Effect of Mix Capital on Financial Performance of Quoted Manufacturing Companies in Nigeria

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ABSTRACT

This study examines mix capital and financial performance of quoted manufacturing companies in Nigeria. The ex post facto research design was employed in the study. The study population comprised of thirty-eight (38) manufacturing companies in Nigeria as listed on the Nigerian Exchange Group (NGX) over the period 2012 to 2023. Census sampling method was employed to determine sample for the study after sanitizing the population of the study. Data collection for this study was source through the published financial reports of quoted manufacturing companies from 2012-2023. The investigation utilizes descriptive statistics and Panel Ordinary Least Square Regression technique for data analysis. The study revealed the existence of a positive and significant effect of equity capital on Return on equity by 0.0073 (p = 0.0042) and on Tobin Q by 0.0029 (p = 0.0002). The study concluded that statistically, there is positive and significant effect of capital structure on financial performance of listed manufacturing companies in Nigeria. The study recommended that management of manufacturing companies should endeavour to explore opportunities to attract more equity investors through robust shareholder engagement and transparent financial reporting, which can ultimately improve profitability and long-term growth.

Keywords: Mix Capital, Financial performance, Manufacturing companies, Equity Capital, Short term debt, Long term debt, Return on Asset, Return on Equity, Tobin Q, Firm Size.
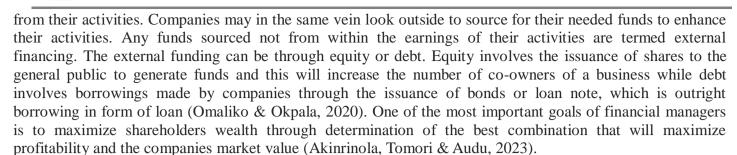
INTRODUCTION

Capital structure and its formation has been a subject of considerable interest in both developed and developing economies of the world, but the fact remains that no business exists without capital (Oladele, Omotosho & Adeniyi, 2017). Capital is a very important factor in an organization, and it is relevant to its sustainability, growth and existence (Olayemi & Fakayode, 2021). Accessibility of capital plays a major role in running the daily activities of a business. It is the life of any entity, it so vital and serves as an instant cause for companies not commencing or progressing. Many companies collapsed within few years of starting up because of a lack of access to capital. In the same vein, how a company finances its daily activities and various investments affects its survival and existence. Therefore, it is very crucial for the survival of any company and the financial managers of such companies are responsible for the capital structure mix decision (Ohaka, Edori & Ekweozor, 2020).

According to Akintoye, (2016) capital structure decision is important for any business establishment arising from the need to maximize the wealth of business stakeholders and because of the fact that such decision has a significant impact on the companies' ability to compete in the competitive atmosphere. On a daily basis, we hear corporate officers, professional investors, and analysts discuss a company's capital structure. Many may not know what a capital structure is or why they should even concern themselves with this term, but the concept of capital structure is extremely important because capital structure reflects overall health in all types of assets and liabilities held (Boshnak, 2022).

Two major sources are available for companies willing to raise funds for their activities (Abdul, John & Idachaba, 2019). These sources are internal and external sources. The internal source refers to the funds generated from within an enterprise which is mostly retained earnings. It results from success enterprises earn

from their activities. Companies may in the same vein look outside to source for their needed funds to enhance their activities. Any funds sourced not from within the earnings of their activities are termed external financing. The external funding can be through equity or debt. Equity involves the issuance of shares to the general public to generate funds and this will increase the number of co-owners of a business while debt involves borrowings made by companies through the issuance of bonds or loan note, which is outright borrowing in form of loan (Omaliko & Okpala, 2020). One of the most important goals of financial managers is to maximize shareholders wealth through determination of the best combination that will maximize profitability and the companies market value (Akinrinola, Tomori & Audu, 2023).

In the modern world, manufacturing sector is regarded as a basis for determining a nation economic efficiency. Manufacturing companies in Nigeria are drivers of the nation's economy; however, this sector has witnessed the collapse of companies at an alarming rate as most of them collapsed due to lack of finance (Olayemi & Fakayode, 2021). Arising from the strategic importance of the manufacturing sector to an economy such as Nigeria's, it is important for investors and shareholders to understand the effect of capital structure on the performance of manufacturing companies. This is because capital structure decision on how to finance their assets by debt or by equity will affect relationship with the final result for any given period, since it influences the returns and risks of shareholders and consequently affects the market value of the shares. Usman and Balogun (2021) stress that growth in the sector has contributed to gross domestic product GDP has remained 1-digit value over the last five decades compared to other African countries with 2-digit value. For instance, the sector alone contributed 7.87% overall to GDP from 2001-2018 (CBN, 2018). Nigerian manufacturing industries is lagging behind in terms of resource to perform optimaly.

Statement of the Research Problem

The manufacturing sector is one of the major sectors that contributes massively to the gross domestic product of any nation (Obamuyi, Edun & Kayode, 2012; Mishra, 2018). They are involved in the business of converting raw materials into finished goods for consumption and other purposes which stimulate the economy. Therefore, they must be liquid and also secure a balanced combination of both debt and equity in order to remain profitable. Manufacturing companies are considered important in both developed and developing countries. They are producer of goods and services which help to increase economic growth and contribute significantly to employment creation. They need a permanent capital to purchase their machinery and equipment, they also need a stable capital as a working capital to finance their normal day to day activities of the business-like paying employees' salaries and suppliers of raw materials, among others. (Akinrinola, Tomori & Audu, 2023). To carry out all these activities only equity as means of capital cannot be enough, the company need debt as part of capital structure. It is the goal of a company to maximize its value and the wealth of its shareholders therefore, company needs to maintain an appropriate capital structure that would maximize performance and minimize financing cost, (Dahiru, Dogarawa & Haruma, 2016). To identify appropriate mix of capital that will maximize value and the wealth of its shareholders has been a huge task for most companies. (Olayemi & Fakayode, 2021).

This study therefore will undertake an in-depth evaluation of effect of mix capital on financial performance of quoted manufacturing companies in Nigeria by capturing long term debt, short term debt and equity as capital mix.

Objectives of the Study

The general objective of this study is to examine the effect of capital structure of quoted manufacturing companies in Nigeria with aim of improving their financial performance.

While the specific objectives are to;

i) assess the mix of capital in the quoted manufacturing companies in Nigeria;
ii) examine the effect of equity on financial performance of quoted manufacturing companies in the study area.

Scope of the Study

The scope of this study is to critically evaluate the effect of mix capital on the financial performance of quoted manufacturing companies in Nigeria. However, the study will cover all manufacturing companies quoted in Nigeria. The choice of manufacturing companies was because they are transforming the economy towards sustainable development through massive production and consumption patterns that meet consumer's satisfaction sustainably. The study will cover a period of 12 years (2012-2023). The justification for choosing this period is that it covers 6th and 7th recession in Nigeria. A period of four years before and a period of three years after the recession.

The Concept of Mix Capital

Mix Capital is the application of external and internal sources of funds to finance the operations of corporate organizations. It is a collective use of equity capital and debt capital to fund business activities. Mix Capital is all about mobilization of mix funds (such as retained earnings, share capital, short and long-term debts) to run a company's activities (Ahmed, Ahmed & EI- Maude, 2016; Ahmad & Ghazalat, 2019). It an important aspect of a company's financial decisions (Musila, 2015). Mix Capital refers to the composition of capital a company employed in financing its activities. It is the proportion of debt and equity that forms the total mix capital of the company. Mix Capital is one of the most important decisions in the field of corporate finance and can be seen as the way an organization finances its assets by combining debts and equity (Dinh & Pham, 2020).
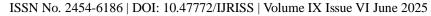
Etale and Ekpulu (2019) affirmed that mix capital embodies the financial framework of corporate entity which comprises of the debt and equity employed to finance the company assets and overall operations. Manufacturing Company must be able to establish different ways for selecting the appropriate components of capital to employ in company operations in order to boost productivity and accomplish performance in order for the mix capital to be acceptable and effective. This method should be defined thoroughly by the finance management. The capacity of the company to correctly identify sources of finances adequate to support its operations will differentiate between good mix capital management and poor mix capital management (Tian & Zeitun, 2017).

Mix Capital determines the long-term solvency and financial stability of companies and is measured using different financial ratios such as Gearing ratio or Debt Equity Ratio or Leverage ratio, Interest Coverage Ratio, Long term debt ratio, Debt Asset Ratio, Short term debt ratio, among others (Hasan, Ahsan, Rahaman & Alam, 2014; Nguyen & Nguyen, 2020).

According to Kenon (2019), there are two types of capital: equity capital and debt capital. Each type of capital has its own set of benefits and drawbacks and determining the best capital structure in terms of risk/reward payback for shareholders is a crucial part of sound corporate governance and management.

Debt Financing

Debt financing involves an action that is bound by time for the repayment of debt and the debt's interest at an agreed end of the period. It occurs when a company borrows needed cash resulting in debt to a lender or an investor for a short term or for long-term capital needs of the company. Dare and Sola, (2018) defined debt as an organization's borrowing of cash to operate its activities. One of the advantages of using debt as a source of money is that when the loan is paid off, the connection ends and no more responsibilities exist. Onaolapo and Kajola (2018) confirm this by stating that debt entails borrowing from a third party while maintaining ownership. Debt refers to a contract between a debtor (borrower) and a creditor (lender), which may take the form of leases, bonds, notes, certificates, debentures, and mortgages (Akinleye & Akomolafe, 2019). Consequently, "total debt" refers to the total amount of money that an organization has borrowed from a third party in order to finance its activities.

Long Term Debt Financing

Ebe (2021), defined long term debt as the percentage of company's assets that are financed with loans and other financial obligation that would last more than one business cycle. Long term debt is the ratio that represents the financial position of a company and its ability to meet the whole financial requirements of the company. As this ratio is calculated yearly, decrease in the ratio would denote that the company is faring well and is less dependent on debt for their business needs. Long-term debts ratio shows the percentage of assets financed with debt which is payable after more than one year. It includes bonds and long-term loans. Normally, these bonds and loans carry a higher interest rate, as lenders demand a higher return in exchange for taking on the greater risk of loaning money over a long period of time. In reality, long-term debt limits managerial discretion by making access to new funds and over-investment less likely (Akaji, Nwadialor & Agubata, 2021). Mathematically, Long term debt financing is measured as long-term debt to total assets. Ubesie (2016), affirmed that long term debt financing is a debt financing that matures in more than one year. It arises when an organization raises money for capital disbursements by selling corporate bonds, trade bills or notes to individuals and/or institutional investors. In return for lending the money, the individuals or institutions become creditors and receive a promise when the principal and interest on the debt will be repaid.
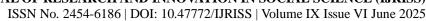
Short Term Debt Financing

According to Olaniyi, Elulu and Abdusalam (2015), short-term debt is an account shown in the current liabilities portion of a company's statement of financial position and it comprises of any debt incurred by a company that is due within a year period. The debt in a company's liabilities account is usually made up of short-term bank loans among other types. Short-term debt is used to finance current assets that can be quickly turned back into cash; examples of this type of debt are accounts receivable and inventories. Non-current liabilities in the form of long-term debt, or debts, are used to finance long-term assets, such as the purchase of land and the construction of a building or ship (Julius & Lucky, 2020). Short-term debt financing according to the matching principle of finance, short-term assets should be financed with short-term liabilities and long-term assets should be financed with long-term liabilities (Ebe et al., 2021). Short-term assets and liabilities are generally regarded as those items that will be used, liquidated, mature or paid off within one accounting year (Guin, 2011; Ada, Ebe & Uwakwe 2021). A company's current assets (including cash, inventories, accounts receivable, etc.) are generally considered short-term assets while plant and equipment are generally considered long-term assets. Nevertheless, current assets can be long-term if they are not completely used or liquidated during the year.

Equity

Equity, as defined by Olayemi et al. (2021), as the capital from external source generated by a company through the issue of equity shares to the public to fund its investment activities. Shareholders of equity own part of the companies and are giving dividends at the end of every accounting year through the profit made by the company. After the resolution of the claims made by preference shareholders, ordinary shareholders have the right to receive returns. The information on the company is available to all shareholders, and the shareholders' votes give them total control over the activities of the company. According to Warokka, Herrera and Abdullah (2020), shareholders, who are also referred to as equity holders, are considered to be partial owners of the company. Furthermore, they are held responsible for the risk that the company faces since they have residual claims on the assets of the company.

Concept of Financial Performance

According to Erikie and Osagie (2017), financial Performance is the measuring of results of a company policies and operations in monetary terms. These results are reflected in the company's return on investment, return on assets, value added, etc. Financial performance is about how a company has succeeded in attaining its objectives, and this generally means how it has perfectly applied its assets from it ordinary course of doing business to generate revenue (Denis, 2017). It is a way of measuring and evaluating a company's financial condition over a given accounting period (Oyetade, 2014). It thus requires adequate and appropriate tools with valid criteria (Ali, 2020). The concept of performance is multifaceted. Various academics, educators,

researchers, and intellectuals have conceptualized performance from various perspectives. Shen (2017), for example, saw performance as both a means to a goal and an end result. He went on to say that performance is a sequence of actions taken over a period in order to achieve a desired end or result. He went on to say that the final product may be called performance.

Ahmad, Abdullahet and Roslan (2019) had a similar perspective, claiming that performance is the capacity to distinguish the end effects of organizational operations. Financial performance, according to Oyedokun et al. (2018), is an organization's meaningful outcomes after efficiently employing various constrained resources. Furthermore, he asserted that performance does not refer to the conclusion or outcome of an activity, but rather to the path taken. It is possible to evaluate the level of a company's financial performance by using a variety of different financial indicators, such as return on asset (ROA), TOBIN's Q, return on investment (ROI), return on equity (ROE), earnings per share (EPS), market share (MS), revenue growth (RG), and cost merit. Some of the indicators that should be looked for when measuring performance in non-financial or market-based areas include growth in market share and sales, satisfaction among customers and employees, organizational survival and stability, risk management, stakeholder management, and productivity, relational and social capital, and behavioral performance.
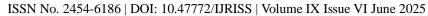
Return on Asset

Return on assets of a company is a metric that is primarily concerned with finance and examines both the operational and financial health of the business (Olarewaju, 2019). The ratio that is referred to as the return on assets (ROA) is computed in such a manner that the more productive the use of assets is for the benefit of shareholders. The capacity of a company to put its resources to good use in order to meet the financial expectations of its shareholders is one of the most important factors in determining whether or not it will be profitable (Abor, 2018). Return on assets, often commonly referred to as ROA, is a fundamental measurement of a company's capacity to create profits from its assets and is typically abbreviated as ROA. Return on asset is a financial measure that indicates a company's rate of return in proportion to the value of its assets (Oyedokun et al., 2018). Return on asset is a financial measure that shows a company's rate of return in proportion to the value of its assets in other words, the return on asset measure is used to assess how much money a company makes in proportion to the value of its assets in order to have a better idea of how profitable the company is. It indicates how well a company utilizes its resources to achieve the objectives it has set for itself.

Return on Equity

Return on equity (ROE) is a metric that is used to evaluate the success of a company based on the value of its shareholders' equity. To calculate a company's return on equity, its net income divided by the total amount of equity held by its shareholders. According to Sunday and Samson (2019), ordinary shareholders are concerned about the rate of return gained by a company in proportion to the quantity of capital given by equity holders, after subtracting the amount that was used to pay other capital suppliers. Return on equity is a common statistic that is used to assess the effectiveness of a business. It goes beyond a simple calculation of profit. ROE is a measurement that may be used to determine the amount of profit that can be attributed to ordinary shareholders in relation to the book value of the investment that they have made in a company (Ahmad et al., 2019). The value of return on equity may be calculated by taking the whole amount of net returns that are available to a company's shareholders and dividing that number by the total amount of equity held by those shareholders.

Tobin Q

Tobin's Q is named after James Tobin, it is a financial performance evaluation method developed by James Tobin in 1969 which is used to measure the performance of a company. It is used to measure the relationship between a company's market value and its replacement cost. Tobin's Q, or the Q ratio, is a financial ratio that measures the market value of a company relative to its book value or total asset replacement cost. Market value is centered around a company's stock price, while book value is based on the difference between total assets and total liabilities on a company's balance sheet. Replacement cost is a method of accurately measuring the current market value of a company's assets. A Q ratio greater than 1 indicates that the market value of a company is higher than its replacement cost, suggesting that the company is deploying resources efficiently

and has a higher competitive power. In other to obtain the figure for the Tobin Q, the book value of total debts and market value of equity, will be divided by book value of the total asset. 'Q' is the ratio of the market value of the existing shares (share capital) to the replacement cost of the total physical assets. Tobin's Q is widely used proxy for gauging the operating performance of businesses in studies of corporate governance (Brainard & Tobin, 1968).

Theoretical Review

Modigliani and Miller (MM) Theory

Modigliani and Miller (MM), 1958 illustrates that under certain key assumptions, firm's value is unaffected by its capital structure. Capital market is assumed to be perfect in Modigliani and Miller's world, where insiders and outsiders have free access to information; no transaction cost, bankruptcy cost and no taxation exist; equity and debt choice become irrelevant and internal and external funds can be perfectly substituted. The MM theory (1958) argues that the value of a firm should not depend on its capital structure. The theory argued further that a firm should have the same market value and the same Weighted Average Cost of Capital (WACC) at all capital structure levels because the value of a company should depend on the return and risks of its operation and not on the way it finances those operations. Miller brought forward the next version of irrelevance theory of capital structure. He appealed that, capital structure decisions of firms with both corporate and personal taxes circumstances are irrelevant (Miller, 1977). If these key assumptions are relaxed, capital structure may become relevant to the firm's value.

So, research efforts have been contributed to relaxing the ideal assumptions and describing the consequences. This theory was criticized on the ground that perfect market does not exist in real life situation. Attempts to relax these assumptions particularly the no bankruptcy cost and no taxation led to the static trade off theory. This theory upholds that a firm's worth increases when it incurs more debt and this helps the firm to realize financial sustainability. This theory supports the practice of using debt than other internal capital. The theory states that if a company uses debt instead of internal capital, it will be in a better position to take advantage of its tax benefits.

Agency Cost Theory

This is a theory concerning the relationship between the principal (shareholders) and the agent of the principal (company's managers). This suggests that the firm can be viewed as a nexus of contracts (loosely defined) between resource holders. An agency relationship arises whenever one or more individual, called principals, hire one or more other individuals, called agents, to perform some service and then delegate decision- making authority to the agents. The agency theory concept was initially developed by Berle and Means (1932), who argued that due to a continuous dilution of equity ownership of large corporations, ownership and control become more separated.

The lowering of agency conflicts would lead to reduction in agency costs which would lead to improved financial growth. The use of debt in the firm as observed by Jensen and Meckling (1976) can help to control and monitor managers in the firm to ensure that they follow objectives that are beneficial to the firm. Buferna, Bangassa and Hodgkinson (2005) supported this theory by indicating that inclusion of debt in the financial structure provides a motivation for managers to stimulate the growth of a firm so as to have cash flows that would satisfy repayments of debts. This leads to the enhancement of the firm's profitability (Dawar, 2014). This theory postulates that short term debt and any other form of debt that a firm uses reduces agency conflicts between managers and shareholders of the firm and hence boosts financial growth (Rashid, 2015). The agency theory plays a crucial role in financing decisions because of the problems that arise between the debt holders and the shareholders.

Pecking Order Theory

The pecking order theory of capital structure as introduced by Donaldson (1961) is among the most influential theories of corporate leverage. It goes contrary to the idea of firms having a unique combination of debt and

equity finance, which minimize their cost of capital. It is the main contender to the trade-off theory; it suggests that actual corporate leverage ratios typically do not reflect capital structure targets, but rather the widely observed corporate practice of financing new investments with internal funds when possible and issuing debt rather than equity if external funds are required. In the pecking order model, an equity offering is typically regarded as a very expensive last resort. The theory suggests that when a firm is looking for ways to finance its long-term investments, it has a well-defined order of preference with respect to the sources of finance it uses. It states that a firm's first preference should be the utilization of internal funds (i.e. retain earnings), followed by debt and then external equity.

Empirical Review

The following empirical were undertaken in developed countries:

Sabin and Miras (2015) investigated the influence of capital structure on Malaysian listed industrial product business performance from 2011 to 2015. The data is analyzed using descriptive statistics and multiple regression. The research discovered that industrial goods companies' financial structures significantly depend on equity financing. Aside from that, the regression results revealed that debt to equity has a negative influence on ROA, whereas total debt and total equity ratios had negligible effects. ROE is negatively impacted by debt to equity, positively impacted by total debt, and insignificantly impacted by total equity. Aside from that, debt to equity has a negative effect on ROE, total debt has a positive effect on ROE, and total equity has no effect on ROE. Finally, debt to equity has a negative significant effect on earnings per share, total debt ratio has a positive significant impact on earnings per share, and total debt has an insignificant influence on earnings per share. The present research investigates effect of capital structure on quoted manufacturing companies in Nigeria.

Ahmad (2016) investigated the impact of capital structure on the financial performance of Kenyan commercial banks using regression analysis. From 2005 to 2014, data was collected over a ten-year period. The findings revealed that increasing debt has a favorable impact on financial performance, resulting in increased profitability. While the previous research concentrated on Kenya's banking sector, the present study focused on Nigeria's manufacturing business. Schulz (2017) examined how the capital structure of manufacturing and allied companies that are listed on the Kenyan stock market affects the profitability of such companies. Data were analysed using descriptive and inferential statistics. According to the findings of the study, the amount of equity funding received has a significant bearing on the net profits of Kenyan manufacturing and associated companies that are publicly traded. According to the findings of the study, one method by which a company may raise money for its business operations is by selling shares of its stock. This method is referred to as equity financing

Abdullahi, Kwaru and Karim (2023) examined Capital Structure and Financial Performance of Listed Consumer Goods Firms in Nigeria. The study covered a period of five years, from 2017 to 2021. The Ordinary Least Square (OLS) regression technique was used to analyze the data. The study found that LTDTA and STDTA have positive and negative significant effect on financial performance of consumer goods firms in Nigeria respectively. Based on the findings, the study recommends that listed consumer goods firms should increase their use of LTDTA as this will lead to increase in their level of performance.

Research Design

This study employed ex-post facto research design to achieve the objective of the study. Ex-post facto refers to research design that examines occurrences of the past in order to determine current events (Olayemi & Fakayode 2021). This was used to correlate historical records to determine the true relationships between the independent variable and dependent variables which finally led us to reasonable conclusion. This research design was preferred for this study because data needed for the study already exists and due to the nature of data that was used for the analysis of the study, the data is characterized with both unit and time dimensions. While the unit consist of the sampled companies, the time dimension relates to the number of years covered by the study. It is therefore, most appropriate for this study because it allows for testing of expected relationships

between and among the variables and making of prediction regarding these relationships when the data have both unit and dimensions.

Study Area

The study area covered manufacturing companies that are quoted on the Nigerian Exchange Group (NGX) as of January, 2023. Data from the financial statements of the companies was used.

Population of the study

Population for this study comprised all manufacturing companies that are listed on the Nigerian Exchange Group (NGX) as of January 2023.

Sample size and Sampling Technique

Census sampling method was employed to determine sample for the study after sanitizing the population of the study based on the criteria of elimination. (1) Manufacturing companies not listed by NGX as at January, 2012 was exempted (2) Companies with incomplete data for all variables for the purposes was eliminated. This technique is one of non-probabilities that offer an opportunity for researcher to pick sample number base on meeting of criteria specified. This technique will assist researcher to obtain relevant and complete data with low margin of error from data gathered for the sample study.

Methods of Data Collection

Only secondary data was used for this research. Data was collected from the published financial statement of selected 38 listed manufacturing companies from 2012 to 2023 and Nigerian Exchange Group. Secondary data covering related capital structure variables such as (equity, long term debt and short-term debt and performance variables (Return on Asset, Return on Equity and Tobin' Q) and control variables (firm size and liquidity) respectively, data gathered from annual financial statement and account of thirty-eight (38) sampled manufacturing companies and Nigeria Exchange Group fact-book.

Method of Data Analysis

Objective 1: To assess the mix of capital in the quoted manufacturing company in Nigeria. This was achieved by using descriptive statistics to ascertain the mix of capital in the quoted manufacturing companies in Nigeria.

Objective 2: To examine the effect of equity on financial performance of quoted manufacturing companies in Nigeria. This was achieved by using model four specified in equations 1 – 3 through a panel regression technique segmented as Pool ordinary least squares (OLS) (equation 1), fixed effect (equation 2) and random effect (equation 3). In addition, relevant diagnostic tests were conducted while Hausman test was carried out to determine the appropriateness of the estimation technique to be adopted.

RESUIT AND DISCUSSION

Objective 1: To assess the mix of capital in the quoted manufacturing firm in Nigeria using descriptive statistics.

Descriptive Statistics

The descriptive statistics for this study provide an overview of the central tendencies, variability, and distribution characteristics of each variable used in examining the effect of capital structure on the financial performance of quoted manufacturing companies in Nigeria. The results are based on 456 observations spanning from 2012 to 2023 for each variable. Here is an analysis and interpretation of each variable's descriptive statistics.

Descriptive Statistics

	ROA (%)	ROE (%)	Tobin Q	LDTA (%)	STD (%)	EQU(in Billions)	FS	LIQ
Mean	12.23094	26.76779	1.755833	5.114737	5.486711	53.64050	72.77721	2.382719
Median	10.99000	24.50000	1.610000	0.510000	0.415000	9.840000	15.59000	2.230000
Maximum	39.29000	77.99000	4.310000	32.99000	33.59000	1290.390	1978.090	5.090000
Minimum	3.290000	5.840000	0.760000	0.160000	0.090000	0.190000	6.490000	1.090000
Std. Dev.	6.669126	13.17794	0.681321	7.391095	8.097563	141.0236	230.6528	0.763805
Skewness	1.086429	0.879276	1.002700	1.406742	1.343178	5.868033	5.431813	0.905668
Kurtosis	4.204958	3.775997	4.052805	3.927278	3.609528	42.37562	35.95869	3.558752
Jarque-Bera	117.2915	70.19878	97.47058	166.7351	144.1726	32075.32	22881.58	68.26963
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	5577.310	12206.11	800.6600	2332.320	2501.940	24460.07	33186.41	1086.520
Sum Sq. Dev.	20237.14	79014.43	211.2101	24855.87	29834.59	9048881.	24206316	265.4464
Observations	456	456	456	456	456	456	456	456

Source: Researcher Computation, 2025

The average Return on Assets (ROA) for the sampled firms is 12.23%, indicating a modest level of profitability relative to total assets. The median value of 10.99% is slightly lower than the mean, suggesting a moderately positively skewed distribution, as confirmed by the skewness of 1.086. This skewness implies that while most firms achieve an ROA around the average, some outliers yield higher returns on assets, pushing the mean above the median. The maximum observed ROA is 39.29%, while the minimum is 3.29%, with a standard deviation of 6.67%, indicating moderate variability in the profitability across firms. The Jarque-Bera test statistic is significant, suggesting a non-normal distribution of ROA.

The Return on Equity (ROE) has a mean of 26.77%, which is notably higher than ROA, reflecting the greater profitability of firms relative to shareholders' equity rather than total assets. The median ROE of 24.50% closely aligns with the mean, indicating that the data for ROE is moderately skewed to the right, with a skewness of 0.879. The maximum ROE recorded is 77.99%, while the minimum is 5.84%, with a standard deviation of 13.18%, showing substantial variability in returns on equity among the firms. The significant Jarque-Bera test suggests that the ROE distribution is also non-normal. Tobin's Q, which serves as a proxy for market valuation, has an average of 1.76 with a median of 1.61, indicating that, on average, the sampled firms are valued slightly above their asset replacement costs. The distribution is positively skewed, as shown by a skewness of 1.003, with some firms experiencing substantially higher valuations (maximum of 4.31) and others much lower (minimum of 0.76). The standard deviation of 0.68 implies moderate variability, while the significant Jarque-Bera test confirms the non-normal distribution.

The average long-term debt to total assets ratio (LDTA) is 5.11%, with a median of 0.51%, indicating that many firms rely less on long-term debt. However, the positive skewness of 1.407 and the large standard deviation of 7.39% reveal significant variation, suggesting that while some firms maintain low debt levels, others exhibit higher dependency on long-term debt, with a maximum of 32.99%. This wide range and significant skewness suggest diverse financial structures among the companies in the sample. The short-term debt to total assets ratio (STD) shows an average of 5.49%, with a median of 0.415%, again reflecting the relatively low reliance on short-term debt for most firms. Similar to LDTA, STD exhibits positive skewness (1.343) and a standard deviation of 8.10%, indicating that while many firms have low short-term debt, a few firms hold significant levels, as seen in the maximum value of 33.59%. This wide dispersion suggests that the debt financing approach among companies varies considerably.

The mean equity value among companies is ₦53.64 billion, with a median much lower at ₦9.84 billion, suggesting a significant positive skewness (5.868) due to a few large companies with high equity levels. The disparity between the mean and median, as well as the extremely high standard deviation (₦141.02 billion), implies substantial variability, reflecting that while most companies operate at moderate equity levels, a few have significantly larger capital bases, with the maximum equity recorded at ₦1290.39 billion. Firm size, measured by the natural logarithm of total assets, has a mean of 72.78 and a median of 15.59, indicating that most companies are moderately sized, with a positive skewness of 5.43. The high standard deviation (230.65) shows a large disparity in firm sizes, ranging from a minimum of 6.49 to a maximum of 1978.09. This broad range reflects the varied asset bases across companies, with some holding significantly higher asset values.

Liquidity, measured as the ratio of current assets to current liabilities, has an average of 2.38, indicating that, on average, companies hold more than twice their liabilities in current assets. The median liquidity of 2.23 aligns closely with the mean, suggesting a relatively symmetric distribution, though a slight positive skewness of 0.906 is observed. The standard deviation of 0.76 reflects moderate variability in liquidity among companies, with a minimum of 1.09 and a maximum of 5.09. The significant Jarque-Bera test for liquidity suggests non-normality in distribution, indicating that liquidity practices vary among the companies. The descriptive statistics reveal considerable variability in financial metrics and capital structure variables among the sampled manufacturing companies. Variables such as equity, firm size, and debt ratios are highly skewed, indicating that a few companies have disproportionately high values, which impacts the overall average. This analysis establishes a foundational understanding of the distribution and dispersion of each variable, which is essential for conducting inferential statistics and interpreting relationships in subsequent analyses.

Objective 2: To examine the effect of equity on financial performance of quoted manufacturing companies in Nigeria using Pool ordinary least squares (OLS), random effect and fixed effect. In addition, relevant diagnostic tests were conducted while Hausman test was carried out to determine the appropriateness of the estimation technique to be adopted.

Multicollinearity Analysis

The Variance Inflation Factor (VIF) test results offer an essential diagnostic for assessing multicollinearity among the independent variables in this study. Multicollinearity occurs when two or more independent variables are highly correlated, potentially distorting the results of regression analyses by inflating the standard errors of the coefficients, making it difficult to assess the true relationship between the independent and dependent variables.

Variance Inflation Factor Test of Variables

Variable	Tolerance	VIF
LDTA (%)	.087	11.494
STD (%)	.093	10.742
EQU	.165	6.058
LIQ	.869	1.151
FS	.156	6.418

Source: Researcher Computation, 2025

Mix Capital (Equity) and ROA Panel-Corrected Standard Error Regression Results

Variable	Pool effects Model	Fixed effects Model (PCSE)	Random effects Model (PCSE)
C	-4.084658* 0.393944)	-0.806920* (0.191015)	-0.866560* (0.400470)

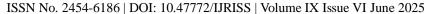|			
	{0.000}	{0.000}	{0.000}
EQU	-0.011128 *	-0.006596*	-0.007072*
	(0.001922)	(0.001724)	(0.001679)
	{0.000}	{0.0001}	{0.000}
FS	0.016747*	0.010829*	0.011430*
	(0.001157)	(0.001189)	(0.001136)
	{0.000}	{0.0000}	{0.000}
LIQ	6.586470*	5.289560*	5.306964*
	(0.393944)	(0.086696)	(0.086721)
	{0.000}	{0.0000}	{0.000}
R^2	0.860517	0.988959	0.948499
Adjusted R^2	0.859591	0.987894	0.948157
F-statistic	929.5144	929.2786	2774.854
Prob(F-stat)	0.0000	0.0000	0.0000
Hausman Test Chi-sq. statistic	27.465666		
Prob (Hausman Test)	0.0000		

Source: Researcher's compilation (2025) using Eviews 10. * sig 5%, ** sig 10% ( ) Standard error { } p-values

This analysis explores the impact of capital structure variables on Return on Assets (ROA) using three different models: Pool Effects Model, Fixed Effects Model with Panel-Corrected Standard Errors (PCSE), and Random Effects Model with PCSE. The purpose of using multiple models is to capture the nuances in the relationships between capital structure and ROA and to test the robustness of the results across different model assumptions.

In all three models, the intercept term (C) is statistically significant at the 1% level, with a negative coefficient. For the Pool Effects Model, the intercept value is -4.0847 (p = 0.000), indicating that without the effect of the independent variables, ROA would start at a significantly negative level. In the Fixed Effects Model, the intercept is -0.8069 (p = 0.000), and in the Random Effects Model, it is -0.8666 (p = 0.000). The decreasing magnitude of the intercept across models suggests that the specific characteristics of each firm (captured in the fixed and random effects models) might mitigate some of the unobserved factors that contribute to lower ROA. This indicates that firm-specific factors play a significant role in the relationship between capital structure and ROA.

The R-squared values for each model provide insights into the explanatory power of the independent variables on ROA. The Fixed Effects Model has the highest R-squared value of 0.9889, indicating that approximately 98.89% of the variance in ROA is explained by the model. The Random Effects Model follows with an R-squared of 0.9485, and the Pool Effects Model has an R-squared of 0.8605. The high R-squared values in all models signify a strong fit, although the Fixed Effects Model appears to capture the highest level of variation in ROA.

The F-statistics and their associated p-values (0.0000 for all models) show that the models are statistically significant and provide robust explanations for the variation in ROA.

Equity (EQU) has a negative and significant impact on ROA in all three models. The coefficient for EQU in the Pool Effects Model is -0.0111 (p = 0.000), implying that a one-unit increase in equity is associated with a 1.11% decrease in ROA. Similarly, the Fixed Effects Model shows a coefficient of -0.0066 (p = 0.0001), while the Random Effects Model presents a coefficient of -0.0071 (p = 0.000). This negative relationship between equity and ROA suggests that higher equity may dilute returns, which could indicate inefficiencies or an underutilization of resources when equity levels are high. The robustness of this result across models further strengthens the interpretation that increased equity levels may reduce profitability, as measured by ROA.

Firm size (FS) exhibits a positive and significant relationship with ROA across all models. In the Pool Effects Model, the coefficient for FS is 0.0167 (p = 0.000), which means that a one-unit increase in firm size leads to a 1.67% increase in ROA. This positive relationship is also present in the Fixed Effects Model, where the coefficient is 0.0108 (p = 0.000), and in the Random Effects Model, where it is 0.0114 (p = 0.000). This result indicates that larger firms tend to have higher returns on assets, which could be due to economies of scale, greater market power, or more efficient asset utilization. The consistent significance across models reinforces that firm size positively influences ROA.

Liquidity (LIQ) shows a strongly positive and significant effect on ROA in all three models. In the Pool Effects Model, the LIQ coefficient is 6.5865 (p = 0.000), suggesting that a one-unit increase in liquidity is associated with a 658.65% increase in ROA. This impact is also prominent in the Fixed Effects Model, with a coefficient of 5.2896 (p = 0.000), and in the Random Effects Model, where it is 5.3070 (p = 0.000). The positive relationship between liquidity and ROA indicates that firms with higher liquidity levels may have more flexibility to meet short-term obligations, invest in profitable ventures, and avoid distress costs, leading to enhanced profitability. The magnitude and significance of this relationship across models emphasize liquidity as a critical factor in improving ROA.

Summarily, the regression results indicate that capital structure components have a significant impact on ROA. Specifically, Equity has a consistent, negative effect across all models, suggesting that higher equity levels may dilute returns and decrease ROA. Firm Size positively influences ROA, highlighting potential advantages from economies of scale and efficient resource utilization. Liquidity has a substantial, positive impact on ROA, underlining the importance of liquidity for flexibility and profitability. The Fixed Effects Model, with the highest R-squared value and consistent significance across variables, is the most suitable model. This suggests that accounting for firm-specific effects provides the most accurate insights into the relationship between capital structure and ROA.

Mix Capital (Equity) and Tobin Q Panel-Corrected Standard Error Regression Results

This analysis examines the impact of m**i**x capital (specifically equity), firm size (FS), and liquidity (LIQ) on Tobin's Q, a key indicator of firm performance and market valuation. The study utilizes three models: pooled effects, fixed effects (PCSE), and random effects (PCSE). Each model applies Panel-Corrected Standard Errors (PCSE) to account for any potential cross-sectional dependence in the panel data, aiming for more reliable coefficient estimates. The Hausman Test is also applied to determine the suitability of the fixed or random effects model.

Mix Capital (Equity) and Tobin Q Panel-Corrected Standard Error Regression Results

Variable	Pool effects Model	Fixed effects Model (PCSE)	Random effects Model (PCSE)
C	-0.018567 (0.041233) {0.6527}	-0.027514 (0.032291) {0.3947}	-0.030281 (0.046135) {0.5119}
EQU	0.001560* (0.000180) {0.000}	0.002925* (0.000247) {0.0000}	0.002657* (0.000248) {0.000}

FS	-0.000170	-0.001745*	-0.001433*
	(0.000101)	(0.000157)	(0.000154)
	{0.0933}	{0.0000}	{0.000}
LIQ	0.714762*	0.735883*	0.733565*
	(0.018134)	(0.014629)	(0.014471)
	{0.000}	{0.0000}	{0.000}
R^2	0.869023	0.971607	0.930712
Adjusted R^2	0.868154	0.968870	0.930252
F-statistic	999.6655	355.0340	2023.838
Prob(F-stat)	0.0000	0.0000	0.0000
Hausman Test Chi-sq. statistic	30.898953		
Prob (Hausman Test)	0.0000		

Source: Researcher's compilation (2025) using Eviews 10. * Sig 5%, ** sig 10% () Standard error { } p-values

Fixed Effects Model (PCSE)

The coefficient is -0.027514 with a p-value of 0.3947, indicating it is not statistically significant. This result is consistent with the pooled effects model, suggesting the intercept does not significantly impact Tobin's Q. The coefficient increases to 0.002925 with a p-value of 0.0000, maintaining a statistically significant positive relationship. This higher coefficient in the fixed effects model suggests a stronger impact of equity on Tobin's Q when controlling for firm-specific characteristics. The coefficient becomes more negative at -0.001745 with a p-value of 0.0000, indicating a statistically significant inverse relationship. This stronger negative effect suggests that after accounting for fixed effects, larger firms are associated with lower Tobin's Q, possibly due to over-diversification or inefficiencies. The coefficient is 0.735883 with a p-value of 0.0000, remaining significantly positive. This confirms the importance of liquidity in enhancing firm value, even after controlling for fixed effects.

The fixed effects model has the highest R-squared (0.971607) and adjusted R-squared (0.968870), indicating it explains the most variance in Tobin's Q. The random effects model also shows a high R-squared (0.930712), suggesting strong explanatory power. The pooled effects model has the lowest R-squared (0.869023), though still substantial, indicating that incorporating fixed or random effects improves model fit. All models have significant F-statistics (p-value = 0.0000), indicating that the overall regressions are statistically significant.

Mix Capital (Equity) and ROE Panel-Corrected Standard Error Regression Results

Variable	Pool effects Model	Fixed effects Model (PCSE)	Random effects Model (PCSE)
C	-7.093333*	-2.494092 *	-2.610585
	(0.769198)	(0.445876)	(0.800323)
	{0.0000}	{0.0000}	{0.0012}
EQU	-0.001545	0.007396	0.006141
	(0.003550)	(0.004221)	(0.004063)
	{0.6637}	{0.0805}	{0.1314}
FS	0.018542*	0.005660*	0.007329*

	(0.002141)	(0.002878)	(0.002722)
	{0.0000}	{0.0499}	{0.0074}
LIQ	13.67955*	11.94150*	11.96767*
	(0.338880)	(0.202592)	(0.200124)
	{0.000}	{0.0000}	{0.0000}
R^2	0.874370	0.971607	0.948016
Adjusted R^2	0.873536	0.985329	0.947671
F-statistic	1048.619	0.983915	2747.685
Prob(F-stat)	0.0000	0.0000	0.0000
Hausman Test Chi-sq. statistic	19.732511		
Prob (Hausman Test)	0.0002		

Source: Researcher's compilation (2025) using Eviews 10. * sig 5%, ** sig 10% ( ) Standard error { } p-values

Fixed Effects Model (PCSE)

The constant has a coefficient of -2.494092 and a p-value of 0.0000, indicating significance. The smaller negative value compared to the pooled effects model suggests that, after accounting for firm-specific characteristics, the baseline level of ROE improves slightly.

The coefficient for EQU is 0.007396 with a p-value of 0.0805, which is marginally insignificant at conventional levels (p < 0.05) but hints at a positive relationship. This near-significance in the fixed effects model suggests that equity might have a modest positive effect on ROE when controlling for firm-specific factors.

The coefficient for FS is 0.005660 with a p-value of 0.0499, indicating statistical significance. This positive relationship indicates that larger firms are associated with improved ROE. This result aligns with the pooled model, supporting the idea that economies of scale likely contribute to enhanced profitability. The coefficient is 11.94150 with a p-value of 0.0000, remaining highly significant and positive. This outcome reinforces the strong positive effect of liquidity on ROE, affirming that better liquidity enhances firm profitability and stability.

CONCLUSION AND RECOMMENDATIONS

This study was conducted to examine the effect of mix capital on the financial performance of quoted manufacturing companies in Nigeria, aiming to contribute insights that could enhance financial decision-making and drive improved performance within the sector. Mix capital, a critical element in corporate finance, reflects the blend of equity, long-term debt, and short-term debt used to fund operations and investments, impacting profitability, growth, and market valuation. Given the unique economic environment in Nigeria and the significant role of manufacturing companies in driving growth and employment, understanding the optimal capital structure that aligns with enhanced financial outcomes is crucial.

Based on the study's results, the following recommendations are provided to enhance the financial performance of quoted manufacturing companies in Nigeria: Finding of this study reveal that equity enhance financial performance of manufacturing companies in Nigeria by fostering financial stability also strengthens investor confidence and reduces the risks associated with debt servicing. Management should explore opportunities to attract more equity investors through robust shareholder engagement and transparent financial reporting, which can ultimately improve profitability and long-term growth. Also, the Manufacturing companies should cultivate the issuance of equity for short term capital requirement to ease the burden of short-term loan for working capital thereby provide permanent working capital for manufacturing companies. Also, industrial bank could be established by government that could provide long term and short-term capital for effective performance of manufacturing companies, taking into consideration that manufacturing companies are agent of development in an economy.

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