Capital Structure and Corporate Performance of Listed Industrial Goods Companies in Nigeria. The Moderating Effect of Firm Size

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Abstract

The purpose of the study was to look into how company size affected the relationship between listed industrial goods companies in Nigeria's financial performance and capital structure. The Pecking Order Theory served as the study's foundation, and both cross-sectional and longitudinal research designs were used. The population under investigation consists of all industrial goods companies that are listed on the Nigeria Exchange Group. In order to account for heterogeneity in the data analysis process, the Generalised Method of Moments (GMM) panel estimator was chosen. The study's findings demonstrated that while equity financing had a non-significantly negative impact on return on assets, debt financing had a positive and significant impact. The study concluded that corporate capital structure affects the financial performance of listed industrial goods firms in Nigeria and that firm size improves the association between capital structure and financial performance of listed industrial goods companies in Nigeria. The study recommended, among other things, that since debt financing has been demonstrated to improve financial performance, the industrial goods sector should employ more of it.

Keywords: *Capital Structure, Firm Size, Financial Performance, Equity Financing, Debt Financing.*

1. Introduction

The three primary objectives of a company are to maximise profits, maximise shareholder welfare, and maximise the business's worth as shown by the share price (Abdullah & Tursoy, 2021). For a firm, maximising profits is essential since without enough revenue, the enterprise's long-term survival cannot be guaranteed. According to Kurniasih and Ruzikna (2017), the primary objective of the company is to maximise shareholder wealth. The higher the profits, the higher the value of the company, and the more prosperity that will be received by the owners of the company. The financial performance of the company is considered important because it can reflect the value of the company and consequently can influence the perception of investors towards the company (Ahmad et al. (2023). Profitability, as one of the measures of financial performance of a company is the company's ability to earn profits through all existing capabilities and sources such as sales activities, cash, capital, market share, growth perspective, number of branches, and earnings per share (Opoku-Asante et al., 2022).
The corporate financial performance reflects the investor's view of a company's level of success which is often associated with shares in creating profits, so that if the shares create high profits, the company value can be high (Otuya & Omoye, 2021). An increase in total profits indicates that the company's value has increased as well, so the improved profitability and financial performance reflect the increase in the company's value. Investors can evaluate potential earnings per share by knowing the earnings and performance, which can be used by company leaders to determine the company's development.

A company's financial health depends on a variety of financial decisions. A company's capital structure is displayed on its statement of financial position (balance sheet), which consists of a combination of owners' equity (common and preferred shares) and debt (short- and long-term) (Ali & Ahmed, 2021; Ngatno et al., 2021). Sdiq and Abdullah (2022) define a firm's capital structure as the proportion of debt to equity to total capital of the business. A company's capital structure often emphasises a combination of debt and equity financing. The balance sheet also contains total assets, which are acquired through equity or debt (Abdullah 2021). When examining a firm’s capital structure, one important aspect to consider is the ratio of debt to equity. Otuya and Omoye (2021) assert that a company's decision about funding sources, including debt or equity raising, has a substantial impact on the business's financial performance. Making the wrong capital structure decision could cause a business to face financial challenges and, eventually, insolvency. For example, firms with prominent levels of long-term debt that are not utilized well are more likely to go bankrupt. Kusumawati and Rosady (2018) contended that the optimization of company value which is the company's goal can be achieved through the implementation of the financial management function, where every financing decision taken will affect other financial decisions and have an impact on company financial performance.

Firm size has been considered a major factor in determining company financial performance because of a concept known as economies of scale that can be found in the traditional view of the company (Asen et al., 2023). It can be interpreted that larger companies can produce goods at a much lower cost. Company size is divided into three categories, namely, large scale companies, medium-scale companies, and small-scale companies. The larger the size or scale of the company,

the easier it will be for the company to obtain funding sources (Diantimala et al., 2021). According to Loncan and Caldeira (2014), large companies usually rely more on debt, as the size of the company itself is a reliable guarantee to guarantee debt service or payment of residual cash back in case of liquidity. The advantages possessed by large companies attract investors to invest because they are considered good prospects for the company.

The findings of earlier research on the impact of capital structure on the financial performance of businesses in industrialised and emerging nations have been inconclusive. Studies such as (Muhammad, et al., 2023; Nguyen & Hoang 2022; Sdiq & Abdullah, 2022; Phuong & Nguyen, 2019; Gul & Cho, 2019) discovered evidence in favour of the pecking order hypothesis and came to the conclusion that leverage has an inverse effect on financial performance., such as the debt ratio. However, other studies (Ahmad et al., 2023; Amare, 2021; Prabowo, 2020) support the trade-off theory and have revealed a positive association.

This study is motivated by several factors. First, opinions on how capital structure affects a company's financial success are divided. Past research on the topic has yielded inconsistent findings, calling for more study. Second, the study looked at the relationship between industrial goods companies' financial performance and their capital structure in developing nations, particularly Nigeria. There are not many studies that have examined industrial goods firms in relation to the Nigerian economy.

Lastly, it was discovered that the association between corporate capital structure and financial performance could be mitigated by business size. The majority of earlier research has focused on the connection between debt or equity financing and capital structure and financial performance. The potential impact of incorporating firm size as a moderating factor on the relationship between capital structure and financial performance in the Nigerian setting has not been examined in any research. This study is distinctive since it examines the aforementioned claims.

Objectives of the Study

The broad objective of this study is to investigate the moderating influence of firm size on the link between capital structure and corporate performance of listed industrial goods firms in Nigeria. Specifically, the study seeks to:

(i) Examine the effect of equity financing on corporate financial performance of listed industrial goods firms in Nigeria;
(ii) Examine the effect of debt financing on corporate financial performance of listed industrial goods firms in Nigeria;
(iii) Examine the moderating effect of firm size on the relationship between equity financing and corporate financial performance of listed industrial goods firms in Nigeria; and
(iv) Examine the moderating effect of firm size on the relationship between equity financing and corporate financial performance of listed industrial goods firms in Nigeria.

Research Hypotheses

Ho1: Equity financing does not have a significant effect on corporate financial performance of listed industrial goods firms in Nigeria

Ho2: Debt financing does not have a significant effect on corporate financial performance of listed industrial goods firms in Nigeria

Ho3: Size of Firm does not significantly moderate the link between equity financing and corporate financial performance of listed industrial goods firms in Nigeria

Ho4: Size of Firm does not significantly moderate the link between debt financing and corporate financial performance of listed industrial goods firms in Nigeria

2. Literature Review

Financial Performance

An organization's total financial health is referred to as its financial performance. The literature has a variety of accounting-based financial performance metrics. The return on equity and return on assets are the two main metrics that have been frequently used in earlier research. The earlier research also made use of other accounting-based metrics including Net Profit Margin, Return on Sales (ROS), and Return on Investment. The return on assets (ROA) is commonly acknowledged as the predominant accounting-based measure of firm performance, as demonstrated by its application in numerous studies (King & Santor, 2008; Sinebe & Akpomiemie, 2023; Umeh et al., 2020). Return on assets (ROA), which is also known as return on investment (ROI), is a metric used to assess a company's profitability or how well its management strategies utilise its assets to produce profits. The measure is calculated by dividing the earnings, which have been adjusted for interest expenses and taxes, by the value of total assets. The aforementioned measure additionally functions as a significant measure of a company's profitability that is derived from its operating activities. This study adopts ROA as measure of financial performance.

Capital Structure

A company's capital structure, which ensures growth, expansion, profitability, and financial stability, is made up of its debt and equity. A company's capital structure, according to Muhammad et al. (2023), is the precise ratio of debt to equity that is used to fund the operation of the business. The method a company uses to fund its assets with a mix of debt, equity, and hybrid securities is referred to as its capital structure. Asen et al. (2023) define hybrid securities as a class of securities that incorporate aspects of debt and equity, have a set or variable rate of return, and give the holder the opportunity to convert them into shares of the underlying company.

Firm Size

Firm size is a measure of the scale or capacity of a business unit. It can be based on different criteria, such as fixed asset investment, production output, number of employees, or revenue (Asen et al., 2023). Firm size is important for determining the profitability and efficiency of a firm, as larger firms may benefit from economies of scale or product diversification. Large and small

businesses differ from one another in a number of ways, which has varied effects on business success. Therefore, the relationship between capital structure choices and financial success may be strengthened or weakened depending on the size of the company. It is also important to observe how business size modifies the relationship between capital structure and profitability. Total assets, sales, or corporate capital can be used to calculate the size of a company. In comparison to enterprises with smaller total assets, those with larger total assets are thought to have better prospects during a period of relative stability and are able to turn a profit. Due to their larger markets and greater potential for generating sizable profits, large businesses are more competitive than small businesses (Ahmed et al., 2023; Mahdaleta et al., 2016).

Empirical Review

Research on the connection between equity financing and business performance has produced contradictory findings. Opoku-Asante et al. (2022), for instance, found a significant negative relationship between equity financing and financial performance after using 425 cross-sectional firm-year samples from companies in Ghana and Nigeria between 2014 and 2019 to investigate the relationship between capital structure and equity financing and financial performance. Using a panel data methodology, Audu and Anafi (2013) investigated the impact of equity financing on the profitability of a list of banks listed on the Ghana Stock Exchange between 2005 and 2012. Their findings showed a negative correlation between equity financing and listed bank profitability.

Furthermore, Akeem et al. (2014) selected ten businesses at random from the Nigerian stock exchange for their study on the influence of equity finance and capital structure, and they utilised generalised least square regression to examine secondary data from [2003 to 2012]. The chosen ratio was total depth to asset. The age of the organisation is used as the control variable. The total debt to equity and long-term debt to capital ratios, which are equity finance-related factors, demonstrate that equity finance negatively affects the performance of the organisation, which is measured by return on investment and return on asset. Njagi et al. (2017) investigated the effect of equity financing on the financial performance of SMEs in Kenya using a target population of 300 SMEs, from which a sample size of 60 SMEs was chosen. The study unequivocally demonstrated a link between equity funding and the financial performance of SMEs. With little to no interest-bearing cash outflow, equity offered a long-term financing option. The study also discovered that the funding source and liquidity situation of the SMEs significantly affected how well they performed. Ahmad et al. (2023) used secondary data gathered from publicly available annual reports of manufacturing companies registered on the Tehran Stock Exchange (TSE) between 2011 and 2019 to investigate the moderating influence of agency cost on the relationship between equity capital and firm performance. Empirical findings indicate a negative relationship between equity capital and firm performance. Although there is a favourable correlation between agency cost and ROA and EPS, agency cost also has a negative effect on corporate performance. The relationship between equity financing, capital structure, and firm performance is empirically examined by Abdullah and Tursoy (2021). The non-financial companies listed in Germany between 1993 and 2016 make up the study sample. Comparing German non-financial enterprises to those in similar nations, the study found that over 40% of their total assets are funded by equity.

The findings validate the favourable correlation between capital structure and firm performance. Asen et al. (2023) examined equity capital measures on manufacturing firm's performance in Nigeria. The results showed that, while ROA negatively effects LDTA, D_E, and TDTA, performance proxy by ROE and Tobin's Q significantly influences SDTA, SIZE, LDTA, and TDTA using annualised panel data for a sample of 15 listed businesses from various sectoral categories from 1999 to 2018. Based on a wealth of theory and empirical data from prior studies examining the relationship between firm size and profitability and equity financing options, it can be concluded that firm size is a significant determinant of capital structure decisions and profitability.

The nonlinear relationship between company performance, capital structure, and size in India was studied by Jaisinghani and Kanjilal (2017). The impact of debt financing on business performance is determined by firm size, as demonstrated by the results of their model, which included firm size as a threshold variable. Businesses with total assets over a specific level (148 million rupees) have more total debt than small businesses, which have total assets below that barrier. In a different study, Fatima and Bashir (2021) investigated the moderating effect of business size on the link between capital structure and textile industry performance in Pakistan. From 2010 to 2017, data from the annual reports of textile companies registered on the Pakistan Stock Exchange (PSE) were gathered for the study. According to the study's findings, debt accounts for 65% of the assets of Pakistani textile companies, indicating that these businesses are using a lot of financial leverage. Firms with an average total debt ratio of approximately 65% are considered to be fairly heavily leveraged.

Diantimala et al. (2021) investigated the impact of firm value resulting from capital structure decisions on business size in Indonesia, one of the emerging markets. The market value and annual reports of 1,638 listed non-financial enterprises were employed in this meticulously conducted research as the result of a random selection strategy with observation periods spanning seven years, from 2012 to 2018. These findings support earlier studies that found that the optimal capital structure choice increases firm value by providing a suitable debt to equity ratio for the company. In a different study, Fatima and Bashir (2021) investigated the moderating effect of business size on the link between capital structure and textile industry performance in Pakistan. From 2010 to 2017, data from the annual reports of textile companies registered on the Pakistan Stock Exchange (PSE) were gathered for the study. According to the study's findings, debt accounts for 65% of the assets of Pakistani textile companies, indicating that these businesses are using a lot of financial leverage. Firms with an average total debt ratio of approximately 65% are considered to be fairly heavily leveraged.

Ahmed et al. (2023) also looked into the moderating role of business size in the relationship between capital structure and firm profitability. The research employed secondary data sourced from the publicly available annual financial statements of 156 industrial firms that were listed between 2011 and 2019 on the Tehran Stock Exchange (TSE). The findings showed that choices on capital structure have a detrimental impact on profitability. Profitability, however, is strongly correlated with firm size. The strong results also showed that a firm's size has a big impact on how much the choice of capital structure affects the profitability of the company. In Iran, as in other

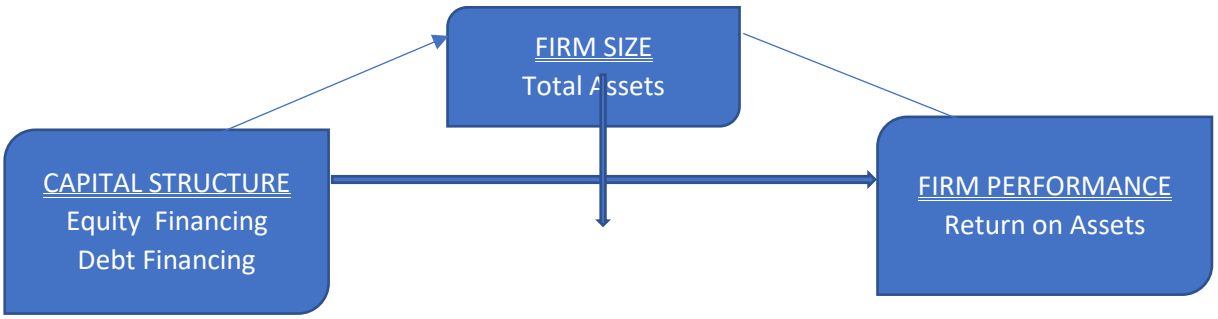
rising countries, long-term debt is a substitute source of funding when local resources are insufficient. Deme and Yuniarti (2022) analyzed the effect of capital structure and firm size on firm value with profitability as a moderating variable. Based on the outcomes of the experiments, it was determined that capital structure and firm size both significantly affect firm value at the same time. Profitability, as a moderating variable, can increase or moderate the relationship between debt financing and company value, but it cannot moderate the influence of firm size on firm value. Debt financing, on the other hand, has a considerable impact on firm value to a partially extent.

Theoretical Framework: The Pecking Order Theory

The pecking order idea forms the basis of the inquiry. The theory explaining the relationship between capital structure, profitability, and business success was developed by Myers and Majluf in 1984. It is thought to be the most widely recognised theory of capital structure. This theory suggests that enterprises should use a hierarchy to select their funding source in order to meet their capital demands and increase profitability (Chandra et al., 2019). Neves et al. (2020) claim that this is a useful tactic for lessening information asymmetry.
According to the argument, since retained earnings are less risky, businesses should use them first. But in order to avoid missing out on possible investments, businesses resort to less hazardous debt when internal funding is insufficient. If companies are unable to get finance, they may, as a last resort, issue new equity or stocks.

Based on the above theoretical framework and the hypotheses, the following conceptual model can be proposed:

Fig. 1: Theoretical Framework



Source: Author's Elaboration, 2024

The interaction between the variables examined in this paper is conceptualised visually in the framework above. Equity financing and debt financing are the two indicators of capital sructure that the study uses as independent variables. The study uses financial performance as the dependent variable and firm size as the moderating variable.

III. Methodology

Design, Sampling and Data

This study adopted both cross-sectional and longitudinal research designs. The cross-sectional design is appropriate since it entails gathering data on multiple cases across different firms. On the other hand, the longitudinal design is considered appropriate for this study since it facilitates measurement of corporate governance disclosure trends from data collected for twelve (12) years starting from 2011 to 2022.

The fifteen (15) industrial goods firms that are listed on the NGX as of December 31, 2022, make up the study's population (NGX, 2022). Nevertheless, eight (8) companies were eliminated from the analysis due to their incomplete data. After sifting the financial data, the working population was comprised of seven (7) companies. Therefore, a census sample approach was used because of the small population. The study's data set included yearly reports from the seven (7) industrial goods companies that were sampled, giving a total of eighty four (84) year-end observations, for the years 2011 through 2022.

Model Specification

To test the hypothesis developed, a linear and multivariate regression model which expresses financial performance as a function of capital structure is stated in functional form as follows:

Fin Performance = (Capital Structure) ……. (i)

This is stated in econometric form to suit our objective as follows

$ROA_{it} = \beta_0 + \beta_1 EQF_{it} + \beta_2 DBF_{it} + e_{it}$ ……. (ii)

Introducing the moderating variables, equation (ii) is transformed as

$ROA_{it} = \beta_0 + \beta_1 EQF_{it} + \beta_2 EQF * SZE_{it} + \beta_3 DBF_{it} + \beta_4 DBF * SZE_{it} + e_{it}$ ……. (iii)

Where:

ROA = Return on Assets; DBF = Debt financing; EQF= Equity financing ; SZE = Firm Size

e = Stochastic or disturbance term; i = Companies; t = Time dimension of the Variables

β_0 = Constant or intercept; $\beta_{1\text{-}2}$ = Coefficients to be estimated or the Coefficient of slope parameters.

Measurement of Variables

Table 1: Measurement of Variables

SN	Variable	Acronym	Measurement	Source	*A Priori* Expectation
1	Financial Performance	ROA	Profit after tax divided by total assets	Otuya and Omoye (2021)	
2	Debt Financing	DBF	Total long-term debt scaled by shareholders fund	Ahmed and Ibrahim (2015)	+

3	Equity financing	EQF	Value of equity divided by shareholders fund	Opoku-Asante, et al. (2022)	+
4	Firm Size	SZE	Log of firms total assets		+

Data Analysis Method

To obtain robust results, a GMM panel estimator was adopted to determine the link between capital structure and financial performance. Using the GMM method helps to cater for instrumental variables for possible endogenous factors. In particular, Durbin-Wu-Hausman was carried out to ascertain the presence or otherwise of endogeneity effect in financial performance – capital structure association. The DWH specification test results will confirm or disprove the endogeneity effect in insider shareholding and establish the need for the adoption of a dynamic panel GMM estimator for this study.

IV. Presentation of Results and Discussion

Table 2: Descriptive Statistics

	ROA	DBF	EQF	SZE
Mean	0.2302	0.2058	0.2487	12.2532
Maximum	1.0430	0.4550	0.3840	7.5647
Minimum	-0.1280	0.0640	0.0010	323.4533
Std. Dev.	0.2410	0.0953	0.0780	1.3437
Jarque-Bera	36.4670	5.2151	9.4859	434.4536
Probability	0.0000	0.0000	0.0000	0.0000
Observations	84	84	84	84

KEY: ROA: Return on Assets; EQF: Equity Financing; DBF: Debt Financing; SZE: Size

Table 1 shows the descriptive statistics of the variables in the model. The mean for ROA is 0.230 which indicates an average 23% of return on assets of the sampled firms during the period under review. The highest and lowest ROA is 1.04 and -0.128 respectively. The standard deviation of 0.241 indicates no substantial dispersion from the average return on assets. The probability value of 0.000 implies that the data satisfies normality criterion and is suitable for further analysis. Equity financing has a maximum of 0.384 and a minimum of 0.001 of sampled firms with a mean of 0.248. The standard deviation of 0.078 also shows no considerable dispersion in the distribution. The descriptive statistics also show a mean of 0.0203 for DBF which indicate an average debt ratio of about 20% in the sampled firms. The maximum and minimum ratios for DBF are 45% and 6% respectively. The standard deviation of 0.0953 is low from the mean and indicates that there is not much variation across the companies surveyed. Finally, firm size has a maximum of 323 and a minimum of 7.5 of sampled firms with a mean of 12.253. The standard deviation of 1.343 also shows no considerable dispersion in the distribution.

Table 3: Correlation Table

	ROA	EQF	DBF	SZE
ROA	1.000000			
EQF	-0.164255	1.000000		
DBF	0.059822	-0.176986	1.000000	
SZE	0.208079	-0.374611	0.458080	1.000000

KEY: ROA: Return on Assets; EQF: Equity Financing; DBF: Debt Financing; SZE: Size

Table 2 is a correlation matrix adopted to check the level of relationship between the dependent and independent variables on one part, and among the independent variables on the other. The correlation statistics shows that ROA has a negative relationship with EQF (r=-0.164). The correlation also shows that ROA has a positive relationship with DBF (r=0.059) and SZE (r=0.208). The correlation matrix also shows that EQF has a negative relationship with DBF (r=-0.178) and SZE (r=-0.374). Further, DBF is observed to have a positive relationship with SZE (r=0.0458). It is observed that none of the variables shows significant high correlations with another.

Table 4: GMM Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.476185	1.865335	4.544056	0.0000
EQF	-0.016017	0.057501	-0.278545	0.7807
DBF	0.041379	0.030420	1.360281	0.0044
EQF*SZE	0.039020	0.014954	2.609320	0.0024
DBF*SZE	0.100478	0.050995	-1.970351	0.0404

R-squared	0.6825	Mean dependent var	9.996305
Adjusted R-squared	0.5533	S.D. dependent var	8.939151
S.E. of regression	8.8106	Sum squared resid	36407.71
Durbin-Watson stat	1.8663	J-statistic	12.75335
Instrument rank	8	Prob(J-statistic)	0.000002

Source: Eview Output, 2024

Table 4 presents the findings from the panel data estimation for the studied listed industrial goods companies in Nigeria. The GMM method of panel estimation is the model chosen for this investigation, as was previously indicated. Further examination of the regression results on the relationship between capital structure and financial performance shows an R^2 value of 0.68 which suggests a 68% explanatory ability of the model for the systematic variations in the dependent variable with an adjusted value of 0.55 for the model. The J-stat (12.7) and p-value (0.0000) indicate that the hypothesis of a significant linear relationship between the dependent and independent variables cannot be rejected at a 5% level. For an evaluation of the effects of the explanatory variables on financial performance, we compare the slope coefficients. As observed, the coefficients of capital structures in form of debt financing appeared positive and significant while equity financing was negative but not significant at the 5% critical level. However, the combined effect of firm size on equity financing and debt financing shows a significant positive

relationship as the probability value is less than 0.05 (p.<0.05). The D. W statistic of 1.86 indicates the absence of serial autocorrelation of the residuals in the model.

Discussion of Findings

Findings of the study are discussed below:
Findings from the study reveal a negative but not significant effect of equity financing on return on assets ($\beta_1 EQFit$ =-0.016017, $p=0.7807$). This result meets our expectations and conforms to previous studies such as Opoku-Asante et al. (2022) Audu and Anafi (2013).

As regards the moderating effect of firm size on the relationship between equity financing and financial performance, the GMM estimates showed a positive and significant effect. Thus this lends credence to the hypothesis that the effect of equity financing on financial performance is strengthened by the size of the firm (β_2EQF * SZE_{it} =0.039020, $p=0.0024$). The result meets our a priori expectation and is consistent with prior studies such as Ahmad et al. (2023) Asen et al. (2023)

The effect of debt financing on financial performance revealed a significant positive effect between adopting debt in financing operations and return on assets of industrial goods companies ($\beta_1 DBFit$ =0.041379, $p=0.0044$).. The implication is that companies that deploy debt financing measures can use them to influence returns on assets. This result meets our priori expectation as we expected a significant positive effect due to tax gains in adopting debt financing. Prior studies such as Fatima and Bashir (2021), Diantimala et al. (2021), and Ahmed et al. (2023) conform to this finding.

As regards the moderating effect of firm size on the relationship between debt financing and financial performance, the GMM estimates showed a significant positive effect (β_4DBF * SZE_{it} =0.100478, p=0.0404). The result meets our a priori expectation and conforms with the study by Deme and Yuniarti (2022).

V. Conclusion and Recommendations

This study was carried out to examine the effect of firm size on the relationship between capital structure and financial performance of industrial goods companies listed in Nigeria. In order to determine if the variables under study have an effect on the financial performance of Nigerian listed industrial goods businesses, we have examined some basic descriptive data and employed regression analysis. The study, using the results of the financial statement statistics and exploratory variables in a regression model showed that debt financing has a positive and significant effect while equity financing has a non-significant negative effect on return on assets. The study also found that firm size strengthens the relationship between capital structure and financial performance of listed industrial goods companies in Nigeria and and concludes that corporate capital structure influences the financial performance of listed industrial goods companies in Nigeria.

In line with the findings of this study, the following recommendations are proffered:

1. The study recommended that the industrial goods companies in Nigeria should use the less of equity because it decreases the performance of companies.
2. Companies in the industrial goods sector should make use of more debt financing since it has shown to positively affect profitability.
3. Companies should use the optimal level of capital structure because high level of debt causes the insolvency risk of companies.

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