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# FINANCIAL LEVERAGE AND FIXED ASSET COVER OF QUOTED NIGERIAN MANUFACTURING COMPANIES

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## Abstract

*The study investigated financial leverage and fixed asset cover of quoted Nigeria manufacturing companies from 2011 to 2017. Secondary data obtained from the Nigerian Stock Exchange (NSE) were used to analyse the data using Regression Model and E-view.*
*The study concluded that there is a positive relationship between asset structure (tangibility and profitability of the Nigerian manufacturing companies. The study therefore recommended that in order to improve on their profitability, management of Nigeria manufacturing companies should be efficient in management of fixed assets.*

**Keywords:** Financial leverage, fixed asset cover, profitability and manufacturing companies

## 1.0 Introduction

Performance measurement is critical for organizational effectiveness. Corporate performance involves the recurring activities to establish organizational goals, monitor progress towards the goals, and make adjustment to achieve those goals more effectively and efficiently. Corporate performance encompasses three specific areas of firm outcomes: financial performance (profits, return on asset and return on investment), product market performance (sales, market share), and shareholder return (total shareholder return and economic value added). Specialists in many fields are concerned with corporate performance including strategic planners, operations, finance, legal, and corporate development (Simon-oke & Afolabi, 2011).

Corporate performance can be measured by the following: liquidity ratios (current ratio, acid test or quick ratio, debtors turnover, average collection period, creditors' payment period, stock turnover, stock turnover period, cash or operating cycle); long term solvency and stability ratios (fixed interest cover, fixed charge coverage, cash flow coverage, fixed dividend cover, proprietary ratio, gearing or financial leverage ratio, debt ratio); profitability and efficiency ratio (return on capital employed, net profit margin, capital employed turnover, gross profit margin, expense to salesratio, total assets turnover, individual; asset turnover, return on total assets, return on shareholder's equity); and lastly, investors' or stock market ratios (earnings per share, price-earnings P/E ratios, dividend per share, earnings yield, dividend yield, dividend cover (Olowe, 2011; Pandey, 2010; Van Horne, 2002).

Asset tangibility of a firm plays a significant role in determining its capital structure. A firm with large amount of fixed asset can borrow at relatively lower rate of interest by providing the security of their assets to creditors (Shehu, 2011).

The manufacturing sector of any economy worldwide is reputed for engineering growth and to serve as a catalyst for sustainable transformation and national development. This is because of its enormous potentials as a tool for creating wealth, generating employment, contributing to the country's Gross Domestic Product as well as alleviating poverty among the citizenry. The experiences of the developed countries of the world and the emerging economies of China, India, North Korea, Malaysia and Singapore show that there is a positive correlation between the performance of the manufacturing sector and national growth and development. Thus, for many upcoming countries like Nigeria, the development of the manufacturing sector is an imperative for meaningful and sustainable national growth (Banjoko, Iwuju & Bagshaw, 2012).

Manufacturing sub-sector is expected to offer prospects of a growing availability of manufactured products, increase employment, greater efficiency and improved balance of

payments. In addition, modern manufacturing processes are characterized by high technological innovations, the development of managerial and entrepreneurial talents and improvement in technical skill which normally promote productivity, better living conditions and improvement in living standards. But in Nigeria, manufacturing enterprises are high-cost producers due partly to heavy imported input-content as well as contemporary provision of deficient infrastructural facilities. In a typical manufacturing cost structure, raw material costs account for more than half of total cost of operations, the bulk of which is imported. The fluctuating exchange rate of the naira over the years, has compounded high cost profile of local manufactures and price uncompetitiveness in the export market. High interest rate charged by banks on facilities granted to manufacturing companies has increased their cost of capital (Banjoko, Iwuji & Bagshaw, 2012).

It is for the reasons discuss above that this study investigates financial leverage and fixed asset cover of quoted Nigerian manufacturing companies.

## 2.0 Review of Literature

Literature relevant to the study were examined

### 2.1 Conceptual Framework

#### 2.1.1 Financial Leverage

Rehman (2013) defines financial leverage/financial risk as a measure of how much firm uses equity and debt to increase its assets. Risk results primarily from the use of debt as reflected by leverage. Financial leverage or risk is evidenced by variability in the return on equity (ROE) of the business, financial leverage takes the form of a loan or other borrowing (debt). The total leverage of a firm is given by a firm's use of both fixed operating costs and debt costs. This implies that a firm's total risk equals business risk plus financial risk. Brealey, Myers and Allen (2008), financial leverage can accelerate earnings per share (EPS) under favourable economic conditions but depresses EPS when the goings is not good for the firm. The unfavourable effect of financial leverage on EPS is more severe with more debt in the capital structure when earnings before interest and taxes (EBIT) is negative. Similarly, the firm's financial leverage, can increase shareholders return and as well could increase their risk. From the discussion above, it can be deduced that financial leverage affects the earnings per share (EPS) when the economic conditions are good and the firm's EBIT is increasing.

Degree of financial leverage can be computed thus:

$$DFL = \frac{\%\ \text{change in EPS}}{\%\ \text{change in EBIT}}$$

$$DFL = \frac{\%\ \Delta\ EPS/EPS}{\%\ \Delta\ EBIT/EBIT}$$

Ahmad, Shah, Bilal and Ahmad (2013) in their study of impact of financial leverage of firm investment analyzed the relationship between financial leverage and firm's investment in the presence of certain control variables such as (Tobin's Q, cash flow, liquidity, return on equity and sales). Data were collected for nine years from 2000-2008. The study found that financial leverage has significant negative impact on firms' investment. It also shows that as leverage increases, firm's investment decreases. The result confirmed that leverage overcome over-investment bias and attenuate agency problem.

**2.1.2 Fixed Asset Cover**

No organization can be sustained without some investment in fixed asset. Investment in fixed assets like land, building, plant and machinery, fixtures, fittings and motor vehicle enhances the productive capacity of firms. Profits can be generated by investing in such assets to ensure long-term profitability. This category of assets does not change frequently and it is purchased to produce and sell more. Assets have significant role in determining the efficiency and the profit ratio of a firm. Since a firm acquires plant and machinery and other productive fixed assets for the purpose of generating sales. Therefore, efficiency in the use of fixed assets should be judged in relation to sales (Olatunji & Adegbite, 2014).

Pandey (2010) opined that fixed assets turnover ratio measure the efficiency with which a firm is utilizing its investment in fixed assets. It also indicates the adequacy of sale in relation to investment in fixed assets. Generally, a high fixed assets turnover ratio indicates efficient utilization of fixed assets in generating sales, while a low ratio indicates inefficient management and utilization of fixed assets.

**2.1.3 Manufacturing Sector**

The performance of the Nigerian manufacturing sector since independence has been unimpressive. The scenario is a mixture of initial mild growth and subsequent retrogression (Banjoko, Iwuji &Bagshaw, 2012). Most manufacturing firms in Nigeria are faced with poor planning of capital structure which has led to paucity of funds for operational activities in the manufacturing sector. Poor planned capital structure caused manufacturing firms to borrow more when not necessary and insolvency which had triggered declined in corporate financial performance (Adegbie & Adeniji, 2005).

Malik, Teal and Baptism (2004) analyzed that manufacturing activity can only flourish in a good investment climate with the following feature in place, physical infrastructure, financial markets and creation of enabling environment for investment and determine the opportunities and incentives for firms to invest productively, create job and expand business. They identified three (3) challenges/factors as major of manufacturing industry: infrastructural

constraints, access to credit and the broader macroeconomic condition affecting the demand for goods produced by the manufacturing sector.

## 2.2 Theoretical Framework

### 2.2.1 Modigliani-Miller Theory

Modigliani and Miller (1958) advocated that the relationship between the cost of capital, capital structure and the valuation of the firm should be explained by NOI (Net Operating Income Approach by making an attack on the Traditional Approach). The Net Operating Income Approach supplies proper justification for the irrelevance of the capital structure. In this context, Modigliani and Miller support the net operating income (NOI) approach on the principle that the cost of capital is not dependent on the degree of leverage, irrespective of the debt-equity mix. In other words, according to their thesis, the total market value of the firm and the cost of capital are independent of the capital structure. They advocated that the weighted average cost of capital (WACC) does not make any change with a proportionate change in debt-equity mix in the total capital structure of the firm.

### 2.2.2 Pecking Order Theory

Pecking order theory was developed by Myers in 1984. The major prediction of the model is that firms will not have a target optimal capital structure, but will instead follow a pecking order of incremental financing choices that places internally generated funds at the top of the order, followed by debt issues, and finally only when the firm reached it's "debt capacity" new equity financing.

Myers and Majluf (1984) noted that this theory is used upon costs derived from asymmetric information between managers and the market and the idea that trade-off theory costs and benefits to debt financing are of issuing new securities. The cost of equity includes the cost of new issue of shares and the cost of retained earnings. The cost of debt is cheaper than the cost of both these sources of equity funds. Considering the cost of new issue and retained earnings, the latter is cheaper because personal taxes have to be paid by shareholders on distributed earnings while no taxes are paid on retained earnings and also no floatation costs are incurred when the earnings are retained. As a result, between the two sources of equity funds, retained earnings are preferred. It has been found in practice that firms prefer internal financing. If the internal funds are not sufficient to meet the investment outlays, firms go for external finance, issuing the safest securities such as convertible debentures, then perhaps equity as a last resort.

Pecking-order theory has the following assumptions: Firms prefer internal financing to external financing; Firms adapt dividend payout ratio to their investment opportunities. This implies that if investment is low, the dividend payout ratio will be high and vice versa; If the

firm only has the choice of external financing, the firm should first issue the safest security. Starting with debt, then the hybrid such as convertible and at the last equity (Myers, 1984).

**2.3 Empirical Review**

A firm with a large amount of fixed asset can borrow at relatively lower rate of interest by providing the security of these assets to creditors.

Sayeed and Ziaulhogue (2010) studied the impact of assets and liability management on profitability of public and private commercial banks in Bangladesh. According to them, banks profitability is almost always of concern in moder economy. The study dealt with the impact of asset liability management (ALM) on the profitability of 16 Bangladesh commercial banks. The results showed that the use of income the dependent variable for private and public banks show evidence that all of the assets have significant contribution to total income of the private banks.

Olatuji & Adegbite (2014) examined the effect of investment in fixed assets on profitability of selected banks in Nigeria. Secondary data were used analyze relationship between dependent and independent variable using person product moment correlation and multiple regressions.

They concluded that investment in fixed assets have strong and statistical positive impact on the profitability of banking sector in Nigeria. In order to improve the bank profitability, there should be efficient management of fixed asset.

Okwo, et al (2012) studied the investment in fixed assets and firm profitability, evidence from Nigerian Brewery industry. A cross sectional data was gathered for the analysis from the annual reports of the sampled brewery firms from 1995 to 2009. The result of the tested hypothesis showed that the level of investment in fixed assets does not strongly and significantly impact on the level of reported profit of breweries in Nigeria.

Alayemi (2013) examined relationship between assets utilization and corporate efficiency. A case study of food and beverage industry on the Nigeria Stock Exchange. Population of the study is made up of all the firms in food and beverage industry quoted on NSE. Secondary data collected from financial statement of sampled companies from 2007 to 2011 using STATA 12 to analyse the data. The study concluded that assets utilization is particularly useful to companies considering expansion or capital investment.

Tamiru (2012) examined the effect of ALM on DMBs profitability in the Ethiopian, he asserted that all assets except fixed assets, mainly loans and advances affect return on asset (ROA) positively while all liabilities mainly savings and fixed deposits and other liabilities and bank credit balances have a significant negative effect on DMBs ROA.

**3.0 Methodology**

The research design adopted in this study was *ex-post facto*. *Ex-post facto* is a systematic enquiry in which the researcher does not have direct control over the independent variable(s), as the events that were observed have indeed taken place. The data sets on the surrogates of the variables used in this study had time series (2011– 2017) and cross-sectional (20 quoted manufacturing companies) attributes.

Secondary data used in the study were retrieved from the Factbook published by the Nigerian Stock Exchange, audited financial statements and annual report.

The data extracted were all certified by external auditors. The companies complied with Companies and Allied Matter Act (CAMA) and other standards for independent audit.

The secondary data for this research were subjected to diagnostic and robustness tests to prove that the data gathered were useful for the study and also met the criteria for deriving good results

**Functional Relationship**

y (FAC) = f(x=DFL)

FAC= Fixed Asset Cover

DFL= Degree of Financial Leverage

$FAC = \pi + \pi\ DFL\ + \mu$.

**4.0 Data Analysis**

**Discussion of Findings**

Collected or generated data sets have no appreciable value until they are analysed, interpreted and convincingly discussed. The results are presented in table 1

**Table 1: Panel Least Squares (PLS) Analysis Regression Results**

Method: Panel Least Squares (with cross-section effects)

Sample: 2011 – 2017

Periods Included: 7

Cross-Sections Included: 20

Total Panel (balanced) observations: 140

| **Model**<br>**Dependent Variables: FAC** | | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient/Effect**<br>*($\pi_j$: j = 1, 2, …, 6)* | **Standard Error** | **t-Statistic** | **P-Value** |
| Constant ($\pi_0$) | 2.1404 | 0.0671 | 31.8600 | 0.0000* |
| KE | -0.2347 | 0.6455 | -0.3636 | 0.7168 |
| KD | 0.0449 | 0.0269 | 1.6692 | 0.0978 |
| WACC | -0.0054 | 0.0231 | -0.2332 | 0.8160 |
| DOL | 2.75E-07 | 5.26E-06 | 0.0516 | 0.9590 |
| DFL | 0.2222 | 0.0092 | 2.4000 | 0.0160* |

| | | | | |
|---|---|---|---|---|
| DCL | 0.0020 | 0.0093 | 0.2158 | 0.8295 |
| | | | F-Statistic = 0.5720 | 0.7519 |
| | | Adjusted R-Square = 0.2270 | | |
| | | | Wald Test Statistic = 5.7800 | 0.0160* |
| | | Hausman Test Statistic = 2.3000 | | 0.1290 |
| | Heteroscedasticity: Breusch-Pegan/Cook-Weisberg = 1.6400 | | | 0.1990 |
| | Woodridge Test for Autocorrelation = 0.7630 | | | 0.3930 |

**Source: Researchers Computation (2021) using E view 8**

*Significant at 5% Level

The following were the estimated models:

$$FAC = 2.1404 - 0.2347KE + 0.0449KD - 0.0054WACC + 2.75E - 07DOL + 0.2222DFL + \pi 0.0020DCL + \varepsilon_5$$

…….Model

The coefficients of equity capital (ke), debt capital (kd), degree of operating leverage (DOL), degree of financial leverage (DFL) and the degree of combined leverage (DCL) had the expected positive effect, while the coefficient of weighted average cost of capital (WACC) did not have the expected positive effect on the corporate performance metrics of the manufacturing firms.

Degree of financial leverage (DFL) related positively with and had positive effect on the fixed asset cover (FAC).



**Hypothesis:** Degree of financial leverage (DFL) had no significant effect on fixed asset cover (FAC) of the quoted Nigeria manufacturing companies.

$$FAC_{i,t} = \pi_0 + \pi_5 DFL_{i,t} + \mu_5 \text{ ..... Model}$$

From Model

$$FAC = 2.1404 + 0.2222DFL + \varepsilon_5 \text{ ..... Model}$$

**Table 2: Regression Estimate**

| | **Model** | | | |
|---|---|---|---|---|
| **Variable** | **Coefficient** | **Std. Error** | **t-Statistic** | **P-Value** |
| Constant | 2.1404 | 0.0671 | 31.86 | 0.000* |
| DFL | 0.2222 | 0.0092 | 2.40 | 0.016* |
| Wald Test | 5.78 | | | 0.016* |
| Hausman Test | 2.30 | | | 0.129 |
| Heteroskedasticity: Breusch-Pagan/Cook-Weisberg | 1.64 | | | 0.199 |
| Wooldridge test for autocorrelation | 0.763 | | | 0.393 |

**Source: Panel Regression Analysis Results**

*significance at 5%

**Diagnostics Test Result**

From Table 2, the Hausman Test was first used to determine whether fixed or random effect is suitable for the model. The probability of this test showed 0.129 which is higher than the acceptable 5%, thus, the null hypothesis to estimate random effect was accepted. Thus, random effect was estimated for model. Also, Breusch-pagan Heteroskedasticity Test showed **2:**a p-value of 0.199, implying that the null hypothesis of constant variance was accepted thus indicating the absence of Heteroskedasticity. Furthermore, the probability value of Wooldridge test for autocorrelation stood 0.393, indicating that the null hypothesis of no serial correlation was accepted. Since there is absence of Heteroscedasticity and no serial correlation, the random effect was estimated for this model. Thus, the model has no specification biasness.

**Interpretation**

From table above, the size of the coefficient of the independent variables shows that a 1 unit increase in financing leverage would lead to a 0.222 increase in operational efficiency measured by Fixed Asset Cover (FAC) of the sampled companies in Nigeria. Also, the overall R-square of the model showed that 22.7% variations in fixed asset cover can be attributed to financing leverage used in this study, while the remaining 87.3% variations in fixed asset cover are caused by other factors not included in this model. This shows that the model has a somewhat weak explanatory power of the model. However, the Wald-test showed a probability value of 0.01 which indicates that the explanatory variable is statistically significant because this is less than 5%, the level of significance adopted for this study. Therefore, the model is statistically significant.

Based on the above analysis and at the level of significance of 0.05, the t-statistics is 2.40 while the p-value is 0.016 which is less than 0.05. The research therefore rejected the null hypothesis and accepted the alternate which means that degree of financial leverage had significant effect on fixed asset cover of quoted manufacturing firms in Nigeria.

Thus, the null hypothesis that financing leverage has no significant effect on operational efficiency measured by fixed asset cover of manufacturing firms in Nigeria is rejected. The alternate was accepted which means that financial leverage had significant effect on operational efficiency in Nigeria manufacturing firms.

**Discussion of Findings**

The objective of this study sought to evaluate the effect of degree of financial leverage (DFL) on fixed asset cover (FAC) of quoted Nigerian manufacturing firms. The analysis of this

study was done in three folds. The first part showed the description of the data, the second part gave the trend analysis test results of the cost of capital on the corporate performance of selected quoted Nigerian manufacturing companies for the period under review and the third part gave the empirical analysis where regression analysis estimates were shown and interpreted. In order to test for the hypothesis, Panel Regression analysis was used using Wald test, Hausman test, Heteroskedasticity and Wooldridge test for autocorrelation were done. The results are as presented in table above. Random effect was estimated for model five while Heteroskedasticity showed a p-value of 0.199 implying that null hypothesis is of constant variable was accepted thus indicating absence of Heteroskedasticity ($\beta = 0.2222$; $t(140) = 2.40$; $p < 0.05$).

The null hypothesis that financing leverage has no significant effect on operational efficiency measured by fixed asset cover of manufacturing firms in Nigeria was rejected. The alternate was accepted which means that financial leverage had significant effect on operational efficiency in Nigeria manufacturing firms. This finding is consistent with the studies carried out by Salawu (2006) and Salawu and Agboola (2008) that there is a significant positive relationship between asset structure (tangibility) and long-term debt. In support of this result, Rehman (2013) investigated relationship between financial leverage and financial performance, the results showed positive relationship between debt-equity ratio with return on assets.

Olatunji and Adegbite (2014) stated that fixed assets accelerated depreciation policy influences the corporate financing behavior. Fixed assets portray permanent investment of funds and therefore, they have to be primarily financed by the owners' funds or proprietors' funds. According to "balance theory": the value of the debt enterprise equals to no debt enterprise value and general tax shield effect, and then minus the bankruptcy cost. When the debt equals to the marginal revenue, marginal cost can achieve the optimal financing behavior. Olatunji and Adegbite (2014) there was positive correlation between net profit and fixed assets quality of banks when it was analyzed independently while it gave a positive relationship when analyzed together with other performance indicators. In the same vein, machinery also has positive correlation with return on investment. This result implies that the increase in machinery also leads to increase in return on investment. However, Osuji and Odita (2012) in their study established a negative and significant relationship between asset tangibility and return on assets as a measure of performance.

## 5.0 Conclusion and Recommendations

The conclusion of this paper is that there is a significant positive relationship between asset structure (tangibility) and profitability of the Nigerian manufacturing companies. The study therefore recommended that:

Nigeria manufacturing companies, in order to improve on their profitability, there should be efficient management of fixed assets.

Nigeria manufacturing firms should improve the level of fixed asset investments in terms of ICT and fixed assets should be utilized effectively and productively in order to boost their profitability and increase the wealth of their shareholders.

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