mix that maximizes the firm's market price per share. Capital structure is the most important part of any capital investment decision. Because such a decision has a direct impact on an organization's profitability. There could be hundreds of options, but to determine which option is best for the firm's interests in a given scenario, one must have a thorough understanding of finance. Using a higher proportion of debt in the capital structure can be effective because it is less expensive than equity, but it also has some limitations because it affects the company's leverage after a certain point. As a result, a balance must be maintained. Managers make the majority of company decisions in Nigeria.

The selection of an appropriate financing mix is critical for any business organization's survival and continued growth, not only because of the need to maximize returns to various interest holders, but also because of the impact such informed decisions have on an organization's performance in a competitive environment. A company's survival and growth require resources, yet funding these resources is limited. Because the firm would be unable to run, grow, and extend their business without capital, the firm should employ these restricted resources in a way that provides an appropriate share of value for both providers and users of resources.

As a result, the goal of this research is to examine the impact of capital structure on the profitability of a few Nigerian publicly traded companies which are involved in construction activities.

## 2.0 LITERATURE REVIEW

### 2.1 Meaning of Capital Structure

The capital structure decision refers to the decision on the long-term financing mix. The finance manager's second task is to pay for the investment in real assets with capital, which refers to the firm's long-term funding sources (Brealey *et al.*, 2001). Share issuance, private investment, bank debt, corporate debts, lease contracts, tax debt, retirement debt, deferred compensation for executives and staff, deposits, product-related debt, and other possible debt are all seen to be part of the capital structure by many scholars. The debt-to-total-asset ratio, the equity-to-total-asset ratio, the debt-to-equity ratio, and the equity-to-debt ratio are commonly used to assess capital structure. The ability of a company to make money through goal-oriented financial strategies and decisions is measured by profitability. The terms "return on asset" (ROA) and "return on equity" (ROE) are commonly used to describe how profitable a company is (Ahmadinia *et al.*, 2012).

The efficient management of a firm's assets to generate profits is defined by return on assets. It's a metric that shows how lucrative a company is in comparison to its total assets. In a similar vein, return on equity assesses a company's efficiency in generating profits from shareholders' funds. Return on equity in the range of 15% to 20%, according to Loth (2012), is deemed good. The debt-to-equity ratio shows what percentage of shareholders' equity and debt a company utilizes to fund its assets.

According to Peterson (1999), debt to equity is linked to a company's leverage, risk, or gearing position. Modigliani and Miller (1958) described this capital structure proxy, which has been hotly discussed in the literature. The debt-to-asset ratio quantifies how much of a company's total assets are financed by liabilities, creditors, and debt. As a result, a company's capital structure is made up of both debt and equity. It is also known as the method through which a company finances its assets using a mix of stock, debt, or hybrid instruments, which are a mix of both equity and debt. The makeup of a company's obligations is the capital structure. Equity capital, preference capital, and long-term loan (debt) capital are the three components of a firm's capital structure, according to Inanga and Ajayi (1999). Contributed capital, or money originally invested in the business in exchange for stock, and retained profits, or gains from previous years kept by the company to strengthen the balance sheet, grow, acquire, and expand the business, are both examples of equity capital. Preference capital is a hybrid that includes the characteristics of debentures and equity shares except for the advantages, whereas debt capital refers to long-term bonds used by a company to fund its investment plans while also paying back interest and principal.

### 2.2 Capital Structure and Firm Performance: A Review of Mixed Findings

Other studies on capital structure and company performance, on the other hand, show that there are mixed results. The following is a list of such studies. From 2003 to 2007, Olokoyo (2012) examines the overall influence of capital structure (leverage) on performance (return on assets, return on equity, and Tobin's Q) of 101 firms listed on the Nigerian Stock Exchange. The study finds that a firm's leverage has

a significant negative impact on its accounting performance measure (ROA) and that all leverage measures have a positive and highly significant relationship with the market performance measure (Tobin's Q) using panel data analysis with Fixed-effect estimation, Random-effect estimation, and Pooled Regression Model. According to the findings, Nigerian enterprises are mostly financed by equity capital or a combination of equity capital and short-term loans.

The study also demonstrates that debt maturity structure has a considerable impact on business performance, and that firm size has a significant positive impact on firm performance. According to the report, Nigerian companies should aim to match their strong market success with real-world actions that might assist them reflect their market performance in their accounting and internal growth. Using descriptive statistics and Pearson Product Correlation methods, Velnampy and Niresh (2012) evaluated the relationship between capital structure and profitability of ten publicly traded Sri Lankan banks from 2002 to 2009. Debt to equity and debt to total funds are used as capital structure indicators, whereas net profit, return on capital employed, return on equity, and net interest margin are used as performance indicators. Except for the positive but small relationship between debt to equity and return on equity, the findings demonstrate a negative relationship between capital structure and profitability. Debt to equity, on the other hand, is found to be significantly adversely connected with net profit and net interest margin, while debt to total funds is found to be strongly negatively correlated with net profit and net interest margin. The findings also imply that debt accounts for 89 percent of total assets in the Sri Lankan banking industry, corroborating the concept that banks are highly

leveraged firms. The study's findings, according to the authors, may help banks, loan creditors, and policymakers make better capital structure policy decisions. Using a performance measure - return on equity (ROE), three capital structure ratios - short-term debt to total capital; long-term debt to total capital; and total debt to total capital, and two control variables - logarithm of sales and sales growth. Addae, *et al.*(2013) investigate the relationship between capital structure and profitability of 34 out of 35 listed firms in Ghana for a five-year period (2005-2009) using panel data methodology. The authors also looked into whether Ghanaian quoted companies were reliant on debt. Profitability and short-term debt had a statistically significant positive link, while profitability and long-term debt had a statistically significant negative relationship. However, the findings demonstrated that profitability and overall debt have a statistically significant negative connection. The findings also revealed that Ghanaian listed companies rely on short-term debt more than long-term debt, with a short-term debt to total capital ratio of 52% and a long-term debt to total capital ratio of 11%. Chechet and Olayiwola (2014) investigate the capital structure and profitability of Nigerian listed firms using agency cost theory on a sample of 70 out of 245 firms listed on the Nigerian Stock Exchange (NSE) from 2000 to 2009. Between 2009 and 2018, this research investigates the capital structure and profitability of quoted construction companies listed on the Nigerian Stock Exchange (NSE) floor.

### 3.0 RESEARCH METHODOLOGY

The population of this study consists of all Nigerian companies that enjoy first-tier listing on the Nigerian Stock Exchange (NSE) which consist of One Hundred and Seventy-Eight (178) quoted firms.



The validity of instruments is established with the regular reference to related and relevant literature (Adesina et al., 2015; Akeem et al., 2014) based on the similarity in research design and instruments for data analysis. Also, the validity of this study is enhanced with the use of only published annual reports and accounts of the selected companies. Also, for the secondary data, auto-correlation test is done to test for the reliability and validity of the data collected. Hence, Durbin Watson auto-correlation test was employed. However, from the test conducted, the Durbin Watson shows 1.067 and 0.936 respectively for the models.

Statistical Package for Social Science (SPSS) was used for both descriptive and inferential statistics. The simple regression analysis was performed to test the impact on firm profitability represented by return on equity ratio and return on asset ratio which is the dependent variables on the firm's capital structure

represented by debt-to-equity ratio, and debt to asset ratio of the selected firms. The impact was analyzed using Pearson correlation coefficient while the coefficient was analyzed using regression analysis. The analysis was based on a confidence limit of 95 % reflected on two tailed significance level of 0.05. For any test to be significant the P-value should be less or equal to 0.05. Thus, the study has one dependent variable and four independent variables.

## 4.0 RESULTS

### Model 1

Table 4.1 shows the descriptive statistics of the variables as it presents the range, mean and standard deviation. From the mean, it is observed that the log of equity (LEQ) is a good predictor of the dependent variables (ROE) with the mean of 7.0907 compared to 0.5443 and 1.6176 of DAR and DER.

**Table 4.1: Descriptive Statistics**

	N	Range	Mean	Std. Deviation
ROE	30	.59	.1961	.18669
LEQ	30	3.82	7.0907	.69015
DAR	30	.51	.5443	.15501
DER	30	4.69	1.6176	1.40644
Valid N (listwise)	30			

Table 4.2 shows the R which is the correlation between the predicted values and the observed values of the dependent variable is given as 0.664 in the Table 4.2 which implies 66.4%. R-squared statistic which is given as 0.441 meaning that only 44.1% (R-square) of the total variation in the ROE can be explained by LEQ, DAR and DER while the

remaining percentage can be explained by other variables. Moreover, the standard error of the estimate is 0.14738 while the Durbin-Watson statistic is given as 0.893 which means there is presence of autocorrelation as the figure presented does not fall between 1.5 and 2.5. This implies that the variables are not in good shape.

**Table 4.2: Correlation between the Predicted Values and the Observed Values**

Model Summary <sup>b</sup>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.664 <sup>a</sup>	.441	.377	.14738	.893

a. Predictors: (Constant), DER, LEQ, DAR

b. Dependent Variable: ROE

Table 4.3 shows the analysis of variance of the regression as it presents the sum of squares the degree of freedom which is one less than the total number of the variables (N-1), also the mean square

is given and most importantly the F-value is given as 6.844 with a probability value of 0.002, which implies that the model derived is statistically significant at 5% significant level.

**Table 4.3: Analysis of Variance of the Regression**

ANOVA <sup>a</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.446	3	.149	6.844	.002 <sup>b</sup>
	Residual	.565	26	.022		
	Total	1.011	29			

a. Dependent Variable: ROE

b. Predictors: (Constant), DER, LEQ, DAR

Table 4.4 shows the coefficients of the regression model both standardized and un-standardized, the t-cal. and the probability value. The B which implies the intersects of the model equation can be used to rewrite the model as:

$$ROE = \beta_0 + \beta_1LEQ + \beta_2DAR + \beta_3DER$$

$$ROE = -0.042 - 0.001LEQ + 0.301DAR - 0.028DER + \mu$$

From the above equation, it is obvious that LEQ and DER (independent variables) has a negative effect on the dependent variable (ROE), This therefore means that, if LEQ and DER increases by one unit

each, ROE of the selected firms will fall by 0.001 and 0.028 respectively. Also, if DAR increases by one unit each, ROE of the selected companies will rise by 0.301.

The t-cal. of the variables is also shown as 0.209, 2.383, -0.586 respectively for LEQ, DAR and DER respectively. These values are lesser than the t-tab of 2 except for DAR. The significant values for LEQ, and DER are 0.836 and 0.563. These values are said to be insignificant at 5% significant level, while that of DAR is 0.025 which is said to be statistically significant at 5% significant level.

**Table 4.4: Coefficient of Regression Model**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.379	.364		-1.041	.308
	LEQ	.009	.041	.031	.209	.836
	DAR	1.028	.431	.854	2.383	.025
	DER	-.028	.047	-.208	-.586	.563

a. Dependent Variable: ROE

**Model II**

Table 4.5 shows the descriptive statistics of the variables as it presents the range, mean and standard deviation. From the mean, it is observed that the log

of equity (LEQ) is a good predictor of the dependent variables (ROA) with the mean of 7.0907 compared to 0.5443 and 1.6176 of DAR and DER.

**Model II**

**Table 4.5: Descriptive Statistics**

	N	Range	Mean	Std. Deviation
ROA	30	.18	.0717	.05103
LEQ	30	3.82	7.0907	.69015
DAR	30	.51	.5443	.15501
DER	30	4.69	1.6176	1.40644
Valid N (listwise)	30			

Table 4.6 shows the R which is the correlation between the predicted values and the observed values of the dependent variable is given as 0.386 in Table 4.6 which implies 38.6%. R-squared statistic which is given as 0.149 meaning that only 14.9% (R-square) of the total variation in the ROA can be explained by LEQ, DAR and DER while the

remaining percentage can be explained by other variables. Moreover, the standard error of the estimate is 0.04972 while the Durbin-Watson statistic is given as 0.576 which means there is presence of auto-correlation as the figure presented does not fall between 1.5 and 2.5. This implies that the variables are not in good shape.



**Table 4.6: Correlation between the predicted values and the observed values**

<b>Model Summary<sup>b</sup></b>					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.386 <sup>a</sup>	.149	.051	.04972	.576

a. Predictors: (Constant), DER, LEQ, DAR

b. Dependent Variable: ROA

Table 4.7 shows the analysis of variance of the regression as it presents the sum of squares the degree of freedom which is one less than the total number of the variables (N-1), also the mean square

is given and most importantly the F-value is given as 1.154 with a probability value of 0.234, which implies that the model derived is statistically insignificant at 5% significant level.

**Table 4.7: Analysis of variance of the Regression**

<b>ANOVA<sup>a</sup></b>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.011	3	.004	1.514	.234 <sup>b</sup>
	Residual	.064	26	.002		
	Total	.076	29			

a. Dependent Variable: ROA

b. Predictors: (Constant), DER, LEQ, DAR

Table 4.8 shows the coefficients of the regression model both standardized and un-standardized, the t-cal. and the probability value. The B which implies the intersects of the model equation can be used to rewrite the model as;

$$ROA = \beta_0 + \beta_1LEQ + \beta_2DAR + \beta_3DER$$

$$ROA = -0.042 - 0.001LEQ + 0.301DAR - 0.028DER + \mu$$

From the above equation, it is obvious that LEQ and DER (independent variables) has a negative effect on the dependent variable (ROA), This therefore means that, if LEQ and DER increases by one unit

each, ROA of the selected firms will fall by 0.001 and 0.028 respectively. Also, if DAR increases by one unit each, ROA of the selected companies will rise by 0.301.

The t-cal. of the variables is also shown as -0.043, 2.068 and -1.785 respectively for LEQ, DAR and DER respectively. These values are lesser than the t-tab of 2 except for DAR. The significant values for LEQ, and DER are 0.966 and 0.086. These values are said to be insignificant at 5% significant level, while that of DAR is 0.049 which is said to be statistically significant at 5% significant level.

**Table 4.8: Coefficients of the Regression Model**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		Beta	Std. Error	Beta		
1	(Constant)	-.042	.123		-.342	.735
	LEQ	-.001	.014	-.008	-.043	.966
	DAR	.301	.146	.914	2.068	.049
	DER	-.028	.016	-.780	-1.785	.086

a. Dependent Variable: ROA

### 4.3 Interpretation of Results

#### Hypothesis 1.

**Ho<sub>1</sub>:** Equity financing does not significantly affect profitability of Nigerian firms

Table 4.4 and Table 4.8 presented above is considered suitable to treat the research assumption stated above as formulated earlier in chapter one of this research work. Profitability which was defined in terms of ROE and ROA. Following the assumption of the above hypothesis, the correlation Tables revealed that equity financing have significant values of 0.836 and 0.966, these values are greater than 0.05. The researcher therefore accepts the null hypothesis and concludes that equity financing does not significantly affect profitability of Nigerian firms.

#### Hypothesis 2.

**Ho<sub>2</sub>:** Debt to asset ratio has no significant impact on profitability of Nigerian firms.

Table 4.1 above can also be used to explain the research hypothesis formulated. From the Table, it shows that a unit increase in DAR will lead to a positive increase of 1.028 in the ROE of the selected

firms with probability value of 0.025 which is said to be statistically significant at 5%. Also, Table 4.8 can also be used to explain the hypothesis whereby a unit increase in DAR triggers 0.301 increase in ROA of the selected firms with 0.049 significant level which is said to be statistically significant at 5%. This therefore means that the researcher rejects the null hypothesis and concludes that debt to asset ratio has a significant impact on the profitability of Nigerian firms.

#### Hypothesis 3.

**Ho<sub>3</sub>:** Debt to equity ratio has no significant impact on profitability of Nigerian firms.

From the co-efficient Table above, it was shown debt to equity ratio has a significant impact on profitability of Nigerian firms. Table 4.4 and table 4.8 is best used to explain the research hypothesis formulated. For a unit increase in DER will trigger a fall in both ROA and ROE of the selected firms by 0.028 with their probability values shown as 0.563 and 0.086 which are said to be statistically insignificant at 5% level. With this, the researchers accept the null hypothesis and concludes that debt to equity ratio has no significant impact on the profitability of Nigerian firms.

## 5.0 CONCLUSION AND RECOMMENDATION

### 5.1 Conclusion

The choice of capital structure is one of the most important strategic financial decisions of firms. The basic question is whether there exists an optimal capital structure that optimizes profitability and hence maximizes the value of a firm.

Considering the above empirical evidence, it is concluded that equity financing has no significant impact on return on equity. This is because, the correlation Tables revealed that equity financing have significant values of 0.836 and 0.966, these values are greater than 0.05. The researcher therefore accepts the null hypothesis and concludes that equity financing does not significantly affect profitability of Nigerian firms.

Considering the above empirical evidence, the study concludes that debt to asset ratio has a significant impact on the profitability of construction firms in Nigerian. It was established that a unit increase in DAR will lead to a positive increase of 1.028 in the ROE of the selected firms with probability value of 0.025 which is said to be statistically significant at 5%. Also, it was established that a unit increase in DAR triggers 0.301 increase in ROA of the selected firms with 0.049 significant level which is said to be statistically significant at 5%. This therefore means that the researcher rejects the null hypothesis and concludes that debt to asset ratio has a significant impact on the profitability of Nigerian firms.

Also, it was established that debt to equity ratio has no significant impact on profitability of Nigerian firms. This was explained that a unit increase in

DER will trigger a fall in both ROA and ROE of the selected firms by 0.028 with their probability values shown as 0.563 and 0.086 which are said to be statistically insignificant at 5% level. With this, the researcher accepts the null hypothesis and concludes that debt to equity ratio has no significant impact on the profitability of Nigerian firms.

### 5.2 Recommendations

Based on the conclusions drawn, the following recommendations were made:

- (1) The management of Nigerian quoted firms should work very hard to optimize the capital structure of their quoted firms in order to increase the returns on equity, assets and investment. They can do that through ensuring that their capital structure is optimal. However, an appropriate mix of capital structure should be adopted in order to increase the profitability of firms.
- (2) Besides, Top management of Nigerian quoted firms should make prudent financing decision in order to remain profitable and competitive.
- (3) It is noteworthy that listed firms intensify their efforts to rely on internally generated funds to finance their operational activities. Even where external debt would be used, the firms should search for low interest-bearing loans so that the tax shield benefit of the loan will exceed the financial distress associated with it.
- (4) Finally, investors and stakeholders of quoted Manufacturing firms in Nigeria should also consider the leverage level of any firm before committing their hard-earned money as the strength of a firm financing mix determine the quantum of their returns.

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