

**Capital Structure and Financial Performance in Quoted Telecommunication Companies in  
Nigeria**

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(M.Sc.) in Accounting**

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## CERTIFICATION

This is to certify that **Abisola Mutiat LASISI** with Matric No: **LCU/PG/001870** carried out this thesis titled “**CAPITAL STRUCTURE AND FINANCIAL PERFORMANCE OF QUOTED TELECOMMUNICATIONS COMPANIES IN NIGERIA**” in the Department of Management and Accounting, Faculty of Management and Social Sciences, Lead City University, Ibadan, Oyo State, Nigeria for the Award of Master’s Degree (M.Sc.) in Accounting and that this has not been previously submitted.

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## **Dedication**

This Thesis is dedicated to Almighty God

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## Abstract

Capital structure is a mixture of the financing options a company uses to finance its investments. However, deciding on an optimal capital mix has been a huge task for most telecommunication companies. The main objective of this study is to examine the effect of capital structure on performance of the quoted telecommunication companies in Nigeria and the specific objective is to determine the effect of capital structure on profit before tax, return on asset, return on equity and return on capital employed. The study used an *ex-post facto* research design. The study population consisted of 9 quoted telecommunication companies on Nigeria Stock exchange. The purposive sampling technique was adopted to select a sample of seven (7) telecommunication firms for the period of ten years (2012-2021). Data for this study were extracted from the published annual reports and accounts of the sampled companies and validated by the statutory auditors. Data were analyzed using descriptive and inferential statistics. The study found that short term debt, long term debt, equity and total debt had joint and significant effect on profit before tax, return on asset, return on equity and return on capital employed of quoted telecommunication companies in Nigeria. (PBT – *Adj. R*<sup>2</sup> = 0.8034, *Wald test* = 71.51 *p* < 0.05; ROA – *Adj. R*<sup>2</sup> = 0.1543, *Wald test* = 4.15, *p* < 0.05; ROE – *Adj. R*<sup>2</sup> = 0.7620, *Wald test* = 56.23, *p* < 0.05 and ROCE – *Adj. R*<sup>2</sup> = 0.4523, *Wald test* = 42.74, *p* < 0.05). The study concluded that capital structure had significant effects on the performance of telecommunication companies in Nigeria. It was recommended that the management of the telecommunication companies should pay attention to the composition of capital structure in term of short term debt, long term debt, equity and total debt and should be careful and cautious in accumulating debt that could eventually have adverse effects on their value and financial performance.

**Keywords:** Capital Structure, Performance, Profit before Tax, return on Asset, return on Equity.

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## ABBREVIATIONS

CS:	Capital Structure
EQT:	Equity
FP:	Financial Performance
NSE:	The Nigerian Stock Exchange
LTD:	Long Term Debt
PBT:	Profit before Tax
ROA:	Return on Asset
ROE:	Return on Equity
ROI:	Return on Investment
ROCE:	Return on Capital Employed
STD:	Short Term Debt
SMEs:	Small, Medium Enterprises
TD:	Total Debt

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## Chapter One

### Introduction

#### 1.1. Background of the Study.

The capital structure of a firm is a combination of the various sources through which a firm is financed. Risk and reward associated with capital structure make it one of the most difficult decisions that business managers made. The capital structure of a company is made up of equity, debt, and debt with preferred stock; this combination is referred to as the long-term financing mix of the company. Making a capital structure decision is fundamental for any business because it is necessary to maximize returns for the many stakeholders involved and because it has a significant impact on a company's capacity to operate in a market that is highly competitive. Financial manager should be careful when making decision as regards raising of fund as irrational decision could be costly and could even reduce the firm's value<sup>1</sup>.

Consequently, any decision made by the financial managers could affect the business's positively or negatively<sup>1</sup>. Also, need to maximize return on investment and competitive environment in which business operate nowadays has make capital structure decision to be very essential to all business stakeholders. In addition, capital structure decision impact directly on the financial standing and firm's stability. Effectiveness of firm usage of its resources with the aim of improving profitability rest on financial manager decision on the structure of capital in place<sup>2</sup>.

Liquidity and profitability are important factor to be considered by the business manager in gauging the right structure of capital in financial management<sup>3</sup>. Capital structure decision depend management since it affected return on investment<sup>1</sup>. The capital structure choice is additionally controlled by the market – firms need a capital structure fundamentally for their

advancement<sup>3</sup>. Therefore, irrespective of its effect on the firm profitability capital structure decision must be taken, after critical evaluation and must be done timeously<sup>2</sup>. An interest in the finances raised entails an essential examination that produces another capital structure<sup>4</sup>.

The modern capital structure theory by Modigliani and Miller states that, under the ideal capital market hypothesis, the association's esteem is autonomous with the construction of capital. Every business organization view capital structure decision to be very essential and are never taking with levity as it can affect going concern of an entity<sup>4</sup>. It is a top management decision as it affect firms value<sup>4</sup>. Maximization of firm value is the main concern why firm chose a balance debt portfolio by using right mixture of debt and equity. Also, a poor judgment by financial manager of a company in selecting the right mix of debt and equity could result in financial failure and may lead to bankruptcy eventually<sup>5</sup>.

The financial decision of a company is important in determining the optimal capital structure mix<sup>1</sup>. Firms use a variety of levels of leverage; however, corporate finance theory and financial literature have yet to identify the ideal combination for managers to use in order to improve performance<sup>6</sup>. Long-term debt, short-term debt, common equity, preferred equity, and retained earnings make up the capital structure<sup>1</sup>. The ability of a company to maximize shareholder value and wealth and to earn the highest possible returns on its assets is what determines how successful it is<sup>3</sup>. Depending on the risk level associated with each financing choice as well as the correlation between risk and return, businesses will choose different types of financing<sup>2</sup>.

Lot of factors such as profitability, growth of the firm, firm size, maturity of debt, debt ratio, tax and tangibility need to be considered before capital structure decision is taken. However, lot of researchers has focused attention on major considerations affecting the capital structure decisions in the light of risk level of a firm. A firm's capital structure must be developed with emphases on risk because it has a direct link with the value<sup>2</sup>.

Researchers has been concern with the effect of capital structure on financial performance of companies. Outcome of their study is still not conclusive as result has been conflicting most especially when compare outcome of developed nation to that of developing nations. Companies in Nigeria are faced with critical financing decisions on the optimal capital structure that will be suitable for the organization and such financing decisions are important to the profitability of the firm<sup>5</sup>. Determination of optimal capital structure of companies in Nigeria has become so critical, widening and deepening as it affect market rating of firms<sup>6</sup>. Corporate sector is characterized by a large number of firms operating in a largely deregulated and increasingly competitive environment<sup>6</sup>. Business operating environment of firms has changed tremendously since 1987, when business and financial environment has been liberalized<sup>6</sup>.

### **1.2. Statement of the Problem.**

All managers at the helm of financial affairs in corporate organizations have a challenge to constantly deal with; the capital structure that it should employ. In Nigeria, there is no conclusive empirical evidence on of effect of capital structure on corporate performance<sup>7</sup>. This creates a problem as it has been established that utilizing the right capital structure will aid the firm to operate more efficiently<sup>1</sup>. Therefore, the fact that Nigerian companies should endeavor to know and strive to attain their optimum debt-equity mix cannot be overemphasized. This is indeed a problem considering the volatile economic conditions and environment the Nigerian companies are made to deal with. Furthermore, if the choice of debt and equity is not critically considered by the manager, using a wrong choice can easily lead the firm to insolvency and illiquidity<sup>8</sup>.

Furthermore, most of the previous related studies carried out in this area related to advance nation leaving so much gap in developing nation of the world. Also, most study in the past

concentrated on manufacturing, banking and other financial institution, other sectors of the economy were left without much work. In addition, telecommunication industry is a new industry in Nigeria when compare to years of existence of manufacturing industries. Therefore, research into this new area bring new ideas into optimum capital structure<sup>9</sup>.

Covid 19 has affected performance of every sector of the economy in different ways of which telecommunication subsector is not excluded<sup>10</sup>. This has make capital structure a more critical factors, mainly because fund is no longer available at the historical source, and firm need to adequately finance their daily activities to ensure better performance. Despite changes in technology, and fall in general performance of business, need of the stakeholder in the business continues to be the same. Manager's optimal capital structure is really concerning and a major gap in financial literature.

Capital structure and financial performance of firms have generated debate among the professional and academia. These debate is still on going all over the world, Nigeria inclusive. Emergency of telecommunication industry and rate at which the sector is growing in Nigeria attracted many investor and therefore need to predict the optimal capital structure that will bring the highest return<sup>1</sup>. Optimal capital structure of a firm is very difficult to determine, most especially in a new industry like telecommunication. To achieve optimal capital structure firm has to issue various securities in a different combination before it can be achieved. Value derived from strategic assets of the company may be reduced if poor capital structure decision is made by management of the organisation<sup>9</sup>. Therefore, a company's capacity to manage its financial policies is crucial if it hopes to benefit from its specialized resources. Numerous scholars have focused their attention on the type and degree of the relationship between capital structure and financial performance of organizations. However, the investigations, which are mostly conducted abroad, have produced contrary results<sup>10</sup>.

### **1.3. Aim and Objectives of the Study.**

The main aim of this study is to examine the effect of capital structure on performance of the quoted telecommunication companies in Nigeria.

The specific objectives are to:

1. establish the extent to which capital structure affects profit before tax of quoted telecommunication companies in Nigeria.
2. determine the effect of capital structure on return on asset of quoted telecommunication companies in Nigeria.
3. examine the effect of capital structure on return on equity of quoted telecommunication companies in Nigeria.
4. determine the effect of capital structure on return on capital employed of quoted telecommunication companies in Nigeria.

### **1.4. Research Questions.**

In order to pursue the objectives, the following research questions were raised:

- (1) To what extent does capital structure affect profit before tax of quoted telecommunication companies in Nigeria?
- (2) How does capital structure affect return on asset of quoted telecommunication companies in the Nigeria?
- (3) What relationship exist between capital structure and return on equity of quoted telecommunication companies in the Nigeria?

(4) How does capital structure affect the return on capital employed of quoted telecommunication companies in Nigeria?

### **1.5. Research Hypotheses.**

1. Capital structure has no significant effect on profit before tax of quoted telecommunication companies in Nigeria.

2. Capital structure has no significant effect on return on asset of quoted telecommunication companies in Nigeria.

3. Capital structure has no significant effect on return on equity of quoted telecommunication companies in Nigeria.

4. Capital structure has no significant effect on return on capital employed of quoted telecommunication companies in Nigeria.

### **1.6. Significance of the Study.**

The results of this study would add to the amount of knowledge already available about telecommunications companies in Nigeria. The results of the study would therefore provide a foundation for additional research in this field and serve as a resource for future researchers. The government and its agencies will also gain from this study because it will point out the need for the government to develop more advantageous financial and economic guidelines as the sector demands, which will sustain the operations of Nigerian telecommunication firms, particularly the potential firms yet to be quoted on the stock market and consequently contribute to the nation's gross domestic product which have been on the rise.

Also, the outcome of this work would also immense benefit managers, shareholders and stakeholders of telecommunicating firms in Nigeria. Managers would be placed on a sound footing to understand the effect of various financing mix on the operations of their firms.

### **1.7. Scope of the Study.**

This study examines the effect of capital structure on performance of quoted telecommunication companies in Nigeria for a period of ten (10) years starting from 2012 - 2021. The study is limited to telecommunication firm that are quoted on the Nigeria stock exchange for the period under review. A total of seven (7) companies out of the population of nine (9) listed telecommunication companies in Nigeria were selected. The criteria for the selection are based on a company that has been listed from 2012 till 2021 and the audited financial reports of the company are accessible.

### **1.8 Limitation of the Study**

The limitations of the study cover only ten years between 2012 – 2021. Besides, the findings of this research were applicable only to characteristics of selected variables of capital structure on financial performance of telecommunication firms in Nigeria. The data will be obtained from the financials of the sampled telecommunication companies in Nigeria and was deemed reliable and valid enough for the study. Therefore, the data and sources were adequate and satisfactorily adjudged good enough to have been used in the generalization of the results obtained from the effect of capital structure governance on financial performance of quoted Nigeria telecommunication company.

## 1.9 Operational Definition of Terms

**Capital Structure:** The specific mix of debt and equity that a company uses to fund both its general operations and expansion is known as its capital structure. While equity might take the form of common stock, preferred stock, or retained earnings, debt typically takes the form of bond issuances or loans.

**Debt:** Debt is an amount of money borrowed by one party from another. A debt arrangement gives the borrowing party permission to borrow money under the condition that it is to be paid back at a later date, usually with interest.

**Equity:** Equity is ownership of an asset of value. Ownership is created when the owner contributes to the financing of the asset purchase. Another way to finance the asset purchase is with debt.

**Financial Performance:** Financial statements are formal records of the financial activities and position of a business, person, or other entity. Relevant financial information is presented in a structured manner and in a form which is easy to understand.

**Debt Financing:** When a company borrows money to be paid back at a future date with interest it is known as debt financing. Debt financing is a time-bound activity where the borrower needs to repay the loan along with interest at the end of the agreed period.

**Firm:** A firm is a for-profit business, usually formed as a partnership that provides professional services, such as legal or accounting services. Not to be confused with a firm, a company is a business that sells goods and/or services for profit and includes all business structures and trades.

**Productivity:** describes various measures of the efficiency of production. Often, a productivity measure is expressed as the ratio of an aggregate output to a single input or an aggregate input used in a production process, i.e. output per unit of input, typically over a specific period of time.

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## Endnotes

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## **Chapter Two**

### **Literature Review**

This chapter presents the review of concepts and extant literature relating to the study. It gives an overview existing knowledge on the area capital structure and financial performance. The chapter equally dealt with the relationship between debt and equity, short-term debt and total assets, and long-term debt and total assets.

#### **2.1 Conceptual Review**

##### **2.1.1 Concept of Financial Performance**

Financial performance principally reflects business sector outcomes and results that shows overall financial health of the sector over a specific period of time. It indicates how well an entity is utilizing its resources to maximize the shareholder's wealth and profitability<sup>1</sup>. Although a complete evaluation of a firm's financial performance takes into account many other different kind of measures but most common performance measurement used in the field of finance and statistical inference is financial ratios.<sup>2</sup>

The financial performance of a company is significant to shareholders, investors, and the stakeholder large. The returns on their investments are what interest investors<sup>3</sup>. A firm that is performing well can reward its investors more favorably by paying high divided and or high share value, however it is commonly known that a company that is not performing well cannot draw informed investors<sup>4</sup>. A company's financial performance can boost employee salaries, enable it to provide clients with high-quality goods or services, and boost its reputation in the market in which it operates<sup>4</sup>. Also, company that performs well can produce higher returns, which can then lead to the creation of jobs and a rise in people's wealth<sup>1</sup>. On the other hand, a company's performance can be viewed as the outcome of how

effectively it evaluated its own performance or strategy in achieving its goals and objectives<sup>6</sup>. An indicator of a company's ability to effectively employ resources from business operations to generate revenue is financial performance. Financial performance indicates how effectively a company employ resources generated from its main line of business to produce income<sup>3</sup>. This phrase is used to explain how healthy a firm is financially. Organizations theory and strategic management are the sources of research on the firm's financial performance. Financial performance concept is a term used when explaining financial standing of entity when compare to others<sup>7</sup>.

Multidimensional meaning of the concept of financial performance has made it to be controversial issue in the field finance. Various scholar explains financial management from the angle at which they look at. In order to assess the accomplishment of the firm's goals, a periodic and systematic examination of the operations is conducted. A firm's performance evaluation needs the application of specific standards, which may be internal, external, or both<sup>8</sup>.

Internal principles are a company's ability to accomplish its stated goals, whereas external principles are a comparison of a company with its industry rivals in order to create an effective business plan that would allow the company to successfully compete in the market<sup>2</sup>. Different ways of gauging a firm's financial performance were employed in the existing studies on the connection between capital structure and financial performance. The majority of earlier studies on businesses' financial performance gauged business performance using accounting- or market-based methodologies of gauging businesses' financial performance<sup>1</sup>. The most popular accounting-based performance metrics are return on assets (ROA), return on equity (ROE), and return on investment (ROI). The most widely utilized type of performance measurement is accounting-based<sup>6</sup>.

The performance of a firm reflects how effectively the firm has been managed and resources utilized<sup>7</sup>. Performance is also a set of financial and nonfinancial indicators that offer information on the level of accomplishment of objectives and results of firm. Explained that an effective organization with high standard of performance level is the one that keeps the demands of its stakeholders satisfied. Firm stakeholders are numerous which includes shareholders, creditor, debtors, government and its agency, investors. A measure of performance of a company that may not only depends on the efficiency of the company itself but also on the market where it operates. Firm performance can equally be viewed in terms of the following; Return on Investment, return on equity, operating expenses ratio, Asset turnover. Some other common financial measures are: revenue, return on equity, return on assets, profit margin, sales growth, capital adequacy, liquidity ratio, and stock prices, among others<sup>9</sup>.

Depending on the industry on which the company operates, some financial ratios will be more meaningful than others. For instance, in a manufacturing company, total unit sales, return on assets and inventory turnover may be key ratios to monitor, while for financial institutions, stock prices, cash flow, revenue and operating income may be the key ratios to monitor. For companies in the consulting business, return on assets and inventory turnover may not be meaningful given the fact that it is not an asset intensive industry<sup>10</sup>.

### **Performance Measurement**

Different measures have been adopted in the literature to measure organizational performance. This study will use accounting based method as it is easily extracted from the financial reports of the company which is available in the public domain. Many researchers have made use of the accounting base measures of performance in their various study successfully<sup>11</sup>. Past researcher has considered Accounting based measurement as a good

gauge of the company's performance in term of profitability<sup>12</sup>. The accounting based measurement indicators to the profitability of firms on the short term in the past years are: Return on assets (ROA), Return on Equity (ROE), Return on Investment (ROI), Profit Margin (PM), Earnings per share (EPS), Operation Profit (OP), Return on Capital Employed (ROCE), Expense to Assets (ETA), Sales to assets STS) and others. The following measurement shall be explained as it is used in this study.

#### Return on Capital Employed (ROCE)

Returns on capital employed is a financial ratio that may be used to evaluate the profitability and capital efficiency of an organization<sup>5</sup>. ROCE can also assist in determining how effectively a business is using its capital to generate profits<sup>11</sup>. ROCE is the primary measure of how efficiently a company utilizes all available capital to generate additional profits. It is analyzed by dividing the profit before tax over the total issued capital<sup>11</sup>. Return on capital employed is an accounting ratio used in finance, valuation, and accounting. It is a useful measure for comparing the relative profitability of companies after taking into account the amount of capital used<sup>12</sup>. Return on capital employed formula is calculated by dividing net operating profit or PBIT by the employed capital<sup>8</sup>.

#### Return on Equity (R.O.E)

Return on Equity (ROE) is measured by profit after tax over total equity shares in issue<sup>13</sup>. It is a financial ratio that tells you how much net income a company generates per naira of invested capital. This percentage is key because it helps investors understand how efficiently and effectively a firm uses its capital to generate profit<sup>14</sup>. Study conducted in this area revealed existence of significant relationship between the Return on Equity and the performance of companies listed in the Abu Dhabi Securities Exchange<sup>15</sup>.

### **Return on Asset (ROA)**

The term Return On Asset refers to a financial ratio that indicates how profitable a company is in relation to its total assets<sup>16</sup>. It measured level of profitability in relation to total asset of the company. Analysts, investors and other company's stakeholders used ROA to determine how efficiently a company uses its assets to generate a profit<sup>17</sup>.

### **Profit before Taxation (Earnings before taxation)**

Profit before tax is a measure that looks at a company's profits before the company has to pay corporate income tax<sup>18</sup>. It essentially is all of a company's profits without the consideration of any taxes. Profit before tax can be found on the income statement as operating profit minus interest. Profit before tax is the value used to calculate a company's tax obligation.

### **Capital Structure**

Capital structure is the composition of the capital employed by the firm from various sources of finance. It comprises of both owners capital (i.e. equity capital and preferred capital) and debt capital. The capital structure of the firm represents its investment and financing strategy<sup>17</sup>. Entity capital structure mean combination of various form in which a firm is financing. Financing open to firm is combination of long term and short term sources<sup>18</sup>.

Capital structure as an arrangement of the different components of business funds, i.e. shareholder's funds and borrowed funds in proper proportion<sup>19</sup>. The capital structure of a company is made up of both its financial liabilities and its equity. It is the process through which a business finances its assets using a mix of equity and debt<sup>20</sup>. Accordingly, it is referred to as a combination of several instruments (long-term debt, common stock) that a company issues to finance its assets. It can also be referred to as the ratios of different types

of capital employed in a business, such as equity capital and debt capital, each of which has advantages and disadvantages of its own<sup>21</sup>. From the aforementioned, it can be seen that a company's capital structure is simply its financial framework, which consists of retained earnings, debt financing, and equity financing to keep the business entity in operation<sup>22</sup>.

Capital structure essentially deals with how overall operation of a firm is being finance and growth accruable to company using different sources of funds. Due to the fact that these theorems form the basis of capital structure theory, which has been employed by several academics, it is widely believed that it is the correct theory. It is acknowledged as a type of organizational structure that provides organizations with guidance and orientation for their commercial endeavors. A market economy and a democratic society are both centered on it<sup>23</sup>. The financial performance of a company is said to be what it is. Additionally, the capital structure serves as a tool for business enterprises' decision-making and promotes the maximizing of return on investment, as well as improving the effectiveness of financing and dividend decisions <sup>24</sup>.

It is important to focus company efforts on making effective judgments that will safeguard the interests of shareholders because financing decisions typically help a commercial firm survive and expand. Therefore, choosing a capital structure is regarded as one of the management's most useful instruments for controlling the cost of capital. Finding the right capital structure in terms of risks and return payout for shareholders constitutes a significant portion of effective company governance and management<sup>25</sup>. According to this, a firm's financial structure is represented by the numerous ways it raises money, whereas the capital structure is the proportionate relationship between long-term debt and equity<sup>26</sup>. A capital structure of a firm does not include short-term credit, but means the composite of a firm's long-term funds obtained from various sources<sup>27</sup>.

As a result, a company's capital structure is defined as the ratio of stock to debt used to finance its assets<sup>28</sup>. A company's capital structure combines its debt and equity structures. It is also known as the process through which a firm finances its assets using a mix of stock, debt, or hybrid securities, which are a mix of both equity and debt<sup>29</sup>. However, not all business firms use a standardized capital structure hence they differ in their financial decisions under various terms and conditions<sup>29</sup>. It is therefore a difficult situation for these firms to determine the capital structure in which risk and costs are minimum and that can raise the value of shareholder wealth and or maximize profits <sup>30</sup>.

The two primary capital structure classes are debt and equity. The two types of debt are short-term and long-term<sup>28</sup>. These elements are frequently discussed as equity and total asset ratios in accounting and finance literature. The elements are mentioned below.

### **Components of Capital Structure.**

The capital structure of the company is nothing but taking decision-related to the acquisition of funds from various sources and composition of debts and equity. Followings are the multiple sources of funds which the company takes into consideration while determining its capital structure: There are many theories that explain how investors can build the best capital structure, which improves the firm's market value by selecting the best mixture of equity financing and debt financing and theories on capital structure<sup>31</sup>. Various studies have been conducted on the capital structure in developed countries and a few have been performed in developing countries. Logically, most of the authors have found a positive relationship while others have found a negative association between capital structure and firm performance<sup>32</sup>.

In developed countries, it is well said that most wall street analyst and investors tend to focus on Return on equity (ROE) as their primary measure of company performance, even

though more sophisticated valuation techniques like internal rate of return (IRR), cash flow return on investments (CFRI), Discounted cash flow analysis (DCF) have come along<sup>33</sup>. They also stated the return on assets (ROA) a better metric of financial performance, than income statement profitability measures like return on sales (ROS). No single metric is perfect and different metrics are appropriate depending upon the circumstances as categorized in the measurements of performance which is divided into two: Accounting based measurement and marketing based measurement<sup>34</sup>.

### **Return on Equity**

The Return on Equity (ROE) KPI measures your company's net income in contrast to each unit of shareholder equity (net worth). By comparing your company's net income to its overall wealth, your ROE indicates whether or not your net income is appropriate for your company's size. Regardless of how much your company is currently worth (its net worth), your current net income will determine its probable worth in the future<sup>35</sup>. Therefore, your business's ROE ratio both informs you of the amount of your organization's profitability and quantifies its general operational and financial management efficiency. An improving, or high ROE clearly indicates to your shareholders that their investments are being optimized to grow the business<sup>36</sup>.

### **Shareholder's Funds**

The owner's funds refer to generating capital by issuing new shares or utilizing the retained earnings to meet up the company's financial requirement. However, it is an expensive means of acquiring funds. It is also known as Returns on Equity.

### **Debt to Equity Ratio**

Debt to Equity is a ratio calculated by looking at your business's total liabilities in contrast to your shareholders' equity (net worth). This KPI indicates how well your business is funding its growth and how well you are utilizing your shareholders' investments. The number indicates how profitable the business is. It tells you and your shareholders how much debt the business has accrued in effort to become profitable. A high debt-to-equity ratio reveals a practice of paying for growth by accumulating debt. This critical KPI helps you focus on your financial accountability<sup>37</sup>.

### **Equity Financing.**

Equity financing is the process of raising capital through the sale of shares. Equity financing carries no repayment obligation and provides extra working capital that can be used to grow a business. Thus, it is a method of raising fresh capital by selling shares of the company to public, institutional investors, or financial institutions. The people who buy shares are referred to as shareholders of the company because they have received ownership interest in the company. Equity financing is an integral component of the capital structure of the firm apart from debts<sup>38</sup>. The relatively low level of risk related to equity financing as opposed to debt financing has resulted into an increased recognition and use of equities in financing investment projects in organizations<sup>39</sup>.

To know ratio of borrowing out of the total capital of a company total debt (including current liabilities) is always divided by the equity held by its shareholders<sup>11</sup>. In order to increase the amount of a company's funding provided by shareholders and to increase the cushion (margin of protection) in the case of declining asset prices or outright losses, creditors prefer that this ratio be lower. Total debt to total equity is defined as the ratio of a company's total liabilities to its total shareholder equity<sup>38</sup>. This contrasts the promises made by shareholders with those of suppliers, lenders, creditors, etc. Numerous empirical research carried out in Nigeria and other countries have demonstrated that a company's total debt to

total equity ratio is anticipated to have a substantial impact on a firm's financial performance<sup>39</sup>.

### **Short Term Debt.**

Short-term debt refers to items where the repayment period is lesser than twelve months such as account payables, accruals<sup>7</sup>. It gauges how much of a firm's total short-term debt is expected to be repaid during an accounting period. The short-term debt to total assets ratio was calculated<sup>7</sup>. Some argue that a company's performance will improve if its debt is kept to a minimum<sup>40</sup>. Others, however, believe that short-term debt can be expensive because it must be repaid in a hurry, which eventually affects the company's ability to manage its cash flow<sup>21</sup>. It was equally empirically showed that short term debt influenced financial performance negatively and significantly<sup>7</sup>. According to a study on the relationship between short-term debt and a company's performance, the ratio of short-term debt to total assets considerably hurts financial performance<sup>8</sup>. Furthermore, a further investigation examining the relationship between capital structure and firm performance found that there is only a weak correlation between short-term debt to total assets and firm financial performance<sup>41</sup>.

### **Long-term Debt**

The long-term debt financing is a measurement representing the percentage of a company's assets financed with long-term debt. This includes loans or other form of debt obligations lasting more than one year. This ratio provides a general measure of the long-term financial position of a company, including its ability to meet its financial obligations for outstanding loans. If a company recorded a consistent year-over year decrease in a company's long-term debt-to-total-assets ratio may indicate that it is becoming progressively less dependent on debt to grow its business<sup>42</sup>.

Study on effect of long term financing and performance have revealed mixed result, while some argues that the higher the long-term debt to total assets the greater the return on assets. Other study claimed that the ratio of long-term debt to total assets and financial success is significantly inverse<sup>43</sup>. It was argued that long term financing has many benefits such as lower financing costs, it is mostly structured and stable over time. It was discussed that firms' ability to obtain long-term financing tends to be greater in countries with a contestable, well-regulated banking system and with developed capital markets. Weakness in the contractual environment is an important underlying reason why long-term debt is less common in developing countries. When lenders cannot rely on legal institutions to enforce their claims to loan repayment, they may prefer to lend short term, so that the continued need for renegotiation provides incentives for borrowers to exert effort and make sound investments<sup>44</sup>.

Despite the fact that long term debt can be used to increase shareholder return, it can also cause agency problems. Firms tend to match the maturity of their assets and liabilities, and thus they often use long-term debt to make long-term investments, such as purchases of fixed assets or equipment. Long-term finance also offers protection from credit supply shocks and having to refinance in bad times<sup>45</sup>. However, the theoretical literature is inconclusive on how the maturity structure of debt financing affects firm performance most especially in telecommunication sector. On the one hand, long-term debt finance is likely to have a positive effect on investment and performance for firms that need it since it allows firms to invest in projects that bring in returns in a relatively long time<sup>46</sup>. On the other hand, long-term finance can distort managers' incentives, hampering investment and firm performance. Thus, the existence of a link between a firm's long term debt financing and financial performance though has been a hotly debated area of accounting research, the results are still mixed<sup>47</sup>.

## **Optimal Capital Structure**

The best combination of debt and equity financing for a company's capital structure optimizes market value while lowering cost of capital. Theoretically, because debt financing is tax deductible, it has the lowest cost of capital. However, if debt levels are too high, shareholders will face greater financial risk and will need a higher return on equity. Therefore, businesses must determine the ideal point at which the marginal advantage of borrowing money balances out the marginal cost. The key features of optimum capital structure are its simplicity and ability to ensure maximum profitability by minimizing the cost of capital. It works on the aspects of control, conservatism, flexibility, and a regulated debt-equity mix. A company's optimal capital structure is important for several reasons. In many cases, it can help a company save money on its financing costs. If a company has a lower debt-to-equity ratio, it will often have a lower cost of capital because equity is typically less expensive to finance than debt. Additionally, an optimal capital structure can help a company reduce business risks, such as the risk of bankruptcy. An optimal capital structure can help a company maximize its market value, improve its financial flexibility, and attract and retain investors<sup>48</sup>.

## **2.2 Theoretical Framework**

This study adopts three theories namely agency theory, pecking order theory and trade off theory to explain the concept of optimal capital structure.

### **2.2.1 Agency Cost Theory**

Agency theory is one of the theory used to predict the optimal structure in past literature<sup>49</sup>. Since shareholders are separated from the management of businesses, an agency relationship is created. This also creates a conflict of interest situation called the agency problem. According to the agency problem, whilst managers seek their own best interest,

shareholders will be expecting them to work towards maximizing the value of their investment<sup>50</sup>. We find that these opposing interests can eventually lead to situations that predicts the optimal capital structure. The agency problem leads to indiscriminate expenditure by managers who have enough cash at their disposal<sup>51</sup>. This was supported by prior researcher where it was stated that, the agency problem is created because management may have enough cash to spend on their pet projects rather than on value maximizing projects<sup>52</sup>. For instance, managers with excess cash may spend them on things like flashy offices, corporate jets, and things of that nature which does little to maximize shareholder's wealth<sup>53</sup>.

On the other hand, managers with very little cash are not in the position to be that wasteful. The central issues in agency theory are therefore how to resolve the fight for the control of firm resources between managers and shareholders. Some theories have suggested a strategy of increasing the use of debt capital in order to reduce the agency cost problem. Other study concluded that, agency issues may have led SMEs to pursue high debt policies leading to lower performance<sup>54</sup>. The reason for this is that, the risk of financial distress from increasing the use of debt may encourage managers to reduce wasteful spending. Agency problem suggests the use of debt contracts as the main means of transferring wealth to investors. This may be because, it deters wasteful spending, and therefore increasing amounts available to shareholders<sup>56</sup>. Also, the use of debt makes wasteful management focus on debt repayments in order to avoid bankruptcy from the inability to pay. The survival of the business therefore becomes a big concern for managers.

### **2.2.2 Pecking Order Theory.**

According to the pecking order hypothesis, businesses should prioritize their sources of funding from internal finance to equity in accordance with the principle of least effort or

resistance, preferring to raise stock as a last choice for financing<sup>53</sup>. The theorists argued that there is an asymmetric information problem between managers and investors. Investors would like to discount firms' new securities when they are issued, and thus managers can anticipate price discounts in advance<sup>54</sup>. The conclusion drawn from the asymmetric information theories is that there is a hierarchy of firms' preferences with respect to the financing of their investments.<sup>55</sup> This Pecking order theory suggests that firms will initially rely on internally generated funds i.e. undistributed earnings, where there is no existence of asymmetry they will turn to debt if additional funds are needed and will issue equity to cover any remaining capital requirements.

The order of preferences reflects the relative costs of various financing options<sup>56</sup>. The Pecking order hypothesis suggests that firms are willing to sell equity when the market overvalues it. This is based on the assumption that managers' act in favor of the interest of existing shareholders maintain that firms will prefer internal sources to costly external finance<sup>57</sup>. Thus, according to the Pecking order hypothesis, firms that are profitable and therefore generate high earnings are expected to use less debt capital than those that don't generate high earnings<sup>49</sup>.

One assumption that is involved in pecking order theory is that target capital structure is absent<sup>58</sup>. This theory emphasizes more on asymmetric information. Asymmetric information is a situation where the manager of a firm has different information about the firms than the investors. This theory states that the cost of financing will increase when the managers of a company have different (which is better) information about the firms than investors<sup>59</sup>.

The methods used to finance a company in this theory are through internal funds, debt and issuing new equity. But in this theory, the priorities to finance a company are taken more from internal funds and issuing new equity is the last choice to finance the company<sup>60</sup>.

### 2.2.3. Trade- off Theory.

The trade-off theory states that target debt-equity ratio is approached at the point where the tax advantage of debt is offset by the costs of prevailing market imperfection<sup>61</sup>. A firm's optimal debt ratio is usually viewed as determined by a tradeoff of the costs and benefits of borrowing. Firms balance tax savings from debt against dead weight bankruptcy costs. The key implications of the theory are that leverage exhibits target adjustments so that deviations from the target are gradually eliminated from the proposed Static Trade -off Theory that supports the relevance of capital structure. This theory suggests that firms have optimal capital structure and they move towards the target, it further emphasized that when debt is employed in capital structure, firms are faced with the challenges of tax benefit and bankruptcy cost, thus the need for trade- off between the two<sup>62</sup>.

Trade -off theory refers to the decision on how much debt and equity used in raising capital for the firms in order to equate the costs and the benefits of using debt and equity. Both of them assume that, trade-off between debt and equity will result in optimal capital structure. Trade-off theory is an important capital structure as most firms are finance by debt and equity<sup>63</sup>. The cost when a firm is financed by debt is they exposed to bankruptcy and the benefit is that they are exempted from paying tax. While, the cost when a firms is financed by equity by issuing new stock is the investor will have thought that the performance of the firm is bad. Actually, the development of this theory is due to the previous argument by <sup>64</sup>. Some argument that arises by both of them is that they assume that capital structure will not affect the market value of the firms; there are no brokerage costs, no taxes and no bankruptcy cost. Several years later, their argument was then revised back by <sup>65</sup>. It was realized that the effect of taxes is present. It was also stated that investor will choose to pay low before-tax return on stock rather than pay before-tax returns on bonds. Other than debt financing is preferable because of the deductibility of interest. Meanwhile, equity financing

is more preferred due to the tax treatment. Regarding about the statement stated that firms will not bankrupt is irrelevant in the real world. As we know the risk to go bankruptcy are present. The probability to go bankrupt will increase as the firm's debt increases. That is why many firms do not prefer use debt as a source of financing<sup>66</sup>.

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 World. Attempts to relax these assumptions particularly the no bankruptcy cost and no taxation led to the static trade off theory. Over the years, several theories have emerged that proposed the Static Trade-off Theory that supports the relevance of capital structure. This theory suggests that firms have optimal capital structure and they move towards the target. It further emphasized that when debt is employed in capital structure, firms are faced with the challenges of tax benefit and bankruptcy cost, thus the need for trade-off between the two.

Trade- off theory predicts that safe firms i.e. firms with more tangible assets and more taxable income to be shield should have high debts ratios. While risky firms i.e. firms with more intangible assets that the value will disappear in case of liquidation ought to rely more on equity financing<sup>67</sup>.

In terms of profitability, trade-off theory predicts that more profitable firms should mean more Debt serving capacity and more taxable income to shield; therefore, a higher debt ratio will be anticipated<sup>68</sup>.

### **2.3. Empirical Review.**

This section offers some understanding of earlier studies on the capital structure and financial performance of telecommunications companies conducted by various scholars in various nations at various times. Results of earlier study in this area are described below:

**Extent to which capital structure affect profitability of quoted telecommunication companies.**

Past studies into the extent to which capital structure affect profitability (performance) of quoted telecommunication companies has provided mixed results. Many studies have been carried out to examine the effect of capital structure on the profitability of firms, but significant number were conducted in developed nations of the world where data are easily accessible leaving huge gap in developing countries like Nigeria. In India, a study was conducted on the impact of capital structure on the profitability of 50 companies listed on the National Stock Exchange of India between 2008 to 2017. The data was analyzed using multiple panel data regression models, descriptive statistics, and correlation. Four different regression models were employed to evaluate the relationship between capital structure and profitability. It was discovered that a firm's capital structure had a significant positive impact on its profitability<sup>69</sup>. Similar research conducted in USA on the effect of capital structure on firms' profitability of telecommunication companies. Annual data of the telecom industry from 2012 to 2020 in the USA, comprising 421 firm-year observations for 72 firms were studied using pooled panel regression, univariate analysis, correlation, and descriptive statistics models. Impact of Capital Structure was tested using Total Liabilities to Total Assets and Total Equity to Total Assets on the profitability using Return on Assets and Return on Equity of firms in the telecommunication industry in the USA. The results reveal that the ratio of Total Liabilities to Total Assets has a significant impact on Return On Asset, and Total Equity to Total Assets has a significant impact on ROA<sup>12</sup>.

Another study Conducted in Ghana on the impact of capital structure on the competitiveness of the manufacturing industry. Data was analyzed using descriptive statistics and inferential statistics. Outcome of the study revealed that short term debt and long term debt had a negative effect on productivity and on the contrary equity has a positive relationship with profitability<sup>13</sup>. Also, study conducted in Nigeria on the effect of Debt Equity Financing on Performance of quoted Firms in Nigeria revealed that Debt Equity Financing has significant and positive effect on Firms Performance. Debt equity financing was proxy using the variables of equity financing and debt equity financing while Firms Performance on the other hand was measured using Return on equity. Data for the study were gathered from the Nigeria Stock Exchange Fact Book, Annual Reports, and Accounts using the Ex Post Facto design of research. The study's conclusions showed that debt equity financing significantly and favorably affects firms' performance in Nigeria. According to the study's findings, debt-equity financing enhances a firm's performance over time. It was advised that firms try to finance their investment operations with debts and equity and only consider debt or equity as a last resort<sup>14</sup> based on the study's findings.<sup>14</sup>

Similar to the above study was conducted to evaluates the effects of debt and equity financing on corporate performance among the Chinese listed firms' revealing that capital structure have significantly negative consequence on corporate performance. Hence, the study shows that it is risky for companies to depend entirely on either debt or equity for raising capital but it is far better to raise capital by both methods, with each employed together, at the same time. This method is better as it affords the benefit of one method offsetting the problems of the other and vice versa<sup>15</sup>.

Also, another study conducted in Kenya revealed that poor financial performance of quoted companies adversely affected the economic growth of the Kenyan economy. Majority of these firms have been facing financial difficulties. The management of these companies is

concerned whether the firm financial structure affects their performance. Financial structure of a company is important for the management and stakeholders as it defines the various modes of financing that the company uses to support its investments and operations. The general objective of this study was to investigate the effect of financial structure on performance of selected companies listed at (NSE), Kenya. The specific study objective was to determine the effect of equity on the performance of Companies listed on the Nairobi Securities Exchange (NSE). Causal or explanatory research design was employed in the study due to the nature of the problem and available. Quantitative data was used. Multivariate tests using panel data model examined the effects of the independent variable on company's financial performance. Data was collected for 30 selected companies for the period 2007-2015. The study adopted positivist philosophy as it focused on objectivity and fits a quantitative study with objective of testing hypotheses. Various diagnostic tests including, Auto-correlation test, Normality test, Heteroscedasticity test, Unit root test and Test for pooling were carried out. Regression coefficients were used to test for significance using t-statistic at 5% level of significance and conclusions drawn. The coefficient of determination ( $R^2$ ) was used to rank the explanatory variable's contribution to the response variable. The study utilized secondary panel data contained in the annual reports and financial statements of selected companies. The research contributed to the existing literature of international business and finance by jointly testing the effects of leverage on performance of selected companies listed at the (NSE), Kenya. Breach-Pagan Lagrange multiplier (LM) test was used showing that there were no panel effects (implying that ordinary least square should be used (pooling)). Therefore, the data was pooled. The study found out that Equity had significant positive effect on financial performance of selected companies listed at NSE, Kenya. The recommendations of the study were that managers of

the selected companies listed at NSE, Kenya could utilize the various sources of finance since financial structure had a positive effect on the performance of the listed firms<sup>16</sup>.

Likewise, study conducted in Nigeria on the implications of equity capital financing on the corporate financial performance in Nigeria with special reference to deposit money banks in Nigeria. 14 banks listed on Nigerian Exchange Group for a period of 11 years (2006-2016) was selected. The data used is secondary in nature; extracted from the Annual Reports and Accounts of the various Banks and employed ex-post facto research design, and Pooled Ordinary Least Square Method in the analysis. It made use of panel data structure and the data was analyzed with E-View package (version 13). Also, the P and T values assisted in the analysis of both magnitude and direction of the relationship between the independent and dependent variables. It also revealed that both ROE AND EVA has a positive effect on the corporate financial performance of Deposit Money Banks in Nigeria. The study concludes that Equity financing has positive effect on corporate financial performance of Deposit Money Bank in Nigeria; therefore, increasing this variable will bring a positive effect on the corporate financial performance of Deposit Money Banks in Nigeria. It recommends that the implications of scheduling banks capital into equity financing, short-term debt and long-term debt by managers should be closely supervised and monitored by both shareholders and bondholders' so as to avoid the company adding negative value to them who are contributors of finance<sup>17</sup>.

Moreover, another study that assessed the effect of equity financing options on financial performance of listed manufacturing firms in Nigeria concluded that equity financing option composition significantly affect financial performance of listed manufacturing firms in Nigeria. Secondary data were obtained from purposively selected 60 out of the 70 listed manufacturing firms in Nigeria. Return on assets (ROA) was used to measure performance while the equity finance options used in the study are; retained earnings, ordinary share

capital and preference shares. The overall effect of the independent variable is statistically significant in explaining the variation in return on assets as their individual probability values are less than 0.05 level of significance. The individual effect of each of the explanatory variables reveals that retained earnings and preference shares significantly influence performance of listed manufacturing firms in Nigeria given its probability value of 0.000 which is less than 5%. Although, the effect of ordinary share capital on performance of listed manufacturing firms in Nigeria was positive but statistically insignificant.<sup>18</sup>

Also, the relationship between equity financing and financial performance of firms in the energy and petroleum sector listed at the Nairobi Securities Exchange showed a significant positive relationship between financial performance and growth opportunities and equity ratio. The study was descriptive in nature and the research analyzed the data selected within a specified period of time. The population for the study consisted of the five firms in the energy and petroleum sector listed at Nairobi Securities Exchange from the year 2005 to 2014 period. The sample was the same as the population. The study used secondary data from published audited annual reports of accounts for the sample firms and these were obtained from Nairobi Securities Exchange and Capital Market Authority. Data from balance sheets, profit and loss accounts and cash flow statements were used to calculate and analyze return on equity which is the dependent variable, while growth opportunities; firm size, liquidity ratio and equity ratio are independent variables. The study used a regression model to analyze the relationship between equity financing and financial performance of the firms. Control variables namely growth opportunities, liquidity ratio, and firm size were used in the regression model. F-test was used to determine the fitness of the regression model in analyzing the relationship. The coefficient of determination was used to explain how much of the variations in financial performance were explained by equity financing. Outcome of the study showed an insignificant but positive relationship between equity

financing and financial performance. It can be concluded that firms which invest resources towards increasing growth in asset base show greater improvement in financial performance. Equity financing are important especially as far as raising capital for growth, expansions or acquisitions is concerned. The study recommends that firms to use equity financing in increasing asset base and growth since this translates to improved financial performance. Policies regarding equity issues should be reviewed and made flexible to encourage firms to participate in equity issues. The study concentrated on listed firms whose findings cannot be generalized for all firms' hence further studies can be to include non-listed firms to compare the findings<sup>19</sup>.

Furthermore, another study conducted in Kenya on the effects of equity financing options and total equity (TED) as ratios of total assets on the financial performance measured as return on assets (ROA) and return on equity (ROE) of Kenya's listed firms. The study analyzes the effects of equity variables as ratios of total assets on the financial performance of 40 non-financial firms listed at the Nairobi Securities Exchange between 2009 and 2015. The study's empirical results show that CS ratio significantly and negatively affects ROA while REN ratio has a statistically significant and positive effect on ROA. Overall, TE ratio positively and significantly affects ROA. On the contrary, ROE is not significantly affected by the equity variables in the sample. While the non-significant effects of equity on ROE find support in Modigliani and Miller's capital structure irrelevance theory, the positive effects of REN ratio and the negative effects of CS ratio on ROA, which are largely supported by the trade-off theory, may explain the pecking order theory's prioritization of internal capital sources over debt and equity issuances. Thus, corporate finance managers should find a place for internal financing options particularly retained earnings to maximize equity holders' returns on assets employed. Additionally, corporate finance managers should endeavor to minimize on the use of CS due to its negative effects on shareholder earnings on

their assets. Nonetheless, a reasonable balance between CS and REN should be considered since the positive effect between TE and ROA is an appraisal for an optimum mix of equity financing options<sup>20</sup>.

Another study conducted in Nigeria looked into the effect of capital structure on the financial performance of the country's consumer goods sector. The consumer goods businesses registered on the Nigerian Stock Exchange made up the study's population. A sample size of six companies was used, and a filter sampling technique was used during a five-year period, from 2012 to 2016. Financial performance is the dependent variable in the study, and shareholders' funds, long-term debt, and short-term debt are its independent factors. Using E-views 8.0, descriptive statistics and regression analysis were used to examine the data generated from the annual report and accounts of the chosen companies. The study's conclusions demonstrate that short-term, long-term, and equity debts have no discernible impact on the financial performance of listed companies in Nigeria's consumer goods sector. The study advised companies to think critically and compare the cost of obtaining a specific source of capital with the benefit that can be obtained from it rather than basing their capital structure decisions on flimsy generalizations when deciding the composition of their capital structure. Managers can use this to guarantee that there will be a profit at the end of the day<sup>21</sup>.

Furthermore, study carried out in Malaysia on the relationship between the source of capital via equity and debt financing, and the performance of small and medium enterprise revealed that SMEs in Malaysia employ equity financing as a source of business capital, for its potential (capability) in affecting the performance of business. The study is run based on of postal survey using cluster sampling method. It comprises of 177 samples of Malaysian SMEs involving in manufacturing and agriculture sectors. Subsequently, two research hypotheses are developed and analyzed. It is found that equity financing has significant

positive relationship on the business performance, while debt financing is insignificant. The study suggests that SMEs in Malaysia to employ equity financing as a source of business capital, for its potential (capability) in affecting the performance of business <sup>22</sup>.

However, the findings of this study is in accordance with the review of prior study who propose that SMEs use of equity financing to improve the performance of the business as the cost of debt financing is high. According to them again, the firms' use of high debt financing would have to incur additional premium costs and thus affects the profitability of the firm. Therefore, this study recommends that SMEs should always self-check for the internal value of the firm (internal sources) before going for external capital resources (capital market)<sup>23</sup>. Also, investigation conducted in Pakistan on the impact of debt financing on airline's (transport) sector performance revealed that that there is opposite relationship between debt financing and financial performance of airlines. Debt is measured from three ratios, short term debt to total assets, long term debt to total assets and total debt to total assets ratio. For the measurement of performance, return on assets and earnings per share were used. Data from secondary sources. In this study, we used a data sample of 11 years from 2008-2018 by using companies' annual reports. Due to unavailability of data, only 3 transport companies have been taken for analysis. The software which we used in analysis is SPSS. It was concluded on the basis of findings that the companies should focus on retained earnings which is cheaper source of finance and use less level of debt. As the more level of debt use by the companies, the performance of companies' decrease<sup>24</sup>.

In addition, study carried out in Dubai on the association between debt and the financial performance of airlines in Dubai concluded that there is positive association between debt financing and profitability of firms. The study covers the period 2010-2015. Data has been taken from secondary sources and annual company reports have been used. The study

variables were utility, growth, development and style. The regression analysis of the Study Panel was used to verify the relationship between the variables<sup>25</sup>.

In addition, a comparable study from 2014 to 2019 examined the relationship between capital structure and financial performance and took into consideration the impact of loan maturity using 425 cross-sectional firm-year samples from companies in Ghana and Nigeria. According to the empirical findings, there is a significant inverse relationship between capital structure and financial performance. Debt maturity has little impact on the relationship between capital structure and financial performance. However, the industry has an impact on the direction of the relationship between capital structure and financial performance. Debt maturity also has an impact on the correlation between capital structure performance and specific industries, but not for the market. This study expands on prior work by include institutional and sectorial investors. This study extends previous investigations into the relationship between capital structure and financial performance by using sector-specific data as well as information on the debt maturity of businesses in Ghana and Nigeria. Finance managers will find it simpler to maximize performance by considering financially justifiable heterogeneities such as the sector and the funding source<sup>26</sup>.

Also, similar study conducted in Hong Kong examined the impact of capital structure on a firm's performance, which has been an unsolved problem in the field of financial management. Eventually, for both capital structure and performance, a panel data model has been adopted and the empirical model used Return on Assets as a proxy for performance, while total debt was proxies for capital structure. The research included 202 cross- sections and 1010 observations for the period of 2014 to 2018. Also, a case study had been done on Capital Structure and Performance of Hong Kong Firms gave the close linkage between the performance of the firms and the stability of the financial structure, and it is important to understand the vulnerability of the companies. Specifically, these would enable managers to

identify determinants and importance of optimal capital structure. Nevertheless, further research was carried out by substituting (LTDR) for (TDR). The result showed a small effect in the negative direction. Therefore, the results of the impact of Capital structure on performance proved to be inconclusive. However, taking into consideration that Hong Kong has a different economic system, and the economy has many characteristics that vary from other countries in aspects such as, consumer consumption, spending behavior, and saving habits which serve as influence to firms and individuals. On this basis, concepts such as cultural, political, and institutional differences should be taken into consideration when assessing the impact of capital structure on firm's performance<sup>30</sup>.

Additionally, a study on the association between firm performance and capital structure in German non-financial firms. The non-financial companies listed in Germany from 1993 to 2016 make up the study sample. The adoption of IFRS by the European stock market in 2005 is another turning event that is thought to have affected how strong the association was. In contrast to other comparable nations, we found that more than 60% of the total assets of German non-financial enterprises are financed by debt. The findings support the idea that capital structure and company performance are positively correlated. Additionally, we discovered that the adoption of IFRS has improved the performance of our sample's firms while weakening the link between capital structure and performance. One plausible explanation for the positive association between capital structure and firm performance is the benefits of the tax shield and the lower costs of issuing debt compared to equity<sup>70</sup>.

Moreover, study conducted on the impact of capital structure on the performance of multinational firms in Nigeria showed that capital structure is significant and negatively affects multinational firms' performance in Nigeria. Panel data of 2008 to 2017 were sourced from the official publication of the Nigeria Stock Exchange (NSE). Data was analyzed, using descriptive statistic, ADF statistic, Levin and panel regression techniques.

The results showed that capital structure is important and has a negative impact on the performance of multinational corporations in Nigeria, supporting the validity of the pecking order theory for these corporations. Except for firm size, other company-specific characteristics such as board size, firm age, firm size, and board independence were positively correlated with the performance of multinational corporations in Nigeria. However, these correlations were not statistically significant. As a result, it is advised that managers of multinational corporations continue to set priorities so that they use internally generated funds (retained earnings) first. If this source of financing has been used up, they should then turn to debt capital, and finally equity, as a source of funding. Besides, managers of multinational firms want to ensure the movement of their capital structure to a level that is optimal (where cost associated with capital is at the minimum level and value of the firm is at maximum level) and strive to sustain and maintain it as much as possible<sup>31</sup>.

Other study that examined the impact of Capital structure on Financial performance of selected quoted firms in Nigeria has a population of ten (10) firms quoted on the Nigerian Stock Exchange as at 31st December 2018 out of which ten (10) firms were selected as samples for a period of seven (7) years from 2012 to 2018 based on purposeful sampling technique. The study uses multiple regressions as a tool for analysis. The study reveals that short term debt, long term debt and Debt equity showed a positive significant impact on Financial performance of selected quoted firms in Nigeria. The study concludes that Short term, long term debt and Debt equity influences Financial performance of selected quoted firms in Nigeria exchange group and therefore recommends that listed firms should go for short term debt and long term debt as it improves financial performance<sup>28</sup>.

In addition, study was conducted in Nigeria on the impact of capital structure on firm performance in Nigeria from 2000 to 2010. The study makes a comparative analysis of the selected firms which are classified into highly and lowly geared firms setting a leverage threshold of above 10% as being highly geared. To accomplish the study's goals, a static panel

analysis was performed. Over a ten-year period, a relationship between performance (measured by return on investment) and leverage of the firms was found using a fixed effect regression estimation model. The findings offer compelling evidence in favor of the conventional capital structure hypothesis, which maintains that leverage plays a key role in determining how well businesses operate. A significant negative relationship is established between leverage and performance. Based on the research outcome, it was strongly advised that businesses should finance their operations primarily with equity rather than debt. This is because, while loan capital can initially increase a company's worth, it eventually starts to work against them. Each firm should establish with the aid of professional financial managers, that particular debt-equity mix that maximizes its value and minimizes its weighted average cost of capital<sup>29</sup>.

Similar study that examined the impact of capital structure determinants on firm financial performance together with the mediation effect of firm leverage in Malaysia and Indonesia over the period of 1990–2010 revealed that there is a positive significant correlation between firm leverage and firm financial performance. Results show that certain of the capital structure determinants directly affect firm financial performance. It was also observed that only the Malaysian sample has a positive significant correlation between firm leverage and firm financial performance. Malaysian firms use external financing instead of internal financing to heighten performance. Our results also show that firm leverage plays a mediating role in Malaysia but not for the Indonesian sample. The asset structure, growth opportunities, liquidity, non-debt tax shield and interest rate are the attributes that were indirectly influenced by firm leverage on firm financial performance. Further analysis for multi-group analysis (MGA) in PLS was also used to test the equality of the parameter estimates. We observe that certain attribute coefficients in the determinants of capital

structure and firm financial performance are significantly different between Malaysia and Indonesia<sup>47</sup>.

In addition, investigation into the capital structure and financial performance of manufacturing companies in Nigerian between 2007 and 2016. All listed manufacturing firm on the Nigerian Exchange Group were taken as the study population. Sample of 10 listed companies was selected. The research design adopted was ex-post facto using four models to analyze the impact of capital structure on firms' performance. The study used balanced panel data of 100 observations from the 10 listed companies for the periods ranging from 2007 - 2016. Descriptive statistics and regression were used as tools of analysis. The study reveals that there are statistically significant and non-significant effects of capital structure on performance variables. Finally, the study recommends that manufacturing companies should adopt balanced capital structure strategy that will optimize company's performance and corporate value<sup>46</sup>.

Also, another revealed that the capital structure is one of the core decision areas in the field of finance, as it determines the existing amount of debt and equity of a bank. It is an important decision that has a close relationship with the value of bank hence its performance. The overall goal of this study is to evaluate how the capital structure of banks in Nigeria's financial performance, specifically how the debt to equity ratio and the equity to debt ratio affects return on equity and net interest margin. All 21 of Nigeria's licensed DMBs make up the study's population (CBN, 2017). For the years 2007 through 2016, the convenience sampling technique was used to determine the sample size of 12 banks. In order to evaluate the data using random effect estimates, the study uses a panel design. The research discovered a favorable correlation between financial performance as shown by Net Interest Margin (NIM). According to the study, STD suppliers should receive additional incentives

in order to effectively change the maturity structure. More incentives should be offered to STD suppliers, the report advises, in order to effectively change the maturity structure of STDs. To investigate the benefits of debt's tax benefits and management efficiency, prudence should be used<sup>43</sup>.

Study into the impact of capital structure on the financial performance of non- financial firms quoted at the Nairobi securities exchange (NSE) in Kenya for the period of 2009-2013 revealed that capital structure has a negative and significant effect on financial performance of financial firms quoted on the NSE in Kenya. The study adopts an explanatory descriptive research design. A sample of 40 non- financial firms listed at the NSE is drawn under judgmental sampling method. Secondary data is obtained from NSE hand book. Multiple regression method is used to analyze and test the hypothesis at 5% and 1% level of significance with the aid of statistical package for social sciences. The findings show that capital structure variables; current liabilities to total assets ratio, long term liabilities to total assets ratio and total liabilities to total assets ratio have a negative and significant effect on financial performance measured by return on assets for financial firms quoted on the NSE in Kenya. The study concludes that capital structure is an important determinant of firm's financial performance as shown by prior studies<sup>42</sup>.

Similar to this study, another one looked at the effect of capital structure on the return-on-assets (ROA) performance of non-financial enterprises over a nine-year period (2012-2020). The capital structure variables of long term debt to equity (LTDQ), total debt (TD), total debt to equity (TDQ), and total debt to total assets (TDTA), as well as the ROA performance, were examined for a total of forty (40) non-financial enterprises. The approach of panel data analysis was used. All factors were significant at the 1% level, and it was discovered that LTDQ, TD, and TDQ have favorable effects on ROA performance while

TDTA has a negative effect. The study recommends that, since long term debt to equity strongly explain corporate performance in the Sub-Saharan African Countries, management should sustain their current policies and should also be very sensitive in determining the appropriate amount of long term debt that ought to be included in their capital structure build up<sup>40</sup>.

Also, other study revealed that capital structure decisions are among the most important and crucial decisions for any business because of their effect on the firm's value. Impact of capital structure of banks in Ethiopia on financial performance where study for a period of five (5) years between 2011 to 2015. Data was analyzed using quantitative approach of multiple regression models. The study used return on equity and return on assets to measure performance as dependent variable and capital structure was measured using debt ratio, debt to equity ratio, loan to deposit, bank's size and asset tangibility as independent variable. The results reveals that financial performance is significantly and negatively associated with capital structure. Conclusion drawn from the study was that the capital structure proxies have impact on financial performance of commercial bank. From the findings, it is strongly recommended that firms should focus on the proportion of debt used by the bank, the manner of utilizing the resources while expanding the banks and the amount of investment on fixed asset <sup>39</sup>.

In addition, study conducted on the influence of capital structure on the financial performance of banks in India indicate that the capital structure has a significant impact on the financial performance of the banks in India. The study covers a period of five years from 2011 to 2015 and <sup>21</sup> banks were selected for the study. Regression analysis was used to test the impact of capital structure on profitability considering capital structure as an independent variable and profitability as the dependent variable<sup>38</sup>. Also, research carried out

in Rome on the relationship between capital structure and financial performance in Romanian companies listed on the Bucharest Stock Exchange, over a period of eight-years (2003-2010). Result of the study revealed a positive and strong relationship between capital structure and financial performance. The analysis was based on cross sectional regressions. The capital structure indicators refer to long-term debt, short-term debt; total debt and total equity, while return on assets and return on equity are the performance proxies. Previous studies indicate asset tangibility, tax, risk, liquidity and inflation as capital structure determinants in Romanian manufacturing companies. As long as these factors have an important impact on financing decisions, they will be included in the analysis as they are expected to also influence performance. Results indicate that performance in Romanian companies is higher when they avoid debt and operate based on equity<sup>37</sup>.

A similar study in Nigeria that looked at the impact of capital structure parameters on manufacturing business performance also found a link between the two. Data from an annualized panel for a sample of 15 listed companies from various sectoral classifications, from 1999 to 2018. excluding financial companies because of the peculiarity of their capital structure and the stringent legislative constraints on their choice of financing. Non-financial businesses are the focus of this study. Measures of the firm's market and book values include capital structure<sup>29</sup>.

Another study on the effect of capital structure on the performance of a Malaysian listed industrial product business also found a negative correlation between ROE and size, a positive correlation between ROE and debt equity ratio, and a negative correlation between ROE and debt ratio. Based on the availability of the 2011 to 2015 annual reports, the study's convenience sample technique was utilized to pick 50 industrial product businesses listed on Bursa Malaysia's main exchange market. The data were analyzed using multiple regression

and descriptive statistics. The findings of the study demonstrated that industrial products companies' financial structures heavily rely on equity funding. In addition, the regression analysis revealed that while the ratios of total debt to total equity and total debt to total equity had a negligible impact on ROA, respectively, on ROA. Debt to equity has a negative influence on ROE, total debt has a positive impact on ROE, and total equity has little to no impact on ROE. In addition, the ratio of debt to equity affects ROE negatively, total debt favorably, and total equity negligibly. Finally, debt to equity has a negative significant impact on EPS, total debt ratio has a positive significant impact on EPS, and total debt has a negligible influence on EPS. In conclusion, industrial product company raise debt finance can reduce agency problem and enjoy tax advantage, but debt level over the optimum capital structure will bring a negative impact on firm performance<sup>36</sup>.

Furthermore, another study studied the impact of capital structure on company performance in 53 Moroccan organizations from 2014 to 2016. The study discovered that debt and equity ratios have a favorable impact on ROA, however debt to equity has a negative impact on ROA.<sup>35</sup>. Similar study that investigated the relationship between capital structure and firm performance in the microfinance banking subsector in Nigeria from 2009 to 2018. It revealed a negative and insignificant relationship between Debt equity ratio and return on equity. Issues surrounding capital structure and performance which have been widely debated in the finance literature, yet there has not been consensus as to how composition of firm 's capital impact on firm performance including Nigeria The study employed explained variables (debt to equity ratio, long term debt ratio and total debt ratio) representing capital structure and the explanatory variable (return on equity) representing firm performance. For the analysis, descriptive statistics and the regression technique were utilized. The findings also showed that the total effect of the explained variables on firm performance as assessed by return on equity is statistically significant, with an F-statistic of 37.16701 and a

probability of 0.026372. Therefore, it is advised that microfinance banks in Nigeria and elsewhere come up with tactics that work to increase their debt profile in order to perform better<sup>31</sup>.

Study conducted on the effect of capital structure on the performance of some Iraqi private banks. Six banks based in Iraq namely: Babylon Bank, Investment Bank, Credit Bank, Commercial Bank, Sharq Al-Awsat Bank, and Baghdad Bank were selected for the present study over the period 2005 to 2015. Methodology: Annual reports of these banks were studied and relevant ratios were calculated. The variables that were identified as independent for capital structure were total debt to capital, bank size and asset growth, while return on assets and return on equity were considered to be dependent variables for bank performance. The panel Least Square model has been used to examine the impact of capital structure on bank performance. Findings: Outcomes indicate that none of the independent variables has a significant impact on return on assets (ROA), while total debt to capital (TDC) has a positive impact on return on equity (ROE). Recommendation: based on this result, Iraqi banks should keep sufficient amount of capital to avoid any financial risks and increase the probability of survival<sup>33</sup>. However, a study conducted on capital structure and firm performance in India indicated that macroeconomic cycle significantly influence capital structure choice of firms which in turn affect their performance. Furthermore, a study on capital structure in Nigeria looked at the effect of capital structure on the financial performance of companies in the cement business. Ex-post factor research design is used. Regression, correlation, and descriptive statistics are employed as analytical techniques. The study found that long-term and short-term liabilities had a statistically significant impact on return on assets (ROA) and return on equity (ROE). However, the study came to the conclusion that the cement industry's performance is not optimum since these companies are unable to effectively use debt in their capital structures <sup>71</sup>.

Furthermore, choosing whether to finance a business with debt or equity has led to a never-ending search for the best capital structure. Researchers have conducted several research studies trying to find out the optimal capital structure. Some indicate that a firm having a high degree of leverage seems to have an optimal capital structure and thus leads to better financial performance. There are others such as that of Modigliani-Miller that differs in argument by concluding that high leverage does not influence the value of the firm. Study on the impact of capital structure on the financial performance of non-financial firms quoted at the Nairobi Securities Exchange conducted on 16 non-financial firms that were in operation in Kenya and quoted at the NSE between 2013 and 2017. Financial performance was measured by return on assets and return on equity, while the capital structure was measured using the change in debt and debt-equity ratio. Secondary data utilized was obtained from audited financial statements derived from company websites and NSE handbook covering the period 2013 to 2017. Correlation and regression analysis were employed in the statistical analysis that was carried out with the aid of STATA version 15. The results demonstrated that the capital structure directly affects the financial performance of companies listed on the Nairobi market. The findings demonstrated that as debt levels in a company's capital structure vary more, their financial performance improves<sup>45</sup>.

Generally, the empirical evidences on capital structure and firm performance are mixed and inconclusive. The measures of capital structure and firm performance differ across various studies. The estimation techniques also vary from one study to the other. The empirical irregularities necessitated further investigation into the impact of capital structure on firm performance particularly in the emerging market context.

**Extent to which capital structure affect return on asset of quoted telecommunication companies in Nigeria.**

A good number of study has been conducted on capital structure and performance mostly in manufacturing sector of Nigeria economy. Some of them were reviewed below:

Study conducted in United State of America on how capital structure affected financial performance of listed firms revealed a negative effect between financial performance and capital structure. Two main sets of variables were used: for profitability, ROA as the ratio of net income to total assets, and ROE as the ratio of net income to total shareholders' equity were adopted as proxies for financial performance; and to indicate capital structure, short-term debt, long-term debt, total debt, debt to equity ratio, and firm size were adopted. From 2005 to 2013, nine years were covered by the study. Financial statements retrieved from Mergent online were used to gather the data. Partial Least Squares (Smart PLS) version 3 was used to evaluate the data. Result of the research showed that total debt had a substantial negative impact on ROE and ROA, but that size in terms of sales had a significant negative influence only on ROE of American enterprises<sup>61</sup>.

Also, study conducted in Sri Lanka on the correlation between structure of capital and the performance in financial term with special reference to manufacturing firms from 2008 to 2012 equally revealed a negative relationship between leverage and return on equity. Variable of measurement are Return on Equity (ROE) and Return on Assets (ROA). 30 listed manufacturing companies were chosen as the sample. Using SPSS, the data were examined, and hypotheses were tested using correlation and regression analysis. Outcome of the study showed an inverse link between leverage and return on equity. Furthermore, there was no connection between leverage and return on assets<sup>72</sup>.

Furthermore, studies carried out in Pakistan to examine the effect of capital structure on return on assets on manufacturing and non-manufacturing industries. The financial statements were analyzed of manufacturing and non-manufacturing organizations of Pakistan for the period of 2008- 2013. The study reveals the fact, profitability and debt in

manufacturing and non-manufacturing industry is an insignificant relationship and a strong positive link between profitability and debt. Descriptive statistics was used to interpret the data. It is proved that manufacturing firms has negative regression between debts and profit and the non- manufacturing has found a positive regression between debt and profit<sup>63</sup>.

This study was conducted in Indonesia to determine the extent of capital structure on return on assets in a profitability on banking sector companies listed on the Indonesia Stock Exchange from 2017-2019. The findings of the results shows that ROA has a positive influence, which means that the greater the ROA, the higher the value of the company or the maximum because high profits will provide guarantees and good prospects for companies using information such as investors to invest in certain issuers. This is because high profits tend to be followed by a high rate of return (dividends) to be obtained by investors, and if the value of the company's shares in the market is high, of course it will have a good impact on the value of the company<sup>64</sup>.

In the study, the impact of capital structure on return on assets for listed manufacturing enterprises in Nigeria is analyzed. Ex-post facto research design was used in this study. 75 non-financial companies listed on the Nigerian Exchange Group comprise the sample for the study. The time period covering is from 2010-2019. The panel regression is employed for the inferential analysis. On the overall, the study finding reveals that LTDE has significant positive impact on ROE but insignificant in relation to TOBINQ while LTDA has a significant negative impact on ROE as well as with Tobin q. The study recommends the need for firms to engaged long term debt productively and reduce the agency cost that accompanies debt financing such as the opportunity for managerial opportunism and inefficient use of debts due to their long maturity characteristic<sup>58</sup>.

The study shows that the financing structure has a conflicting effect on financial success. It uses a panel regression approach to evaluate how funding structure affects financial

performance for mobile telecom companies based in sub-Saharan Africa. For the seven-year period from 2010 to 2016, it takes into account eight businesses having publicly available annual reports. Operating profit margin, return on assets, and return on equity were used to gauge financial success, while long-term debt to total assets ratio was used to gauge the strength of the financing.<sup>65</sup>

Another study used data from the Nigerian stock exchange to analyze the financing structure composition and financial performance of food and beverage companies. Findings show a strong positive correlation between long-term debt to total assets, Tobin Q, and earnings yield<sup>60</sup>. Also, study conducted on the relationship between debt and profitability of commercial banks in Nigeria. Profit after tax and earnings per share were used as a measure of performance and employed panel regression technique to analyze data collected from a sample of fourteen quoted commercial banks between 2009 to 2016. The study concludes that debt can be significantly influenced by liquidity and shareholders' wealth. Consequently, the study recommend that commercial bank managers should not depend on debt capital as a source of financing the organization financing structure but rather use retained earnings of the business and consider debt as the least alternatives<sup>80</sup>.

From the findings, the study found that debt capital has significant effect on the financial performance of the quoted commercial banks. It recommends that management of quoted commercial banks should work very hardtop optimize the capital structure in order to increase the returns on equity and assets through ensuring that their capital structure is optimal and management of commercial banks should increase their commitments into capital structure in order to improve earnings from their business transaction<sup>56</sup>.

**Effect of capital structure on return on equity of quoted telecommunication companies in Nigeria.**

Various study conducted on the effect of capital structure and return on equity in telecommunication companies indicate positive relationship. The study conducted in Indonesia on the effect of the capital structure on return on equity. The survey was conducted on issuers in the JII70 with a sample of 32 issuers. The data taken are financial report data for 2016 and 2017. Based on the results of data processing with the SPSS version 25, it shows that the capital structure has a positive and significant effect on return on equity. This positive influence shows that effective use of debt will have an impact on return on equity increasing<sup>70</sup>.

Another, study carried out on Romania capital structure and firm performance of firms active in the wholesale of motors vehicle parts and accessories (NACE 4531). Capital structure refers to how a firm chooses to finance their assets and future growth by dividing debt into subcategories (bank, commercial) and time horizon, while firm performance is evaluated by the return on equity (financial return). By determining this relationship, firms in these sectors should have a better understanding of how to select the financing for their future growth. The main output of the study consists in the fact that the financial structure divided by debt components of the companies does not influence significantly the return on equity during periods of low interest rates, like the case of Romania during 2016<sup>71</sup>.

The study examines the effect of long term debt financing and financial performance of listed manufacturing firms in Nigeria. This study employed an ex-post facto research design. The sample used for the research consists of 75 non-financial firms listed on the Nigerian Exchange Group. The time period covering is from 2010-2019. The panel regression is employed for the inferential analysis. On the overall, the study finding reveals that LTDE has significant positive impact on ROE but insignificant in relation to TOBINQ while LTDA has a significant negative impact on ROE as well as with Tobin q. The study recommends the need for firms to engaged long term debt productively and reduce the

agency cost that accompanies debt financing such as the opportunity for managerial opportunism and inefficient use of debts due to their long maturity characteristic<sup>72</sup>.

Another study conducted on the relationship and impact of capital structure on firms' financial performance of companies listed in BSE in Nigeria. The sample Companies were selected based on judgmental sampling. The SPSS using descriptive and inferential statistics was used to process collected data for the study. The results of the study showed a significant relationship between debt equity ratio, short-term debt to total assets and total debt on return on equity.

The impact of post-consolidation capital structure on the financial performance of Nigerian listed banks was also explored in the study. It demonstrates that the capital structure and financial performance of Nigeria's listed banks are significantly positively correlated. Profit before tax and equity and debt in the capital structure were employed as the study's independent and dependent variables, respectively. The study's sample includes ten (10) Nigerian banks that are listed on the Nigerian Stock Exchange (NSE) and covers the eight (8) years from 2005 to 2012. The required data and information for the study were gathered from published annual reports<sup>73</sup>.

Likewise, investigation into the impact of Capital structure on Financial performance of selected quoted firms in Nigeria showed that short term debt, long term debt and Debt equity has a positive significant impact on Financial performance of selected quoted firms in Nigeria. The population of the study consists of ten (10) firms quoted on the Nigerian Stock Exchange as at 31st December 2018 out of which ten (10) firms were selected as samples for a period of seven (7) years from 2012 to 2018 based on purposeful sampling technique. The study uses multiple regressions as a tool for analysis. The study concludes that Short term, long term debt and Debt equity influences Financial performance of selected quoted firms in Nigeria and therefore recommends that Security and Exchange

Commission should encourage selected quoted firms to go for short term debt and long term debt as it improves financial performance<sup>74</sup>.

Furthermore, study conducted on capital structure in Jordan established that that capital structure associated negatively and statistically with firm performance on the study sample generally. The study used multiple regression model represented by ordinary least squares (OLS) as a technique to examine what is the effect of capital structure on the performance by applying on 76 firms (53 industrial firms and 23 service corporation) for the period (2001-2006). The results of the study concluded that capital structure associated negatively and statistically with firm performance on the study sample generally. In addition, the study found out that there was no significant difference to the impact of the financial leverage between high financial leverage firms and low financial leverage firms on their performance. Finally, the study also showed that the effect of financial leverage on the basis of the growth that there is no difference between the financial leverage of high growth firms and low growth firms on the performance, which it was negatively and statistically<sup>75</sup>

Moreover, investigation conducted on capital structure of Nigerian banks post bank consolidation revealed that capital structure has impact on firm performance in Nigeria. Bank consolidation in Nigeria has increased bank equity capital against debt. It demonstrates that the financial performance of Nigeria's listed banks and capital structure have a strong favorable link. This study aims to determine how the capital structure following consolidation impacts the financial performance of Nigerian listed banks. Profit before tax was used as a dependent variable in the study, while the two capital structure variables (equity and debt) were used as independent variables. The sample of the study, which served as the basis for analysis, consisted of ten (10) Nigerian banks listed on the Nigerian Stock Exchange (NSE). The sample period for the study covered the eight (8) years from 2005 to 2012. The investigation's data and information came from published annual reports. This

suggests that the management of Nigeria's publicly traded banks often uses debt and equity capital in financing to boost profits<sup>76</sup>.

Also, study conducted on Malaysian financial performance and capital structure showed a negative association between capital structure and performance. Study period ranges between 2011-2015. The study focused on Malaysian construction firms. The empirical data was taken from 41 construction firms listed on the main board of Bursa Malaysia. Capital structure is the financing decision on the proportion between debt and equity. The right proportion leads to optimal capital structure. This study adopts two theories namely trade-off theory and pecking order theory, to explain the concept of optimal capital - structure. Capital structure is the independent variable and is measured by short-term debt (STD), long-term debt (LTD), total debt (TD), meanwhile the dependent variable, financial performance, is proxy by return on asset (ROA) and return on equity (ROE). The results indicated positive and significant association between LTD and ROE. However, STD was significant but negatively correlated with ROE. Meanwhile, TD was positive but insignificantly associated with ROE. Nevertheless, STD, LTD and TD were negatively and insignificantly associated with ROA. The findings suggested that financing decisions are influenced by the objective of the firms. If the goal of the firms was to maximize return on asset, the pecking order theory was employed, however if the firms' objective was to maximize return on equity then the trade-off theory was appropriate to explain the concept of optimal capital structure. The concentration on one industry and the relatively narrow five-year period for data collection were the main limitations of this study. The findings of the research will contribute towards capital structure literature<sup>77</sup>.

Furthermore, using a panel technique, the effect of capital structure on the financial performance of listed manufacturing firms in Nigeria from 2005 to 2014 was examined. The results of the panel ordinary least square test reveal a positive statistically significant

relationship between the long-term debt ratio (LTD) (0.0001), total debt ratio (TD) (0.0065), and return on equity (ROE), but a positive statistically insignificant relationship between ROE and STD (short-term debt ratio). Additionally, there was a little correlation between ROE and all of the capital structure proxies (LTD, STD, and TD), making ROE a more accurate indicator of performance. The study concluded that capital structure has a positive impact on financial performance and companies should employ more of long term debts. Therefore, it recommends that every firm should make good capital structures decision to earn profit and carry on their business successfully<sup>78</sup>.

Similarly, study on restaurant–business firms’ behavior regarding debt equity financing and firm performance financing based on debt maturity and financial limitations. Result of the study revealed that food-business firms focus more on equity financing than on debt. This is mainly because of financial constraints and optimal equity versus debt ratio<sup>71</sup>.

In addition, a study was conducted on Influence of Asset Structure and Capital Structure on performance of listed Banks in Indonesia within the scope 2012-2015. Findings of the study showed that asset structure has a positive and significant influence to earnings, while capital structure has a negative and significant influence on earnings. Return on Assets (ROA) and Return on Equity (ROE) were used as the dependent variables for the different models in the study. For the asset structure models, Ratio of Current Assets to Total Assets, Ratio of Fixed Assets to Total Assets, Other Assets Ratio to Total Assets as independent variables while Debt to Asset Ratio (DAR), Debt to Equity Ratio (DER), and Capital Adequacy Ratio (CAR) were used for capital structure<sup>79</sup>.

Moreover, the study investigated on how capital structure affects a firm performance in Ukraine. Findings shows that leverage correlates negatively with how well the firm performs The study employed the method of triangulation. Employing a sample size of 16.5

thousand firms in Ukraine for the period 2001 to 2010. Results obtained from the Panel data analysis showed an appreciable positive correlation between ROA and capital structure<sup>80</sup>.

Furthermore, the study conducted in Nigeria on Manufacturing firms also confirm a significant negative relationship of variable of study. In addition, most empirical works reviewed have stated a strong relationship between capital structure and performance of firms for individual countries and sectors. This study did a combine effect study for three Sub-Sahara Africa counties and non-financial sectors<sup>81</sup>.

Furthermore, the study examined the effect of capital structure on company performance in all manufacturing companies listed on the Indonesia Stock Exchange for five years from the 2014-2018 period. In the capital structure variable is measured by Total Debt to Total Assets (TDTA), Long-Term Debt to Total Assets (LTDTA), Short-Term Debt to Total Assets (STDTA). Company performance variables are measured by the ratio of Return on Assets (ROA). While the population in this study is all manufacturing companies listed on the Indonesia Stock Market. The final sample was obtained by 360 companies for five years using a purposive sampling method. Then for the type of data in this study, researchers used secondary data obtained from IDX by using multiple regression analysis methods. In this study the results of the analysis found that capital structure has a negative and significant effect on firm performance in both models<sup>82</sup>.

The study also looked at the effects of capital structure decisions (equity vs. debt) on the performance of chosen US enterprises. Using 200 carefully chosen listed companies from 10 sectors of the US Stock Exchange, a multiple regression model was used statistically to estimate the relationship between performance and capital structure. Performance was measured using Return on Equity (ROE), Return on Assets (ROA), Price per Share (P/E Ratio), Earnings per Share (EPS), and Tobin's Q (TQ), while capital structure is proxy by

Debt to Equity ratio. According to the study's mixed findings, the effect of capital structure on corporate performance varies depending on the performance metric utilized and is time-related. For instance, higher levels of gearing have negative significant relationship with ROA (-0.362) and (-1.13) before and after the crisis respectively or (-0.391) using the pooled data, but a positive significant relationship exist between DE and ROA in the post crisis period other variables shows insignificant relationship. More precisely, a percentage increase in the level of debt brings 46% changes in ROA. Generally capital structure is not a major determinant of corporate performance as it has insignificant impact (15%) on corporate performance of US companies. The study recommends that companies should pay little attention to capital structure but look outwards to human capital development/managerial efficiency in asset utilization for performance enhancement<sup>83</sup>.

Furthermore, investigation on the relationship between capital structure and performance of listed banks in Ghana from 2000 to 2010 revealed that banks listed on the Ghana Stock Exchange are highly geared and this is negatively related to the banks 'performance. The regression result also revealed that capital structure is inversely related to performance of the listed banks in term of Return On Equity and Tobin's Q<sup>84</sup>.

Furthermore, a study conducted in Nigeria investigated the association between capital structure and company financial performance of listed non-financial enterprises. The study's findings demonstrated a favorable and significant link between long-term debt and Return on Asset. In addition, it demonstrates how financial literacy on the board can greatly improve business performance and regulate capital structure. The report indicated that in order to improve the financial performance of Nigerian listed non-financial enterprises, management should optimize the capital structure. They can do that through ensuring that their capital structure is optimal by using more of current debts and non-current debt than equity. The Board of Directors of Nigerian listed company should be concerned about the

level of long term debt, short term debt and include members that are financially literate who will contribute in financing decision of firm in order make optimal capital structure for better financial performance. This is because the findings of this study revealed a positive significant moderating relationship between long term debt, short term debt and financial performance<sup>85</sup>. Studies on the impact of capital structure on risk and firm performance of companies listed on the Bucharest Stock Exchange's floor. According to the study, long-term debt has a bad impact on both ROA and ROE<sup>86</sup>. The aforementioned conclusion is consistent with a study done in Ethiopia on the effect of capital structure on the financial performance of Ethiopian banks. The study found a strong and inverse relationship between long-term loans and return on assets (ROA). This shows that increasing the firm's debt will have a negative impact on its financial performance since interest will be deducted from the profit before taxes and interest<sup>87</sup>.

The study also looked at how capital structure and corporate governance affected the success of companies with East African listings. According to the study, there is a capital structure-mediated relationship between corporate governance and firm performance<sup>87</sup>. A second study backed up this finding, showing that the relationship between capital structure and financial performance was positively influenced by corporate governance<sup>88</sup>.

Finally, research on capital structure and performance in Nigerian enterprises showed that capital structure entails choosing how to combine the various funding sources a company will utilize to finance its operations and capital investments. Among these are the use of long-term debt financing, also known as debt financing, as well as preferred stock and common stock, also known as equity financing. The study's conclusions showed that capital structure has an impact on the performance of Nigerian manufacturing enterprises that are publicly traded. Making the most of a company's financial resources and maximizing its value by choosing where to invest those resources are two of financial managers' top

priorities. The investigation assessed the impact of capital structure on the monetary results of Nigerian manufacturing enterprises that are publicly traded. In this study, ex post facto research design was used. According to the Nigeria Stock Exchange (NSE), the population of the study comprised of the 71 manufacturing companies in Nigeria that were publicly traded as of the end of 2017. Convenience sampling was used in the study to pick the sampled businesses. Data for the study were taken from the sampled companies' annual reports. Descriptive and inferential statistics were used in the investigation. The study came to the conclusion that capital structure and the financial performance of listed industrial companies in Nigeria are significantly correlated. Based on the report, management should maintain a good capital structure to boost financial performance, enable an increase in dividend payments, and free up retained earnings for growth<sup>89</sup>.

**Extent to which capital structure affect return on capital employed of quoted telecommunication companies in Nigeria.**

Research into how much capital structure affects return on capital employed has sparked intense debate because most of the studies have produced contradictory findings. A few of such studies were covered here. A study carried out in Nigeria looked at how capital structure affected the return on capital utilized by Nigerian construction enterprises. The annual report and accounts of the sampled firms were used to obtain the study's data. The study used panel data analysis, pooled regression, fixed-effect, and random-effect estimation approaches, and Stata 12.0 for the analysis. The study came to the conclusion that capital structure of the tested Nigerian construction enterprises had a negative effect on their return on capital employed. It advises construction company management to exercise caution when using debt as a source of funding; they should attempt to finance their operations using retained earnings and utilize debt as a last resort.

Another recent study that analyzed the capital structure and company performance of Nigerian consumer products manufacturing firms listed on the Nigerian stock market. Inconsistencies in the results on the relationship between capital structure and firm performance necessitated this study. Secondary data was collected from consumer goods manufacturing companies listed on the Nigerian stock exchange. Eighteen companies were used in this study, and panel data method was used in sampling the 18 listed manufacturing firms from 2008-2018. The study adopted the popular accounting and financial measures used in the vast literature on the subject matter namely, return on equity, return on asset, Tobin's Q and earning per share) as the dependent variable. In measuring the independent variable of the study, which is capital structure, long term debt, short term debt, total debt ratios, and growth was adopted. The study also included size as a control variable. The results from the regression analysis carried out in this study show that firm performance has a negative relationship with the capital structure in listed Nigerian manufacturing firms. Additionally, growth and performance had a positive correlation for the 18 consumer goods manufacturing companies.<sup>62</sup>

In addition, an empirically investigation into the causality between firm performance and capital structure for German listed firms in the non-financial sectors over the period 1993-2016. Firm performance was measured based on both financial and market indicators while capital structure is measures by leverage ratio of total debt to assets. The findings provide evidence for the existence of homogeneous causality between capital structure and the two selected proxies of firm performance. Financial performance and financial leverage can positively affect each other. Capital structure could negatively determine market performance whereas stock price has positive influence on leverage ratio. Results from the study revealed rather support trade-off theory, probably indicating that non-financial firms in Germany bear more debt to benefit from tax shield <sup>63</sup>.

A related study also found a connection between the capital structure of Nigerian manufacturers and their financial success. It examined the connections between total debt and the financial performance of listed industrial companies in Nigeria as well as the connections between equity and those same financial results. The study used ex-post-facto data to investigate variable relationships. Nigerian manufacturing firms were studied. The data was taken from the company's (2005-2020). Both descriptive and inferential statistics, such as Pearson correlation and panel regression, were used to examine the data. Return on equity, equity capital has a substantial influence on the performance of Nigerian manufacturing companies. 6.34 and 0.26 Total debt assessed by asset debt-to-equity ratio has no influence on stock market performance ( $p > 0.6580$ ). Return on equity has a positive significant influence on financial performance of Nigerian manufacturing firms by 6.331 ( $p = 0.0000.05$ ) and 0.117 ( $p = 0.0070.05$ ); long-term debt also has a positive significant effect. The study found that equity capital, total debt, and long-term debt have the potential to positively and significantly influence the financial performance of manufacturing firms in Nigeria, whereas short term debt has the potential to positively and insignificantly influence financial performance. Total asset has the potential to positively and significantly influence financial performance<sup>90</sup>.

A further investigation investigated into how Nigerian non-financial companies' profitability was affected by debt financing. Utilizing a panel regression model to investigate the effects of loan financing on the profitability of Nigerian manufacturing enterprises. The results show that the quoted firms are listed on the Nigeria stock exchange. The results showed that debt financing is statistically significant in determining profitability of manufacturing firms in the quoted firms in Nigeria. The regression results indicate that LTDR, LSTDR, LLTDR and LPROF are important in influencing the profitability of manufacturing firms in Nigeria.

A well-managed capital structure in terms of debt financing, leads to an increase in the profitability of the firms as showed in the result<sup>91</sup>.

Moreover, research in Ghana examined the effect of financing structure on profitability (measured as Return on Assets and Return on equity) of commercial banks in Ghana. The study sampled 23 banking over a six-year period from 2010 to 2015 and extracted data from the annual of these banks. Data was analyzed using descriptive statistics, correlation analysis as well as panel regression analysis. The results showed that banks in Ghana are highly leveraged with debt financing constituting 84% of total capital out of which 77% is short term debt despite the increase in minimum equity capital for these banks. The regression analysis revealed that long term debt ratio is negatively related with profitability of banks in Ghana <sup>92</sup>.

The result shows a significant relationship between debt and profitability of commercial banks in Nigeria used profit after tax and earnings per share as a measure of performance and employed panel regression technique to analyze data collected from a sample of fourteen quoted commercial banks between 2009 to 2016. The study concludes that debt can be significantly influenced by liquidity and shareholders' wealth. Consequently, the study recommend that commercial bank managers should not depend on debt capital as a source of financing the organization financing structure but rather use retained earnings of the business and consider debt as the least alternatives<sup>93</sup>.

Another study on the effect of capital structure on financial performance was carried out in Vietnam between 2010 and 2015 utilizing the audited financial statements of 219 listed companies on the local stock exchange. Two research techniques were used in the study: panel data regression analysis and correlation analysis. The ROE is chosen by the author as the dependent variable, and size, capital structure, solvency, asset structure, and growth

rates are chosen as the independent variables. The study's findings demonstrate that capital structure affects business performance favorably across all production group<sup>94</sup>.

Similar study conducted on short-term debt and performance in Nigeria suggest that a rise in short-term debt to assets leads to increase the risk of default, Whereas the increase in long-term debt to assets leads to decrease the default risk. It was equally revealed that the size, tangibility and interest coverage are also the important determinants of default risk. In addition, study conducted in Pakistan on the effect of internal financial policy on shareholders' wealth and firm value among (91) ninety-one manufacturing sector firms listed on Pakistan Stock Exchange for a 5-year period between 2009 and 2014 showed that dividend pay-out and retained earnings have positive and significant impact on stock price. However, dividend pay-out showed a stronger relationship with stock price compared to retained earnings<sup>95</sup>.

Furthermore, study carried out in Nigeria on the relationship between leverage (equity) and debt ratio on return on assets of chemicals and paints firms quoted in the Nigerian stock exchange using the ordinary least square (OLS) on a sample of three firms from 2000 – 2009. It was concluded that the equity finance had a significant and positive impact on Return On Asset while the Debt reported a negative and insignificant relationship on the performance measures. Therefore, firms in the chemical sector should employ more equity finance and avoid more debt<sup>96</sup>.

Also, another study in Ghana, examined the impact of financing structure on leverage and profitability of listed banks in Ghana stock exchange from 2007 to 2013 showed that the concept of capital structure in finance explains the way a firm finances its assets/operations by the use of a blend of debt and equity. The blend of debt and equity would make banks more profitable bearing in mind the adverse effect of the extreme of each form of financing.

Data was collected from Ghana stock exchange and the annual reports of the 17 listed banks. The data were analyzed using multiple regression models and descriptive statistics. The findings showed that Long Term Debt to Total Asset (LTDTA) also had a statistically significant positive link with ROA and ROE, but had a weak and negligible relationship with EPS<sup>97</sup>. In addition, research on impact of corporate capital structure on financial performance based on convolutional neural network concluded that short-term liabilities can meet the company's sustainable development. Based on the relevant theories of capital structure, by constructing a convolutional neural network model, taking a listed company as the research object, this study analyzes the company's capital structure, liabilities, and other financial conditions. Finally, it is concluded that short-term liabilities can meet the company's sustainable development and enhance the competitiveness of the industry, thereby increasing the company's operating income. However, a poor capital structure can negatively impact a company's finances. By improving the corporate governance structure of listed companies, strengthening the adjustment of the financing structure of listed companies, and strengthening the management of listed company's operating risks, the company's capital structure can be improved so that the company's financial situation can be sustainable and healthy<sup>98</sup>.

Additionally, a Pakistani study that used a sample of 36 engineering companies registered on the KSE for the years 2003 to 2009 to analyze capital structure choices and company performance. The data were evaluated using a panel econometric technique called pooled ordinary least square regression. The findings showed a strong negative correlation between financial leverage as measured by short-term debt to total assets (STDTA) and total debt to total assets (TDTA) and the firm's performance as measured by return on assets (ROA) and gross profit margin<sup>99</sup>. A study has also been done on how capital structure affects the financial performance of the companies listed on the Tehran Stock Exchange. They studied

a sample of 400 firms during the course of 12 industry groups from 2006 to 2010 that were listed on the Tehran Stock Exchange. Return on Assets (ROA) and Return on Equity (ROE) ratios are metrics that are used to evaluate a company's financial performance. Based on the findings, there is a significant inverse relationship between debt levels and companies' financial performance, and a significant inverse relationship between asset turnover, firm size, asset tangibility ratio, and growth opportunities and financial performance measures. However, there is no substantial correlation between ROA and ROE measurements and firm age. The study's findings also indicate that management can boost shareholder wealth by reducing the company's debt ratio and raising profitability and other financial performance indicators. Given the varying findings of the aforementioned researchers, this topic of capital structure and company performance will continue to be of interest to academics and researchers because no consensus has been formed on the effect of capital structure on firm performance<sup>100</sup>.

Additionally, a research was carried out in Pakistan to look into how capital structure affected performance between 2004 and 2009. The findings revealed a negative correlation between debt ratios and return on assets (ROA). The researchers also discovered a negative correlation between the variables total debt ratio, long-term debt ratio, and Tobin's Q. Additionally, Short-term and Tobin'Sq have a positive but negligible association<sup>101</sup>.

A further study conducted in the United States looked at how financial crises affected the capital structures of different businesses. This study also investigates if, in the event of a financial shock, the capital structures selected by the various industries have any bearing on the performance of the enterprises, a question for which there are conflicting results in the literature. Before and after the 2008 financial crisis, we examine listed US companies in the areas of Consumer Goods, Consumer Services, Healthcare, Industrials, and Technology using two panel data regressions and long- and short-term debt as proxies for capital

structure. The results indicate that the capital structures of the various industries changed in diverse ways, and we discover a major impact of the crisis in the consumer services and healthcare sectors. Our findings also imply that the effect of capital structure on company performance varies by industry. We discover statistically validated relationships in the technology, healthcare, and consumer services sectors. This study adds to the body of knowledge in the field of capital structure and its effect on firm performance by demonstrating that the financial crisis did matter differently in different industries<sup>102</sup>.

Another study examined capital structure and firm performance in Sri Lanka. Thirty (35) public limited companies listed in Colombo Stock Exchange (CSE) was used for the study. Research period covered 2012 to 2019. The study employs total debt to total asset ratio to represent the leverage of a company while return on assets was proxy for firm performance. Further, return on equity was introduced to test the robustness of each model developed within the study. Followed by a general descriptive analysis, panel data regression models were designed to observe between the main variables of the study. Moreover, the study has taken a fair attempt to eliminate model specification bias by incorporating control variables to the main regression models. As per the regression model outputs it was observed that marketing expense operates as a moderator variable in Sri Lanka and most importantly it is weakening the adverse impact created by excessive debt level on firm performance. These findings appeal for a developed capital market in Sri Lanka and highlight the radical decision making under resource-based view. The results of the study agree with the related literature in other parts of the world<sup>103</sup>.

Similar study investigated the impact of capital structure and corporate governance on firm performance. To test the hypothesis of study, data was collected from annual reports of sugar sector companies listed in PSX. This study data covers from 2015 to 2020. The results of study showed that both proxies of capital structure, i.e., D/A and D/E negatively

influence the company performance. Whereas two out of three proxies of corporate governance, i.e., board size and chairman/CEO duality negatively indicate association with company performance while audit committee size has a positive impact on the company performance<sup>104</sup>.

Other research conducted on Amman stock market on the effect of capital structure and the performance of the industrial Jordanian Companies. Study cover the period between: 2005 to 2013. In order to achieve the objective of the study the unbalanced cross sectional pooled Ordinary Least Square (OLS) regression model was used. The results of this study showed that there was statistically significant inverse effect of capital structure, expressed by long-term debt to capital ratio, total debt to capital ratio and total debt to total assets ratio, on the performance of the Jordanian industrial companies listed at ASE expressed by Return on asset ratio (ROA), which means that the most profitable companies rely less on borrowing to finance their cash needs, and this result is supported by Pecking-order theory which states that the relationship between borrowing and profitability of the company is an inverse relationship so that the most profitable companies are less dependent on profits to finance their need<sup>105</sup>.

Another study conducted to determine the performance-leverage relationships among Mediterranean aquaculture production firms in Croatia, Italy, Spain, France and Greece. A stochastic frontier production function is used to determine and define performance through firm level efficiency estimates. The multilevel internal instrument variable approach is employed to identify the causal relationships between performance and leverage. Our results show that technical efficiency has been increasing across all firms over the period 2008–2016. The agency-cost hypothesis holds such that leverage has an inverted U-shaped relationship with performance. This implies that leverage increases with efficiency, but efficiency begins to decrease at sufficiently higher levels of leverage. The reverse

relationship confirms the franchise-value hypothesis, which states that firms with high efficiency will try to protect the value of their high income by holding more equity capital. Implications for the results are drawn for the Mediterranean region<sup>106</sup>.

Furthermore, the effect of capital structure on company performance in Tehran was also examined in this study. The results showed that capital structure is strongly and favorably correlated with firm performance as evaluated by (ROE, MBVR, and Tobin's Q), but not with (ROA, EPS), which showed a negative correlation. In the study, the association between leverage level and company performance is estimated using multiple regression analysis. Using four of accounting-based measures of financial performance (i.e. return on equity (ROE), return on assets (ROA), market value of equity to the book value of equity (MBVR), Tobin's Q), and based on a sample of 85 firms listed in Tehran Stock Exchange from 2006 to 2011. The results indicate that firm performance, which is measured by (ROE, MBVR & Tobin's Q) is significantly and positively associated with capital structure, while report a negative relation between capital structure and (ROA, EPS). Altogether, our study provides evidence that indicates firm performance is positively or even negatively related to capital structure<sup>107</sup>.

Similarly, the study looked at how capital structure choices affected how well businesses performed in Pakistan's emerging market. For the 36 engineering sector companies in Pakistan's market that were listed on the Karachi Stock Exchange (KSE) between 2003 and 2009, pooled ordinary least square regression was used. The results show a significant inverse relationship between financial leverage, as indicated by short term debt to total assets (STDTA) and total debt to total assets (TDTA), and firm performance, as indicated by return on assets (ROA), gross profit margin (GM), and tobin's q. The relationship between financial leverage and a company's success as measured by return on equity (ROE) is weak but not substantial. Asset size and company performance as determined by ROA and GM

have no link, however asset size and Tobin's Q have a significant and inverse relationship. Engineering companies in Pakistan rely largely on short-term financing<sup>108</sup>.

Furthermore, study was investigated on the impact of capital structure on firm performance of 63 companies listed on Karachi Stock Exchange. Data comprised of 5 years, 2007 to 2011. Balance Sheet Analysis issued by State Bank of Pakistan was used for data collection. Fixed Effects Model was used as pooled regression model to find the relationship between firm performance (ROA, ROE, ROS) and capital expenditure (DTA, EQA, LDA). Results showed that there does exist a relationship but direction of the relationship was mixed. Capital structure showed positive impact on firm performance when return on assets (ROA) was used as dependent variable. When return on equity (ROE) was used as dependent variable then debt over assets ratio (DTA) showed positive impact but equity over assets ratio (EQA) and long term debts over assets ratio (LDA) revealed negative impact over dependent variable and when return on sales (ROS) was used as dependent variable then DTA and EQA showed negative link to ROS but LDA revealed positive impact over ROS. It has been demonstrated that capital structure affects firm performance, hence managers should exercise the required caution when making judgments about capital structure<sup>109</sup>. Additionally, this study used the judgment sampling approach to examine the company performance on capital structure for the listed non-financial enterprises in the Dhaka Stock Exchange (DSE) during the years 2008 to 2011. Specific objective of this research is to examine the relationship between the attribute of capital structure and the performance as measured by Return On Assets (ROA) and Return On Sales (ROS). Multiple regression models were used to estimate the influence of capital structure on firm performance and capital structure was measured by the debt ratio, debt to equity ratio, current debt ratio, proprietary of equity ratio and current assets proprietors' funds Ratio. The findings from regression models indicate a negative and substantial association between debt ratio, debt

equity ratio, and proprietary equity ratio and return on asset (ROA) and return on sales (ROS). Total asset has a positive and significant association with both Return On Asset (ROA) and Return On Sales (ROS), independent of the control variable<sup>110</sup>.

The study also investigated the impact of capital structure on firm performance using panel data procedure for a sample of 28 listed companies the Palestinian Stock Exchange (PSE) over the period of 2006-2010. The study used fifth performance measures (including return on equity, return on assets, earning per share, market value of equity to the book value of equity and Tobin's Q) as dependent variable and four capital structure measures (including short-term debt, long-term debt, total debt to total assets and total debt to total equity) as independent variable. The results showed that firm's capital structure had a positive impact on the firm's performance measures<sup>111</sup>.

Likewise, other empirical study on the association between corporate board structure and corporate financial performance using a dynamic panel model showed that most of the governance variables are endogenous by nature. Principles of corporate governance deliver an explicit board structure for the purpose to facilitate the board members, which helps in making good decisions. The board of directors consists of the CEO, the chairman, the internal directors, and the external non-executive directors to work for the shareholders. This study undertakes different corporate governance attributes including non-executive directors, board size, and CEO duality and examines its effect on firm performance. The dynamic panel model is used, and pre-estimation and post-estimation tests were conducted for the validity of the model. This study found a significant effect of board size, CEO duality, and non-executive directors on firm performance. Results are consistent with agency theory. This study provides the theoretical and empirical evidence and applies a superior model (dynamic panel model) to better explain the association between corporate board structure and corporate firm performance in listed firms<sup>112</sup>.

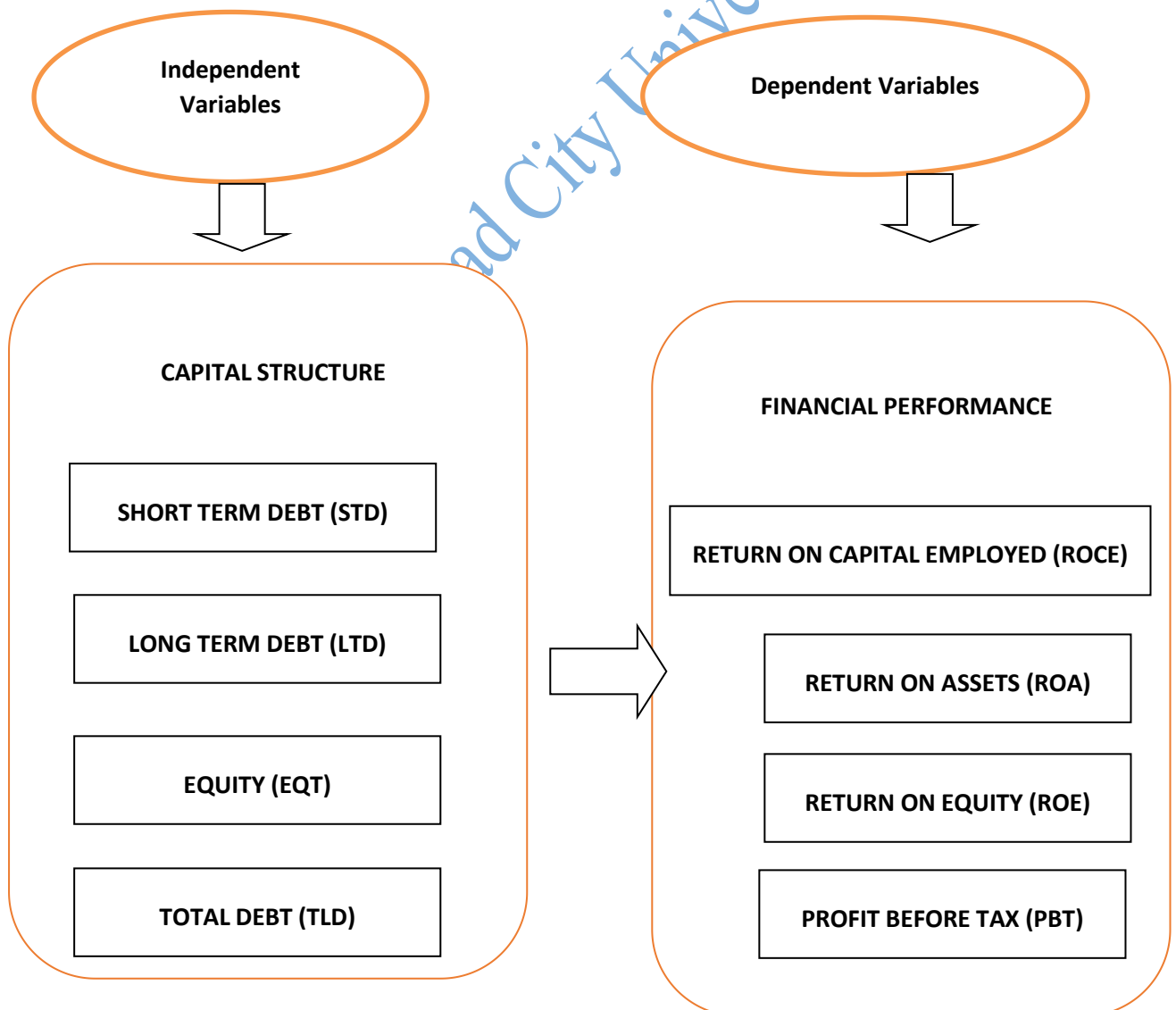
## Conceptual Framework

This section emphasis on the two variables used; dependent and independent variables.

Capital structure is the independent variable while Firms performance is the dependent variables.

Independent variable is proxy by combination of short term debt, long term debt, total debt and equity, while the dependent variable will be proxy by Return on Capital Employed, return on Assets, return on Equity and Profit before Tax are show in Figure 2.3 below:

**Figure 2.3 Conceptual Framework**



## Sources: Researcher's Conceptual Model (2022)

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## Chapter Three

### Methodology

The study's methodology is covered in this chapter. The chapter is presented in the following sequence namely; description of population of study, the sample size and sampling technique, sources of data, data analysis techniques and model specification.

#### 3.1. Research Design

This study adopted the *ex-post facto* research design. Secondary data was extracted from the annual report of sampled companies for the period of 2012 to 2021. Content analysis approach was employed to gather performance information as well as the capital structure information in annual report of sampled companies. This approach was considered appropriate for this study as it reflected the company's performance proxy by return of asset, return capital employed, turnover and profit before tax. Also, capital structure will be proxies by equity financing, long term debt, short term debt and total debt <sup>1,2</sup>.

#### 3.2. Population of the Study

The Population considered for this study is all the Nine (9) telecommunications companies listed on the Nigerian Stock Exchange (NSE) as at December 31st, 2021 (The Nigerian Stock Exchange, NSE 2021). To make this research work different from other study, listed telecommunication companies of the Nigeria economy was chosen. This is because prior study in this area in Nigeria focused on the financial institution and manufacturing sector leaving telecommunication area untapped. Also, telecommunications firm is considered to be essential sector that contributed immensely to the gross domestic product of Nigeria. The

importance ascribed to telecommunication companies justified the reason for its selection for this research. Moreover, one single industry is selected in order to obtain more reliable results, as different industries display different patterns of disclosure, and this could affect the results obtained.

Time frame of 2012 to 2021 was considered for the study. Period of ten years were chosen so as to check the impact of capital structure and performances of telecommunications companies before and when COVID '19 pandemic changes the narrative of the whole world economy.

### **3.3 Sample size and sampling Technique**

Purposive sampling techniques were used in this research work to select the companies. Employing the formula developed by Kyrce and Morgan, the sample size selected yielded 70 firm-year observations. This figure translates to 70 company's years representing about 77.78% of all telecommunication companies listed on the Nigeria Stock exchange as at 31<sup>st</sup> December 2021. 77.78% is enough to form a representative and for the report generalization<sup>3,4</sup>. Reason why purposive sampling technique was employed was that only companies that consistently published annual accounts and financial statement between years 2012 to 2021 were utilized. Companies not listed during the period were excluded so that the researcher could have balanced data. Specifically, selection of sampled companies is based on the event criterion of companies that have consistently been trading on the Nigerian Stock Exchange for the period under study, and which have the relevant published financial statements.

### **3.4. Method of Data Collection**

Data from secondary sources was used in this investigation. The information was taken from the sampling Nigerian telecommunication companies' annual reports and financial statements. As a result of the nature of the variables being studied, secondary data will be

employed. Cross-sectional/time series data were gathered from the firms' annual reports and accounts in order to analyze the relationship between the variables of the study. In the study, panel data were used to identify and quantify effects that could not be readily seen by pure cross sectional data or pure time series data. The information was also appropriate for researching complex behavioral patterns and the dynamics of change.

### **3.5 Validity and Reliability of Research Instrument**

#### **3.5.1 Validity of research instrument**

The data used for this study has been subjected to scrutiny, verified and certified by the relevant company's external auditors who have been licensed to carry out such function professionally as well as the Nigerian Stock Exchange (NSE). Also, the appropriateness of all figures relative to the variables under study will be subjected to further scrutiny and validated by the supervisor.

#### **3.5.2 Reliability of research instrument**

This research work used audited financial report for the nine (9) companies selected over a period of ten (10) years, (2012-2021). Annual report is deemed to be reliable due to its compliance with the guidelines of International Financial Reporting Standard (IFRS) and Financial Reporting Council of Nigeria local regulation on companies listed in Nigeria.

Also, audited financial statement and annual reports to be used are those that have been subjected to scrutiny, certified, published and display on the website of the Nigerian Stock Exchange (NSE) prior to its use for the research work.

### **3.6 Method of Data Analysis**

Both descriptive and inferential statistics will be used in the study in order to achieve its goal. Descriptive statistics such as: mean, minimum, maximum, and standard deviation variables shall be used for the study. To determine the relationship between variables used, inferential statistics such as correlation and multiple regression analyses will be used for the

study. Since the data derived cuts across companies in several years, the model will be estimated using Unobserved Effects Model (UEM). The UEM can either be fixed effect or random effect depending on the assumptions about the distribution of the unobserved components and the error term, and stochastic process of the time series across company (that is, unit root processes), as well as the asymptotic properties of year (t) and company (i). The choice of UEM was based on the result of hausman test and other diagnostic tests performed in line with the underlining assumptions of linear regression.

Also, post estimation tests will be carried out to determine the correctness of the model estimations. These tests include: serial correlation test, heteroscedasticity test, multi-collinearity test and other tests performed where appropriate.

### **3.6.1 Dependent Variables**

Returns on capital employed, returns on assets and equity, profit before tax, and turnover are the dependent variables for this study. The selected companies' annual reports were used to extract the dependent variables.

### **3.6.2 Independent Variables**

Independent variable for this study are, short term debt, long term debt, equity financing and total debt were obtained from the annual reports of the selected ten listed telecommunication companies for ten years' period.

## **3.7 Measurement of Variables and Model Specifications**

The study used two variables which are dependent and independent variables and their measurements as detailed below.

### **3.7.1 Measurement of Variables**

#### **3.7.1.1 Dependent Variables**

The dependent variable consists of four variables which are Return on Capital Employed, Return on Assets and Return on Equity and profit before tax.

### 3.7.1.2 Independent Variables

The independent variables are short term debt, long term debt, equity financing, and total debt.

Dependent and independent variable will be measured as detailed in table 3.7.

**Table 3.7 Explanation and measurement of variables**

<b>Sign</b>	<b>Dependent Variable</b>	Proposed measurement	Author
ROCE	Return on capital employed	This is represented by operating profit divided by capital employed or total assets minus current liabilities.	Dawar, 2014; Salim & Yadav, 2012; Ganiyu, Rodionova& Samuel et al. 2019Oke&Fadaka, 2021
ROA	Return on assets	ROA is represented by operating profit divided by total assets	Ganiyu, Rodionova& Samuel et al. 2019Oke&Fadaka, 2021, Abor 2005
ROE	Return on equity	ROE is proxy by operating profit divided by equity.	Dawar, 2014; Salim & Yadav, 2012; Ganiyu, Rodionova& Samuel et al. 2019Oke&Fadaka, 2021
PBT	Profit before tax	This will be determined by the profit derived before the payment of tax	Dawar, 2014; Salim & Yadav, 2012;
<b>Sign</b>	<b>Independent Variable</b>	Proposed measurement	Author
EQT	Equity	Shareholder fund	(Dawar, 2014; Salim&Yadav, 2012;Ganiyu, Rodionova& Samuel et al. 2019
STD	Short Term Debt	This represented by short term debt in annual report	Olaoye, Akintola, Soetan and Olusola(2020), Abor, 2005
LTD	Long Term Debt	This represented by long term debt in annual	Olaoye, Akintola, Soetan and

		report	Olusola(2020), Abor, 2005
TLD	Total debt	Proxy by addition of long term debt and short term debt	Olaoye, Akintola, Soetan and Olusola(2020)

### Researchers' calculation of variables 2022

### 3.8.2 Model Development and Specification

#### 3.8.2.1 Model Development

Model developed is as shown below:

$$Y = f(X)$$

Y = Dependent Variable- Performance (PFM)

X = Independent Variables-Capital Structure (CS)

$$Y = y_1, y_2, y_3, y_4$$

$$X = x_1, x_2, x_3, x_4,$$

$$y_1 = \text{PBT}; y_2 = \text{ROA}; y_3 = \text{ROE}; y_4 = \text{ROCE}$$

$$y_1 = f(x_1, x_2, x_3, x_4)$$

$$Y = f(X)$$

Y = Dependent Variable-Performance (PFM)

X = Independent Variables-Capital Structure (CS)

$$Y = y_1, y_2, y_3, y_4$$

$$y_1 = \text{PBT}; y_2 = \text{ROA}; y_3 = \text{ROE}; y_4 = \text{ROCE}$$

$$X = x_1, x_2, x_3, x_4$$

$$x_1 = \text{Short term debt (STD)}$$

$$x_2 = \text{Long term debt (LTD)}$$

$$x_3 = \text{Equity (EQT)}$$

$$x_4 = \text{Total debt (TD)}$$

$$y_1 = \text{Profit before Tax (PBT)}$$

$$y_2 = \text{Return on Asset (ROA)}$$

$$y_3 = \text{Return on equity (ROE)}$$

$y_4$ =Return on Capital Employed (ROCE)

$X = x_1, x_2, x_3, x_4$

$PBT = f(STD, LTD, EQT, TD)$  - equation 1

$ROA = f(STD, LTD, EQT, TD)$  - equation 2

$ROE = f(STD, LTD, EQT, TD)$  - equation 3

$ROCE = f(STD, LTD, EQT, TD)$  - equation 4

The functional relationships were used to test the hypotheses previously formulated. The associated regression models are as indicated in chapter three where the methodology of the study will be discussed.

Thus, in line with the agency theory, pecking order theory and trade off theory adopted for this study and prior studies, the models are specified and justified.

### 3.8.2.2 Model Specification

The regression model shown below was used to examine the relationship between the two main variables, which are dependent and independent variables, in order to assess the application of the hypothesized relationships between capital structure and performance of telecommunication businesses in Nigeria. It is our expectation in this study that performance will react positively to well-designed capital structure variables of listed telecommunication companies in Nigeria.

On this premise, we have this model for the first hypothesis which stated that Capital structure has no significant effect on Profit before Tax of quoted telecommunication companies in Nigeria.

#### Model 1

$$PBT_{it} = \beta_0 + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 EQT_{it} + \beta_4 TD_{it} + \mu_i$$

This model was formulated for the second hypothesis which stated that Capital Structure has no significant effect on Return on Asset of quoted telecommunication companies in Nigeria.

### **Model 2**

$$ROA_{it} = \beta_0 + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 EQT_{it} + \beta_4 TDT_{it} + \mu_i$$

This model was formulated for the third hypothesis which stated that There is no significant effect between Capital Structure and Return on Equity of quoted telecommunication companies in Nigeria.

### **Model 3**

$$ROE_{it} = \beta_0 + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 EQT_{it} + \beta_4 TDT_{it} + \mu_i$$

This model was formulated for the fourth hypothesis which stated that Capital structure has no significant effect on Return on Capital Employed of quoted telecommunication companies in Nigeria.

### **Model 4**

$$ROCE_{it} = \beta_0 + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 EQT_{it} + \beta_4 TDT_{it} + \mu_i$$

## **3.9 Model Evaluation Technique and Test of Significance**

The multiple regression models will be used to obtain numerical values of the model coefficients. In order to evaluate estimated numerical value of Statistical significant of Independent variables the p – values of t-statistic at 5% level of significance was used. Also, the p – values of f-statistic at 5% level of significance was used to evaluate aggregate effect of the independent variables on the dependent variables for statistical significance. If  $p < 0.05$  for the F-statistic, reject the null hypothesis which means the models are significant; if  $p > 0.05$ , accept the null hypothesis and it means the models are insignificant. A  $p < 0.05$  depicts significant models that serve as good predicting tools of the dependent variable and

ascertain that the results are not based on chance; however, if the  $p > 0.05$ , it means that the models are not significant and cannot be used to explain the variations in the dependent variable.  $R^2$  and Adjusted  $R^2$  shall be used to evaluate strength of the variables in predicting the effect of independent variables in manufacturing firms listed in Nigeria stock exchange.

**Decision Rule:**

$H_01-H_04$ :  $p\text{-value} < 0.05$  Reject Null hypothesis and accept the alternate  $p\text{-value} > 0.05$ , Do not reject Null hypothesis.

**3.10 Definition of Variable**

**3.10.1. Dependent Variable**

- 1. Return on asset:** It indicates the proportion of how well a company's assets produce revenue.
- 2. Return on equity:** signifies how good the company is in generating returns on the investment it received from its shareholders.
- 3. Return on capital employed:** It alludes to a financial measure that can be applied to determine the profitability and capital efficiency of a business.
- 4. Profit before tax:** is a measure that looks at a company's profits before the company has to pay corporate income tax.

**3.10.2. Independent Variable.**

**Short term debt:** It is also known as current liabilities, and it refers to a company's debt that is anticipated to be repaid within a year.

**Long term debt:** It is any amount of unpaid debt that a business has that has a twelve-month or longer maturity. It is also referred to as a non-current liability.

**Equity:** the value that would be returned to a company's shareholders if all of the assets were liquidated and all of the company's debts were paid off.

**Total debt:** is a leverage ratio that defines the total amount of debt relatives to assets owned by the company.

### Endnotes

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## CHAPTER FOUR

### Results and Discussion of Findings

This chapter examines the findings from the panel data regression analysis that was done to determine how the capital structure of listed telecommunication firms in Nigeria affected their performance over the course of 10 years (2012–2021). The chapter is divided into four main parts. The first part comprises of the descriptive statistics indicators of the measurements of capital structure and performance of listed telecommunication companies in Nigeria, the correlation matrix of the explanatory variables as well as other pre estimation tests. The second part addresses data analysis, hypothesis testing, diagnostic tests, and interpretation of results. The third part comprises discussion of findings, while the fourth part discusses the implication of the findings.

#### 4.1.1 Descriptive Statistics

Seven telecommunication businesses that were listed on the Nigerian stock exchange as of December 31st, 2021, are represented by annual statistics in this section of the study for the years 2012 to 2021. The dependent variables are equally measured by Return on Asset (ROA), Return on Capital Employed (ROCE), Return on Equities (ROE), and Profit Before

Tax (PBT). Table 4.1 shows the mean, standard deviation, minimum and maximum values for the explanatory variables, which were measured by Short Term Debt (STD), Long Term Debt (LTD), Equity (EQTY), and Total Debt (TLD).

**Table 4.1 Descriptive Statistics**

	Mean	Std. Dev	Min	Max
PBT	64040	138517	-3278	621,546
ROA	-0.0044	0.2013	-0.86	0.72
ROE	-0.1698	2.7882	-20.53	2.73
ROCE	-0.1064	1.6627	-9.74	3.4
STD	163292	334692	0	1,533,480
LTD	92003	233781	0	1087634
EQTY	510758	1202147	-1582	4,566,864
TLD	255300	513057	1	2,148,365

**Source: Researcher's Computation, 2022**

### **Interpretation**

Table 4.1 shows the summary statistics of all the variables obtained from the sampled telecommunication companies for the period under review. The mean value for the data set of profit before tax is 64040 while its standard deviation is 138517. The standard deviation measures the extent of dispersion from the mean which suggests that data are cluster and implies that data gathered are consistent. A high standard deviation reflects that the data points are spread out over a large range of values while a low standard deviation indicates

that the data points tend to be very close to the mean. Also, as shown in Table 4.1 Short term debt shows a close range between mean and standard deviation which implies that company in this industry behave in the same manner and are affected by the same economic metrics. The standard deviation measures the extent of dispersion from the mean and this suggests that there exists less fluctuations in the data and that the quoted telecommunication companies for the period under study may likely similar in the rate of their performance as a result of their similarity different types of financing methods under consideration. This implies that all companies quoted in Nigeria telecommunication subsector considered for this study behave the same way hence, generalization could be inferred from this study. The difference between the minimum value  $-3278$  and the maximum value  $621,546$  also shows the extent to which the telecommunication companies varies from each other in this regard. The mean value for the data set of return on assets is  $-0.0044$  while its standard deviation is  $0.2013$  away from the mean. This suggests that there exists some level of fluctuations in the data and that the quoted telecommunications companies over the periods for the study may likely differ in the rate of their disclosure as a result of their various audit committee sizes. The standard deviation value shows that return on asset of telecommunication companies varies with a wider dispersion amongst themselves, hence, the study is not concentrated only on some similar audit committee size, but covers a wide range of manufacturing firms with different audit committee sizes. This is good for generalization purposes. The difference between the minimum value of  $-86$  and the maximum value  $0.72$  is which also show the extent to which the telecommunication companies differ from each other.

The mean value for return on equity is  $-0.1698$  while its standard deviation is which is  $2.7882$  away from the mean implying that disclosure differ in relation to frequency of the difference between the minimum value  $-20.53$  and the maximum value  $2.73$  also shows the extent to which the varies from each other.

The mean value for Return on Capital Employed is -0.1064 while standard deviation is 1.6627. This suggests that data were clustered around the mean, implying that sampled companies behave in the same way. The difference between the minimum value of -9.74 and the maximum value 3.4 is -13.14 which also shows the extent to which the quoted telecommunication companies vary from each other.

The mean value for the data set of Short Term Debt (STD) is 163292 while its standard deviation is 334692. This suggests that there exists a high level of fluctuations in the data and that the sampled quoted manufacturing firm over the periods for the study may likely differ in the rate strategy of disclosure of long term and short term liabilities of companies. The difference between the minimum value is 0 and the maximum value is 1,533,480 which also shows the extent to which the telecommunication companies vary from each other in this regard in terms of their capital structure.

The mean value for the data set of Long Term Debt (LTD) is 92003 while its standard deviation is 233781. This suggests that there exists a high degree of fluctuations in the data set of the sampled companies for the period under review which may likely differ in the rate of their disclosure of accounting information as a result of lumping up in long term liabilities and short term liabilities disclosure in annual accounts. It was made more explicit by the difference between the minimum value 0 and the maximum value 1087634 which is 1087634.

The mean value for Equity is 510758 while its standard deviation is 1202147 which shows a very high deviation of data from the mean. It is an indication that there exists high fluctuations in the data of the sampled quoted telecommunications firms for the period under study. While the mean value for Total Debt is 255300 while its standard deviation is 513057. This suggests that there exists some level of fluctuations in the data and that the sampled firms over the periods for the study may likely differ in the rate of their profitability

and gross profit margin. The difference between the minimum value 1 and the maximum value 2148365 is 2,148,364 which shows a relatively high value and appears that relatively high volatility in the business of sampled company.

#### 4.1.2 Pre-estimation Tests

##### 4.1.2.1 Multicollinearity Test

In attempt to establish the appropriateness of the data that were used in the models, the data series were tested for multicollinearity using correlation matrix and Variance Inflation Factor (VIF) tests. The results of these tests are presented in Table 4.2 and 4.3. The VIF test reveals the presence or absence of multicollinearity through the mean value of the test result but does not reveal the degree of association among the variables in order to easily identify the variables affected however, the correlation matrix reveals the magnitude of the associations among the variables.

**Table 4.2: Result of the Variance Inflation Factor (VIF) Test**

Variables		
VARIABLE	VIF	1/VIF
PBT	5.66	0.176
ROA	1.45	0.689
ROCE	6.54	0.152
ROE	15.63	0.094
STD	6.69	0.000
LTD	3.27	0.000
EQT	10.58	0.944
TD	1.57	0.000
Mean VIF		3.21

Source: Researcher's Computation, 2022

Table 4.2 shows the result of the Variance Inflation Factor (VIF) test. The Mean VIF according to the result is 3.21, this is below the threshold of 10 which signifies the absence

of multicollinearity problems among the variable data series. Attempt to further established that the estimated parameters are not biased and inefficient, the study examined the possibility of multicollinearity among the explanatory variables, using the variance inflation factor for each of the explanatory variables, the results of the VIF is less than 10 for each of the variables which have VIF of 5.66,1.45,6.54,15.63,6.69,3.27,10.58 and 1.57 for PBT, ROA, ROCE, R O. E, STD, LTD, Equity and Total Debt. The findings reveal a positive correlation between short-term debt, long-term debt, equity, and total debt for telecommunication businesses listed on the Nigerian stock exchange, with correlation values of 0.8610, 0.7149, 0.7592, and 0.8874, respectively.

**Table 4.3 Result of Pearson Correlation Matrix Tests**

Variables	STD	LTD	EQTY	TD	PBT	ROA	ROE	ROCE
<b>STD</b>	1							
<b>LTD</b>	0.6170	1						
<b>EQTY</b>	0.9037	0.3412	1					
<b>TD</b>	0.9335	0.8582	0.7450	1				
<b>PBT</b>	0.8610	0.7149	0.7592	0.8874	1			
<b>ROA</b>	0.2662	0.3095	0.1553	0.3146	0.3400	1		
<b>ROE</b>	0.0883	0.1376	0.0460	0.1202	0.1124	0.4319	1	
<b>ROCE</b>	0.0772	0.0822	0.0507	0.0878	-0.0935	0.3930	0.8969	1

**Source: Researcher's Computation, 2022**

Table 4.3 above shows result of the test of correlation matrix. The result's highest number, 0.9335, denotes a strongly positive association between Total Debt and Short-Term Debt, while the lowest number, 0.0460, denotes a weakly positive and insignificant relationship between Return on Equity and Equity. This indicates that multicollinearity is not present in the data series utilized in this investigation because these values are lower than the threshold for indication of multicollinearity. This outcome further supported the VIF result that was previously discussed and illustrated in Table 4.2. It was equally revealed in Table 4.3, that

Short Term Debt (STD) is positively and strongly associated with Profit before tax (PBT), Equity(EQTY), Total Debt (TD) and Long Term Debt (LTD) all are positively and strongly associated with Profit before Tax (PBT). While, STD, LTD, EQTY and TD are positively but weak association with ROA. This is derived from their associated correlation values of 0.2662, 0.1553, 0.3146 and 0.3400 respectively. Also, STD, LTD, EQTY and TD are positively and insignificant association with Return on capital employed. This implies that Short Term Debt (STD), Long Term Debt (LTD), Equity (EQTY), Total Debt (TD), Profit before Tax (PBT), Return on Asset (ROA), Return on Equity(ROE)and Return on Equity (ROCE) move in the same direction, as one increases the other increases as well.

## 4.2 Regression Analysis

### 4.2.1. Estimation of Model One

**Research Objective One:** establish the extent to which capital structure affect profit before tax of quoted telecommunication companies in Nigeria.

**Research Question One:** To what extent does capital structure affect profit before tax of quoted telecommunication companies in Nigeria?

**Research Hypothesis One (H<sub>01</sub>):** Capital structure has no significant effect on profit before tax of quoted telecommunication companies in Nigeria.

**Table 4.4.1: Estimation Results for Model One**

Sector	PROFIT BEFORE TAX			
Estimation Techniques	Fixed Regression with Driscoll-Kraay standard errors			
Dependent Variable:	Coeff.	Std. Err	T-Stat	Prob
Constant				
STD	22.91	24.86	0.09	0.92*
LTD	23.08	24.86	0.10	0.92*

<b>EQTY</b>	0.04	00.18	2.58	0.01*
<b>TD</b>	-22.81	24.86	-0.09	0.92*
Adjusted R <sup>2</sup>	0.8034			
F-Stat/Wald Stat	Chi <sup>2</sup> <sub>(4, 65)</sub> =71.51 (0.0000)			
Hausman Test	Chi <sup>2</sup> <sub>(2)</sub> =23.66 (0.0000)			
Testparm/LM Test	Chi <sup>2</sup> <sub>(4,62)</sub> = 9.60(0.00)			
Heteroskedasticity Test	Chi <sup>2</sup> <sub>(7)</sub> = 5.50 (0.00)			
Serial Correlation Test	F <sub>(1,6)</sub> = 1.857(0.2219)			
Cross sectional Dep	0.612= (0.5406)			

Source: Researcher compilation. @Chosen Significant level of

Do Not Copy, Lead City University, Nigeria

## Post-Estimation Results

### Interpretation Model

Model 4.4.1 examined the impact of capital structure on the profitability (profit before tax) of Nigerian listed telecommunications companies. The Hausman test was utilized to identify which regression estimation method to apply. Among the pooled OLS, fixed effects, and random effects results reported in Table 4.4.1, Model 1 was the most appropriate. Based on the results of the test, which had a p-value of 0.000, which was less than the study's specified level of significance of 5%. Fixed effects was found to be the most appropriate estimator and null hypothesis was rejected. Although the Hausman test result indicated that Fixed effects were adequate, the Hausman test result was confirmed using Testparm since this test aids in choosing between Fixed effects and Pooled OLS regression as the proper model. The Testparm test results show that Fixed effects were properly used in estimating Model 1a, with a p-value of 0.000, which is less than the significance level of 5%.

To assess the model's robustness, heteroskedasticity, cross-sectional dependency, and serial correlation were investigated. The null hypothesis of the test is that the model's residuals exhibit no temporal correlation. The model was evaluated for the series' cross section dependence. The test was run using the Pesaran CD test, and the result with a p-value of 0.5406 greater than the study's chosen level of significance of 5%—indicates that the model's standard errors are correlated over time, suggesting that it has a cross-sectional dependence issue.

Additionally, a serial correlation test was run to see if there was any autocorrelation between the model's residuals and coefficients. The coefficients' standard errors are smaller than their real values due to autocorrelation, and the coefficient of determination (R-squared) is larger than usual. The study also checked for serial correlation in the series. There is no serial correlation, or first order autocorrelation, according to the test's null hypothesis. The test was run using the

Wooldridge method, and the resultant p-value of 0.02219, which is less than the significance limit of 5%, shows that the model does have a serial correlation issue. In conclusion, the diagnostic tests showed that the model has issues with cross-sectional dependence, serial correlation, and heteroskedasticity. Because of this, the effect of capital structure on profit before tax of listed telecommunication companies in Nigeria was estimated using the Fixed Regression with Driscoll-Kraay standard errors.

$$PBT = f(STD, LTD, EQT, TD) \quad 1$$

$$PBT_{it} = 22.91STD_{it} + 23.08LTD_{it} + 0.48 EQT_{it} + -22.82TD_{it} + \mu_i$$

Table 4.4.1 showed regression output for model 1. Model 1 evaluated the effect of Capital Structure on Profit before Tax. The result showed that Short Term Debt (STD), Long Term Debt (LTD) and Equity (EQT) exerted a positive effect on Profit before tax on the quoted telecommunication in Nigeria, this is indicated by their coefficients  $\beta_2STD_{it} = 22.91$ ,  $\beta_3LTD = 23.08$ ;  $\beta_4EQT = 0.48$  and  $\beta_5TD = -22.82$ . This result is consistent with our a priori expectation in the study as it was expected that capital structure will have positive effect on profitability (profit before tax) on quoted telecommunication companies in Nigeria.

From the result, Short Term Debt, Long Term Debt and Total Debt significantly affected Profit before Tax in Nigerian telecommunication companies (0.09, 0.10, 2.58) while only Equity had insignificant but positive effect on profit before Tax in Nigeria probability of t-statistic score of (2.58). This implies that improvement in capital structure can bring about a positive increase in the profitability of quoted telecommunication companies in Nigeria.

The adjusted R-square which measures the proportion of the changes in financial Performance Index as the result in changes in capital structure stood at 0.8034. This implies that 80.34%

changes in profitability Index can be explained by changes in capital structure while the remaining 19.66 % were other factors not captured in the model.

The result revealed that at a level of significance 0.05, the F-statistics is 71.51, while the p-value of the F-statistics is 0.0000 which is lower than the adopted level of statistics. Therefore, the study rejected the null hypothesis and concludes that Capital structure has significant effect on profitability (profit before tax) of quoted telecommunication companies in Nigeria.

#### **4.2.2.2 Regression Results of Model 1**

The regression results in model 4.4.1 investigated the effect of capital structure on profit before tax on quoted telecommunication companies in Nigeria and discovered that capital structure as measured by short term debt, long debt, equity, and total debt had a joint significant effect on profit before tax on quoted telecommunication companies in Nigeria. This is based on the results of F-statistics that is 0.0001 which is lesser than 5% chosen level of significant. Despite the fact that the overall model is jointly significant, three of the capital structure attributes measured (short term debt, long term debt) regression results show significant but positive relationship with profit before tax when tested in isolation or individually. While equity show a positive insignificant effects on profit before taxation. Also, total debt shows a negative and significant effects on profit before taxation.

The results of this study were in line with those of past investigations into the impact of capital structure on the financial performance of Nigerian listed companies. The study uses multiple regressions as an analytical tool. Short-term, long-term, and debt equity have all been found to have a positive impact on the financial performance of a few Nigerian sampled companies<sup>1</sup>. The study's conclusions are also in line with research on the association between Nigerian firm performance and capital structure. In the study, a dynamic panel model was used on panel data

from 115 listed Nigerian nonfinancial firms. Results of the study reveal a statistically significant link between capital structure and business success, particularly when debt financing is used<sup>2</sup>.

On sub-Saharan Africa, a similar study that supported this study was carried out. For a period of nine (9) years (2012-2020), the study examined the effect of capital structure on the return-on-assets (ROA) performance of non-financial enterprises in Sub-Saharan Africa. The capital structure variables of LTDQ, TD, total debt to equity, and total debt to total assets as well as the ROA performance of forty (40) non-financial enterprises were examined. It was discovered that ROA performance is positively impacted by LTDQ, TD, and TDQ<sup>3</sup>. Another study done in Nigeria on how capital structure affects companies listed on the Nigerian stock exchange's financial performance found a substantial correlation between the debt-to-equity ratio, the short-term debt to total assets, and the total debt on return on equity<sup>4</sup>.

In addition, a study on the effect of debt equity financing on listed businesses' performance in Nigeria indicated that it had a significant and positive impact on firms' performance in Nigeria. In place of debt equity financing, equity financing (EF) and debt equity financing (DEF) were utilized, and return on equity (ROE) was used to measure firm performance. Two hypotheses were constructed to guide the investigation, and the OLS Regression Model was utilized to provide a statistical test of parameter estimations. The study's findings indicate that debt equity financing has a significant and positive effect on firm performance in Nigeria at the 5% level of significance. Based on the study's findings, it was recommended that firms try to finance their investment operations with debts and equity and only consider debt or equity as a last resort<sup>5</sup>.

However, the following study conducted among the Chinese listed revealed a contrary result. Effects of debt and equity financing on corporate performance among the Chinese listed firms

was study and result revealed that capital structure have significantly negative consequence on corporate performance. Hence, the study shows that it is risky for companies to depend entirely on either debt or equity for raising capital but it is far better to raise capital by both methods, with each employed together, at the same time. This method is better as it affords the benefit of one method offsetting the problems of the other and vice versa<sup>6</sup>.

Additionally, a different study in Nigeria that supported the opposing viewpoint investigated the impact of capital structure on the country's consumer products sector's financial performance. The companies selling consumer goods that are listed on the Nigerian Exchange Group made up the study's sample. A filter sampling technique was applied throughout a five-year period, from 2012 to 2016, with a sample size of six businesses. A significance level of 0.05 (5%) was used to evaluate the analysis' results. Conclusions of the study demonstrate that short-term debts have no appreciable influence on the financial performance of listed companies in Nigeria's consumer goods sector<sup>7</sup>.

## **4.2 Regression Analysis**

### **4.2.1. Estimation of Model Two**

**Research Objective Two:** determine the effect of capital structure on return on asset of quoted telecommunication companies in Nigeria.

**Research Question Two:** How does capital structure affect return on asset of quoted telecommunication companies in the Nigeria?

**Research Hypothesis Two ( $H_{02}$ ):** Capital structure has no significant effect on return on asset of quoted telecommunication companies in Nigeria.

**Table 4.4.2: Estimation Results for Model Two**

<b>Sector</b>	<b>RETURN ON ASSET</b>			
<b>Estimation Techniques</b>	<b>Fixed Regression with Robust Std. Error</b>			
<b>Dependent Variable: ROA</b>	<b>Coeff</b>	<b>Std. Err</b>	<b>T-Stat</b>	<b>Prob</b>
Constant	-0.23	0.25	-0.95	0.36*
<b>STD</b>	0.19	0.72	2.67	0.10*
<b>LTD</b>	0.19	0.72	2.67	0.10*
<b>EQUITY</b>	-5.59	5.65	-0.99	0.32*
<b>TD</b>	-0.19	0.72	-2.67	0.10*
Adjusted R <sup>2</sup>	0.1543			
F-Stat/Wald Stat	F <sub>(4, 65)</sub> = 4.15 (0.0047)			
Hausman Test	Chi <sup>2</sup> <sub>(2)</sub> = 23.66 (0.000)			
Testparm/LM Test	F <sub>(4, 65)</sub> = 4.15(0.0047)			
Heteroskedasticity Test	chi2 <sub>(7)</sub> = 279.68(0.000)			
Serial Correlation Test	F <sub>(1, 6)</sub> = 0.209(0.6637)			
Cross sectional Dep	0.200, = (0.8413)			

**Source: Researcher compilation. @Chosen Significant level of 5%**

**Post-Estimation Results**

**Interpretation Model**

Model 4.4.2 examined the impact of capital structure on asset return. The results of the pooled OLS, fixed effects, and random effects shown in Table 4.4.2 were compared using the Hausman test to evaluate which approach was best for estimating the regression Model 2. The best suitable estimate was determined to be Fixed effects based on the test's outcome, which had a p-value of 0.049, or less than the study's specified level of significance of 5%.

Although, the Hausman test result revealed the appropriateness of Fixed effects; however, the confirmation of the result of the Hausman test was carried out using Testparm as this test helps to decide the appropriate model between the Fixed effects and Pooled OLS regression. The

results of the Testparm test with *p-value* of 0.0047, which is less than the significance level of 5 percent; confirms the appropriateness of Fixed effects in estimating the model<sup>2</sup>.

To assess the model's robustness, heteroskedasticity, cross-sectional dependency, and serial correlation were investigated. The cross section dependence test of the series was undertaken as part of the study, and its null hypothesis is that there is no temporal correlation in the model's residuals. The Pesaran CD test was used to conduct the test, and the outcome with a *p-value* of 0.8413, which is higher than the study's chosen level of significance of 5%, indicates that the model's standard errors are not correlated over time, indicating that the model has no cross-sectional dependence issues.

The heteroskedasticity test is used to determine whether or not the fluctuations in the model's residuals are constant over time; the null hypothesis indicates that the model's standard errors are constant over time. This test was performed using the Breusch-Pagan/Cook-Weisberg test, and the result of heteroskedasticity with *p-value* of 0.000, which is less than the 5% level of significance chosen for the study, indicates the presence of heteroscedasticity, that is, the residuals of the model are not constant over time, and thus the model residuals are homoscedastic.

A serial correlation test was also performed to detect the presence of autocorrelation among the residuals and model coefficients. The autocorrelation problem causes the coefficient standard errors to be smaller than their true value and the coefficient of determination (*R-squared*) to be greater than usual. The series was also evaluated for serial correlation. The null hypothesis of the test asserts that there is no serial correlation (no autocorrelation of the first order). The Wooldridge test was used, and the result with a *p-value* of 0.6637, which is less than the significance limit of 5%, indicates that the model has a serial correlation problem.

Finally, the diagnostic tests demonstrated that the model has heteroskedasticity and serial correlation, excluding cross-sectional dependence issues. As a result, the Fixed Regression with Robust Standard Errors model was used to quantify the effect of return on asset of Nigerian telecommunications businesses.

$$ROA = f(STD, LTD, EQTY, TD)$$

2

$$ROA_{it} = 0.19STD_{it} + 0.19LTD_{it} - 5.59EQTY_{it} - 0.19TD_{it} + \mu_i$$

Model 2 assessed the effect of capital structure on return on asset. The result showed that short term debt and long term debt had a positive effect on Return on Asset, this is indicated by its coefficient  $STD = 0.19$ ,  $LTD = 0.19$ . This result is consistent with our a priori expectation. Although, Equity and Total Debt exerted a negative effect on Return on Asset of Telecommunication companies in Nigeria ( $EQTY = -5.59$ ,  $TD = -0.19$ ). This result is not consistent with our a priori expectation as it was expected that all independent variables to exert positive effect on Return on Asset on telecommunication companies in Nigeria.

Model 2 further showed that only 15.43% variation is caused by Return on Asset while 84.57% was not captured in the model. The result further revealed that at a level of significance 0.05, the F-statistics is 4.15, while the p-value of the F-statistics is 0.0047 which is lower than the adopted level of statistics. Therefore, the study rejected the null hypothesis and concludes that capital structure has significant effect on return on asset of quoted telecommunication companies in Nigeria.

#### 4.2.2.2 Regression result of model 2

The regression results in model two investigated the effect of capital structure on performance of telecommunication firms in Nigeria and found out that capital structure measured by short term debt, long term debt, equity and total debt had joint significant effect on return on asset

Index of telecommunication companies in Nigeria. Though the overall model is jointly significant as the F-statistics result shows 0.0047 which is lower than 5% chosen significant level. Short Term Debt (STD) and Long Term Debt (LTD) attributes regression results show a significant positive relationship with mandatory information disclosure when tested individually. While Equity (EQTY) and Total debt (TD) show negative and significant effects on return on asset index.

This result was in consonant with the results of prior study carried out in Malaysia on the impact of capital structure on financial performance of construction firms. Capital structure was the independent variable and is measured by short-term debt (STD), long-term debt (LTD), total debt (TD), meanwhile the dependent variable, financial performance, is proxy by return on asset (ROA) and return on equity (ROE). The results indicated positive and significant association between LTD and ROE<sup>8</sup>.

Another study conducted in Nigeria concurred with the study's conclusions. The research investigated the effect of capital structure on the financial performance of Nigerian listed industrial businesses. There is a positive statistically significant relationship between long term debt ratio (LTD) (0.0001), total debt ratio (TD) (0.0065), and return on equity (ROE), as well as a positive statistically insignificant relationship between ROE (return on equity) and STD (short term debt ratio), according to the study's findings. As a result, it recommends that every organization make sound capital structure decisions in order to produce a profit and maintain a profitable business<sup>9</sup>.

However, investigation conducted in Hong Kong which examined the impact of capital structure on a firm's performance, has been an unsolved problem in the field of financial management. Panel data model was adopted and the empirical model used Return on Assets (ROA) as a proxy

for performance, while total debt (TDR) was proxied for capital structure. The result showed a small effect in the negative direction. Therefore, the results of the impact of Capital structure on performance proved to be inconclusive. However, taking into consideration that Hong Kong has a different economic system, and the economy has many characteristics that vary from other countries in aspects such as, consumer consumption, spending behavior, and saving habits which serve as influence to firms and individuals<sup>10</sup>.

Similarly, with the aforementioned, a study done in Ethiopia found that capital structure choices are among the most important ones for any business because of how they affect firms' success. The financial performance of a few chosen commercial banks in Ethiopia was investigated, and the effect of capital structure on that performance was quantified using multiple regression models. The results demonstrate a strong negative correlation between capital structure and financial success, as measured by ROA and other metrics<sup>11</sup>.

### **4.3 Regression Analysis**

#### **4.3.1. Estimation of Model Three**

**Research Objective Three:** examine the effect of capital structure on return on equity of quoted telecommunication companies in Nigeria.

**Research Question Three:** What relationship exist between capital structure and return on equity of quoted telecommunication companies in the Nigeria?

**Research Hypothesis Three (H<sub>03</sub>):** Capital structure has no significant effect on return on equity of quoted telecommunication companies in Nigeria.

**Table 4.3.3: Estimation Results for Model Three**

Sector	RETURN ON EQUITY			
Estimation Techniques	Random-effects Regression with Driscoll-Kraay standard errors			
Dependent Variable: EQTY	Coeff	Std. Err	T-Stat	Prob
Constant	0.88	0.18	0.48	0.63
STD	0.79	0.53	14.81	0.00 *
LTD	0.79	0.53	14.81	0.00*
EQY	-1.97	4.15	-0.47	0.63
TD	-0.79	0.53	-14.81	0.00*
Adjusted R <sup>2</sup>	0.7620			
F-Stat/Wald Stat	F( 4, 65) = 56.23 (0.000)			
Hausman Test	Chi <sup>2</sup> (3) = 23.66 (0.0469)			
Testparm/LM Test	F( 4, 65) = 56.23 (0.000)			
Heteroskedasticity Test	Chi <sup>2</sup> (1) = 3303.19 (0.000)			
Serial Correlation Test	F(1,6) = 2.155 (0.1924)			
Cross sectional Dep	0.170 (0.8650)			

**Source: Researcher compilation. @Chosen Significant level of 5%**

### Post-Estimation Results

#### Interpretation Model

Model 4.4.3 assessed how Nigerian telecommunications companies' return on equity was affected by their capital structure. The Hausman test was used to determine which method of estimating regression Model 3 among the pooled OLS, fixed effects, and random effects results shown in Table 4.4.3 was most appropriate. The test's result, which had a p-value of 0.0469, which is greater than the study's chosen level of significance of 5%, showed that random effects

was the best estimator given its null hypothesis, which claims that there is no presence, thus, the study rejected the null hypothesis.

Even though the Hausman test result indicated that Random effects were appropriate, the confirmation of the Hausman test result was carried out using the LM Test since this test aids in selecting the most appropriate model between Random effects and Pooled OLS regression. The results of the LM Test, which had a p-value of 0.000, less than the significance limit of 5%, demonstrate that random effects were properly used to estimate model 3.

To assess the model's robustness, heteroskedasticity, cross-sectional dependency, and serial correlation were investigated. The series was tested for cross section dependence; the null hypothesis of the test is that the model's residuals are uncorrelated with time. The test was performed using the Pesaran CD test, and the result with a p-value of 0.8650, which is greater than the 5% level of significance chosen for the study, indicates that the model's standard errors are correlated over time, implying that the model has a cross-sectional dependence problem.

The heteroskedasticity test is used to determine whether or not the fluctuations in the residuals of the model are constant over time; the null hypothesis indicates that the model's standard errors are constant over time. This test was performed using the Breusch-Pagan/Cook-Weisberg test, and the result of heteroskedasticity with p-value of 0.00, which is less than the 5% level of significance chosen for the study, indicates the absence of heteroskedasticity; that is, the residuals of the model are constant over time.

In addition, the study performed a serial correlation test on the series. The null hypothesis of the test asserts that there is no serial correlation (no autocorrelation of the first order). The Wooldridge test was used, and the result with a p-value of 0.1924, which is higher than the significance criterion of 5%, indicates that the model has a no serial correlation problem.

Finally, the diagnostic tests revealed that the model had cross-sectional dependence issues. As a result, the Random Effects Regression with Driscoll-Kraay standard errors was used to evaluate the influence of capital structure on Return on Equity of Nigerian listed telecommunication companies.

$$ROE = f(STD, LTD, EQTY, TD)$$

$$ROE_{it} = 0.79 STD_{it} + 0.79 LTD_{it} - 1.97 EQTY_{it} - 0.79 TD_{it} + \mu_1 \quad 3.$$

Model 3 assessed the effect of capital structure on Return on Equity. The result showed that Short Term Debt and Long term debt had positive effect on Return on Equity, this is indicated by its coefficient  $STD = 0.79$ ,  $LTD = 0.79$ . This result is consistent with our a priori expectation. Although, equity financing and total debt exerted a negative effect on return on equity of telecommunication firms in Nigeria ( $Equity = -1.97$ ,  $TD = -0.79$ ). This result is not consistent with our a priori expectation as it was expected that all independent variables to exert positive effect on capital structure index in telecommunication companies.

The result further implies that improvement in Short Term Debt, Long term Debt can bring about more return on equity index in telecommunication firms. Although Equity and Total debt may bring about decrease in return on equity on Telecommunication companies in Nigeria.

Model 3 further showed that 76.20% variation is caused by capital structure while 23.80% was not captured in the model. Conclusively, the result revealed that at a level of significant 0.05, the F-statistics is 56.24, while the p-value of the F-statistics is 0.0000 which is lower than the adopted level of statistics. Therefore, the study rejected the null hypothesis which means that Capital structure has significant effect on the return on equity of listed telecommunication companies in Nigeria.

#### 4.3.3.2 Regression result of model 3

The regression results in model three examined how capital structure affected the return on equity of listed telecommunication companies in Nigeria. They discovered that the capital structure, as measured by short-term debt, long-term debt, equity financing, and total debt, had a significant impact on those companies' returns on equity. Although the overall model is jointly significant, two of the capital structure attributes measured (Equity and Total debt) regression results show insignificant relationship with capital structure when tested in isolation or individually.

While Equity and Total Debt regression results on the other hand reveal negative but negligible effects on return on equity index, Short Term Debt and Long Term Debt reveal positive effects of capital structure on return on equity. Only short- and long-term debt affects return on equity index positively and significantly. This study was carried out in line with the study investigated in Ukraine on how capital structure affects a firm performance. Findings from the results obtained from the Panel data analysis showed an appreciable positive correlation between ROA and capital structure<sup>12</sup>. In addition, the Nigerian study looked at the connection between listed non-financial companies' capital structures and financial performance. The study's conclusions showed a strong and positive correlation between long-term debt and return on assets. The results also showed a substantial positive link between financial performance, short-term debt, and long-term debt<sup>13</sup>.

Another study conducted in Ghana looked at the effect of listed banks' capital structures on their operational and financial success. The data were analyzed using multiple regression models and descriptive statistics<sup>14</sup>. The study's findings showed that ROA and ROE had a substantial positive association with long-term debt to total assets (LTDTA). The effect of capital structure on the performance of 63 companies listed on the Karachi Stock Exchange was also studied in Karachi.

Given that return on assets (ROA) was employed as the dependent variable, the capital structure had a favorable impact on the firm's performance<sup>15</sup>.

However, similar study investigates the relationship between capital structure and financial performance of firms in Ghana and Nigeria. The findings revealed a significant negative relationship between capital structure and financial performance. The outcomes of this study will aid finance managers in maximizing performance by taking into account financially reasonable heterogeneities such as the sector and the funding source when making financing decisions.<sup>16</sup>

Another study carried out in Palestine investigated the impact of capital structure on financial performance. The results of the study revealed a strong inverse relationship between capital structure and return on asset (ROA)<sup>17</sup>. Also, the Indonesian study also examined the impact of capital structure on the efficiency of all manufacturing businesses. The criteria used to assess capital structure include total debt to total assets (TDTA), long-term debt to total assets (LTDTA), and short-term debt to total assets (STDTA). The Return on Assets (ROA) ratio is a common metric for assessing a company's performance. The findings of the study have a negative and significant influence on the success of the company in both models.<sup>17</sup>.

#### **4.4.2 Analysis of Hypothesis Four**

##### **4.4.2.1 Regression Analysis for Hypothesis Four**

##### **4.4.2.2 Estimation of Model Four**

**4.4.2.3 Research Objective Four:** determine the effect of capital structure on return on capital employed of quoted telecommunication companies in Nigeria.

**4.4.2.4 Research Question Four:** How does capital structure affect the return on capital employed of quoted telecommunication companies in Nigeria?

**4.4.2.5 Research Hypothesis Four (H<sub>04</sub>):** Capital structure has no significant effect on return on capital employed of quoted telecommunication companies in Nigeria.

**Table 4.4.4: Estimation Results for Model Four**

Sector	RETURN ON CAPITAL EMPLOYED			
Estimation Techniques	Fixed Regression with Robust Std. Error			
Dependent Variable: TD	Coeff.	Std. Err	T-Stat	Prob
Constant				
<b>STD</b>	0.037	0.048	7.74	0.000
<b>LTD</b>	0.037	0.048	7.74	0.000
<b>EQT</b>	-1.35	3.75	-0.36	0.721
<b>TD</b>	-0.375	0.484	-7.74	0.000
Adjusted R <sup>2</sup>	0.4523			
F-Stat	F((4, 65) = 15.24 (0.000)			
Hausman Test	Chi <sup>2</sup> <sub>(3)</sub> = 23.66 (0.0227)			
Testparm/LM Test	Chi <sup>2</sup> <sub>(01)</sub> = 42.74(0.000)			
Heteroskedasticity Test	Chi <sup>2</sup> <sub>(41)</sub> = 3508.40 (0.000)			
Serial Correlation Test	F <sub>(1,40)</sub> = 46.128 (0.000)			
Cross sectional Dep	-0.820 (0.4121)			

**Source: Researcher compilation. @Chosen Significant level of 5%**

### Post-Estimation Results

### Interpretation

The impact of capital structure on return on capital employed in Nigerian telecommunications companies is determined by Model 4.4.4. The outcomes of choosing the best method for estimating the regression of model 4 between pooled OLS, fixed effects, and random effects are shown in Table 4.4.4. The Hausman test's p-value was 0.0227, which is less than the study's 5% level of significance.. This indicates that Fixed effects is the best estimator based on its null hypothesis, which claims that there is an unsystematic difference in the model coefficient; thus, the null hypothesis was rejected by the investigation. Regardless of the appropriateness of the fixed effect, the study used Testparm to test for confirmation of the Hausman test in order to choose the best model between the fixed effect and pooled OLS regression; therefore, the study rejected the null hypothesis.

The model was also examined for heteroskedasticity, cross-sectional dependency, and serial correlation to determine its robustness. The model was evaluated for series cross section dependence; the null hypothesis of the test is that the model's residuals are uncorrelated with time. The Pesaran CD test was used, and the result with a p-value of 0.00, which is less than the 5% level of significance chosen for the study, indicates that the model's standard errors are correlated over time, implying that the model has a cross-sectional dependence problem.

Heteroskedasticity test helps to examine whether the variations in the residuals of the model are constant over time or not; the null hypothesis states that the standard errors of the model are constant over time. This test was carried out using Breusch-Pagan/Cook-Weisberg test and the result of the heteroskedasticity with *p-value* of 0.000 which is less than the 5 percent level of significance selected for the study is an indication of the presence of heteroskedasticity; indicating that the residuals of the model are not constant over time, thus the model is homoscedastic.

In addition, serial correlation test was carried out to determine the existence of autocorrelation among the residuals and the coefficients of the model. Autocorrelation problem causes the standard errors of the coefficients to be smaller than their actual value and the coefficient of determination (R-squared) to be higher than normal. Furthermore, the study was tested the series for serial correlation. The null hypothesis of the test states that there is no serial correlation (no first order of autocorrelation). The test was carried out using Wooldridge test and the result with *p-value* of 0.00 which is less than the significance level of 5 percent is an indication that serial correlation problem does exist in the model.

In conclusion, the diagnostic tests showed that the model has issues with cross-sectional dependence, serial correlation, and heteroskedasticity. In order to evaluate the impact of capital structure on the return on capital employed of listed telecommunication companies in Nigeria, the Fixed Regression with Driscoll-Kraay standard errors was utilized.

#### **Regression Equation Results (Model 4)**

$$ROCE = f(STD, LTD, EQTY, TD) \quad 4$$

$$ROCE_{it} = 0.037STD_{it} + 0.037LTD_{it} - 1.35EQTY_{it} - 0.037TD_{it} + \mu_{1t}$$

Table 4.4.4 showed regression output for model 4. Model 4 evaluated the effect of Capital Structure on Return on Capital Employed. The findings revealed a strong correlation between short- and long-term debt. Their coefficients,  $2STD_{it} = 0.037$ , and  $3LTD = 0.037$ , show this. This conclusion is consistent with our study's a priori anticipation that capital structure will have a favorable impact on Nigeria's Return on Capital Structure Index.

The adjusted R-square which measures the proportion of the changes in Return on Capital Employed as the result in changes in capital structure stood at 0.4523. This implies that 45.23%

changes in Return on Capital Employed can be explained by changes in capital structure while the remaining 54.77% were other factors not captured in the model.

The outcome also showed that, at a significance level of 0.05 the F-statistics is 15.24, while the p-value of the F-statistics is 0.0000, which is less than the chosen level of statistics. Considering the analysis rejected the null hypothesis, it can be concluded that capital structure significantly affects listed Nigerian telecommunication companies' returns on capital employed.

#### **Regression result of Model 4**

The regression results in model four investigated the effect of capital structure on return on capital employed of quoted telecommunication firms in Nigeria and discovered that capital structure, as measured by Short term debt, Long term debt, Equity financing, and Total debt financing, had a joint significant effect on Return on Capital Employed of telecommunication firms in Nigeria. Two of the measured capital structure attributes—short term debt and long term debt—show a significant positive relationship with return on capital employed in regression results, while the other two—equity and total debt—show a significant negative relationship when tested separately or separately from the overall model, which is jointly significant.

This study was consistent with the study of the effects of capital structure done in Palestine. The study used four capital structure measures (short-term debt, long-term debt, total debt to total assets, and total debt to total equity) as independent variables and five performance measures (return on equity, return on assets, earning per share, market value of equity to book value of equity, and Tobin's Q) as dependent variables. The findings demonstrated that the firm's capital structure had a favorable influence on the firm's performance indicators<sup>19</sup>. Another study conducted in Nigeria that examined the impact of capital structure and financial performance of manufacturing companies. Long-term debt also has a favorable, considerable impact on

performance in addition to return on equity and equity capital. The study discovered that while short-term debt has the capacity to positively and insignificantly influence financial performance, equity capital, total debt, and long-term debt have the potential to positively and significantly influence financial performance of manufacturing enterprises in Nigeria. Financial performance could be dramatically and favorably impacted by total asset<sup>20</sup>

However, a study conducted in Nigeria examined the financial makeup and operational efficiency of companies that manufacture consumer goods and are listed on the Nigerian Exchange Group. The study used Tobin's Q, return on equity, return on assets, and earnings per share as dependent variables. It was determined that the study's independent variable, capital structure, would be measured using growth, total debt ratios, long-term debt, short-term debt, and long-to-short debt ratios. The results of the study show that capital structure and company performance are negatively correlated in publicly traded Nigerian manufacturing enterprises<sup>21</sup>. Additionally, a study conducted in Ethiopia on the impact of capital structure on risk and company performance of companies listed on the Bucharest Stock Exchange's floor found a negative correlation between long-term debt and both ROA and ROE<sup>22</sup>.

### **4.3 Implication of Findings**

The findings of this study have implications for the different users of accounting information, investors, market regulators, policy makers, business analyst, professionals, scholars as well as the general public. These implications are outlined below:

**Investors and Shareholders:** Investors now have a better understanding of how various capital mix compositions might impact a company's financial performance based on the study's findings. It became clear that having both short- and long-term loan financing considerably improved the

financial performance of Nigerian telecommunications enterprises. It is suggested that telecommunications companies use more short- and long-term debt than shares in order to increase financial success. Additionally, investors are ready to place their money where it will generate the highest return, and shareholders want to maximize their return on investment. This study is important because it aids investors in decision-making for several reasons.

**Regulators:** The financial management of a company should devise a plan for the capital structure of their businesses that is open to public scrutiny, would provide an equitable distribution of ownership stakes, and will boost the profitability of the firms' operations. The government need to make provisions for ideas that would support the rate at which the economy increases in order to enable firms to increase their profit margins. This will help the economy grow faster. It's possible that studies with the same emphasis may be broadened to look at other aspects of the economy.

**Company Management:** The company management needs to pay attention to various combination of capital in arriving at company optimal capital structure. This because various combination of fund/debts result in difference financial performance at any point in time. Also, critical attention should equally be paid equity and total debt in as a source of financing as they affected firm financial performance negative. Since each source of finance/debt come with cost management of the organization should take critical look at the different combination with the aim of meeting the objective of the firm and satisfy the interest of all stakeholders.

**Accounting Profession:** The mixed results of each of the model as in profit before tax, return on asset, return on equity, and return on capital employed models is significant in advancing financial implications and predictive advisory roles at the disposal of the Accountants, professionals in the field of accounting, finance and other relevant data science field. It has

implication in assisting financial consultants, analysts and professional accountants in making informed decisions based on the extent of the reaction of each of the various proxies of capital structure and firm financial characteristics of sampled companies for the study.

**Financial/Business Analysts:** Financial and business analysts will find this study useful in making informed and predictive business and investment decisions. The reported mixed results being revealed in each of the models tested should be carefully and mindfully be considered by financial and business analyst to enhance and increase future business and investment predictive abilities.

**Researchers:** Researchers can realize from the findings of this study that different variables react differently under different conditions. Capital structure attributes, as observed in this study has greater significant magnitude of impact on the financial performance of listed telecommunication companies in Nigeria. Knowledge gained from the findings of this study may be applied by researchers to other industry aside from telecommunication companies.

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## **Chapter Five**

### **Conclusion**

This chapter presents summary of the study, summary of empirical findings, conclusion, recommendations, contributions to knowledge, limitations of the study and suggestions for further studies.

#### **5.1. Summary**

The study examined the effect of capital structure on financial performance of the listed telecommunication companies in Nigeria. In carrying out the study, two main variables were considered, the dependent variable and the independent variable. The dependent variable of the study, financial performance was measured using proxies such as Profit before Tax (PBT), Return on Asset (ROA), Return on Equity(ROE) and Return on Capital Employed (ROCE). While independent variable is capital structure measured by short term debt, long term debt, equity financing and total debt.

In achieving the objectives of the study, the study was divided into five chapters. Chapter one provides overview of the study, this consists of background to the study, identification of the main problem of the study, the main and specific objectives of the study, research questions and research hypotheses. Also, the study emphasized the justification for the study, significance of

the study and went ahead to describe the scope of the study and lastly the operationalization of the identified variables and the operational definition of key terms used in the study.

Chapter two presented the literature review which comprised of the conceptual review of the concepts used in the study, theoretical review highlighting various theories reviewed in the study, and then the empirical literature review of prior studies related to the study, summary of empirical review, gaps in literature as well as the researcher's conceptual model.

Chapter three of the study covered the methodology adopted for the study. It also discussed the research design and population of the study as well as sample size and sampling technique of the study, source of data collection & instruments, validity & reliability of research instrument used, method of data analysis, model estimation and evaluation techniques, *a priori* expectation and ethical consideration and guidelines followed in course of the study.

In chapter four, the study considered the analyzed data in two parts; descriptive statistics and inferential analysis, using regression analysis. The study equally, carried out the descriptive analysis centered on mean, standard deviation, minimum and maximum. In addition, under the descriptive statistics, all sections of the research instrument were considered. Also, in chapter four, the stated hypotheses were tested, and this was carried out using regression analysis of each of the hypotheses. It also presented the main findings on the effect of each of the models of the study of the effect of capital structure on financial performance in Nigeria telecommunication firms.

The last chapter focused on the summary of the study as well as the findings and their implications. Conclusions were drawn, and recommendations made. The limitations of the study were highlighted, and the chapter concluded with the study's contribution to knowledge and suggestion for further studies.

### **5.1.1 Summary of Findings**

### **5.1.2 Summary of Theoretical Findings**

In the theoretical summary viewpoint, the study reviewed some theories which were considered appropriate, relevant and suitable for the study. The theories reviewed included Agency theory, trade off theory and pecking-order theory. This study was anchored on the agency theory, trade off theory, and pecking order theory. This is because the study looks at how capital structure attributes can be used to enhanced financial performance of telecommunication firms in Nigeria. All theory on which the work was anchored look into the financial performance of firm in relation to the different combination debt (capital structure) with the aim of getting optimal capital structure.

### **5.1.3 Empirical Findings**

#### **Descriptive**

Starting with the test for multicollinearity, the mean of variance inflation factor is 3.21 which is below the threshold of 10. This signifies the absence of multicollinearity problem. The results show profit before tax, return on asset, return on equity, return on capital employed, short term debt, long term debt, equity and total debt with correlation values of 5.66,1.45,6.54,15.63,6.69,3.27,10.58 and 1.57 respectively.

A descriptive analysis was performed to describe all the variables obtained from the quoted telecommunication companies for the period under study using the mean, standard deviation, minimum and maximum of the data set. The result of the descriptive statistics showed that variations exist in the data set and that the quoted telecommunication companies for the period under study may likely differ in the rate of combination of short term debt to long term and equity.

## **Inferential**

The study examined the effect of capital structure and financial performance of telecommunication companies in Nigeria for the period 2012-2021. Four hypotheses were examined, and their results were summarized as follows; the first hypothesis of the study examined the effect of capital structure on profit before tax of quoted telecommunication companies in Nigeria for the period of 2012-2021. The result of the F-statistics with probability value of 0.0001 implies that all the measures of the independent variables (STD, LTD, EQTY and TD) jointly and significantly impacted PBT. In addition, the Wald Chi Square did not accept the null that Capital structure has no significant effect on Profit before Tax of quoted telecommunication companies in Nigeria and the alternative hypothesis that capital structure has significant effect on Profit before Tax on quoted telecommunication companies in Nigeria firm was accepted. Also, the second hypothesis of the study examined the effect of capital structure on return on asset of quoted telecommunication companies in Nigeria for the period of 2012-2021. The result of the F-statistics with probability value of 0.000 implies that all the measures of the independent variables (STD, LTD, EQTY, TD) jointly and significantly impacted ROA. In addition, the Wald Chi Square did not accept the null that capital structure has no significant effect on return on asset of quoted telecommunication companies in Nigeria and the alternative hypothesis that capital structure has significant effect on return on asset of quoted telecommunication companies in Nigeria firm was accepted. While, the third hypothesis of the study examined the effect of capital structure on return on equity of quoted telecommunication companies in Nigeria for the period of 2012-2021.

The result of the F-statistics with probability value of 0.000 implies that all the measures of the independent variables (STD, LTD, EQTY, TD) jointly and significantly

impacted ROE. In addition, the Wald Chi Square did not accept the null that Capital structure has no significant effect on return on equity of quoted telecommunication companies in Nigeria and the alternative hypothesis that capital structure has significant effect on return on equity of quoted telecommunication companies in Nigeria firm was accepted.

Furthermore, the fourth hypothesis of the study examined the effect of capital structure on return on capital employed of quoted telecommunication companies in Nigeria for the period of 2012-2021. The result of the F-statistics with probability value of 0.0000 implies that all the measures of the independent variables (STD, LTD, EQTY, TD) jointly and significantly impacted ROCE. In addition, the Wald Chi Square did not accept the null that there is no significant effect of capital on return on capital employed of quoted telecommunication companies in Nigeria and therefore alternative hypothesis that state that there is significant effect of capital structure on return on capital employed of quoted telecommunication companies in Nigeria was accepted.

## **5.2 Conclusion**

This study set out to examine the effect of capital structure and financial performance of telecommunications companies in Nigeria for the period 2012-2021. In order to achieve this major objective, four (4) different capital structure attributes measurement which are short term debt, long term debt, equity and total debt; and four (4) financial performance were selected and analyzed namely; profit before tax, return on asset, return on equity and return on capital employed from 2012 to 2021 through descriptive analysis and multiple regression. After reviewing the extant literature about the relationship between capital structure and performance, deriving hypotheses from literature and theories, collecting data and analyzing the data, the study concluded that the capital structure has a great effect on performance of telecommunication companies in Nigeria.

### 5.3 Recommendations

In line with the results and findings obtained in each of the hypotheses, the following recommendations were made which might be useful to the management, investors and shareholders, the policy makers, the government, and other stakeholders;

1. When it comes to telecommunication companies who are looking to obtain financing for day to-day operations or working capital, short term financing should be used. This is shown by the fact that short term debt is positively connected with financial performance considerably as in the study.

2. Also, finding from this study revealed that Long term debt have a positive relationship with Performance so when trying to raise finance or funds, telecommunication companies to finance new project or expansion of relatively long time, long term financing should be utilized. Result from the study depicts a positive significant link with financial success provides proof for this assertion.

3. Base on the outcome the study that shows a positive and significant relationship between long term debt, total debt, equity return on asset, return on equity and return on capital employed, telecommunication companies should ensure they balance the three sources of fund in other to operate at optimum level that maximize return of stakeholders.

4. The management of telecommunication companies should use long term financing to finance long term project and short term financing to finance project of relatively short term and not vice

versa. Though, short term financing and long term financing has a positive and significant relationship the two should be used with caution and care.

#### **5.4 Contribution to Knowledge**

This study contributed to knowledge in the following ways:

##### **Theory**

The study had made theoretical contribution to knowledge having reviewed several theories considered relevant to the study. The study reviewed are; (i) Agency theory and (ii) Trade off theory and (iii) Pecking Order theory. In the process of the theoretical review, the study discusses various scholars who propounded these theories, the assumptions of each of the theories reviewed, the scholars who did support the theory, criticisms put forwards by some other scholars as well as limitation and or shortcoming of each of the theory. The study equally considered the relevance of each of the theories, thereby expanding the frontier of the existing body of knowledge from the theoretical point of view.

##### **Empirical**

Critical empirical review of previous studies on financial performance with special reference to capital structure were thoroughly carried out. This was done in line with each objective of the study and the hypotheses as specified in the model specifications of the study. In addition, the empirical results in this study had made additional contribution to empirical studies. The study had found mixed results, while some of the results were consistent to previous studies; others failed to align with previous findings. Many of the inconsistencies were due to changes in legislation, effect of Covid '19 as well as variability in environment study. Consequently, this study had made addition contribution to knowledge by synthesizing these diverse findings with

previous studies. The results from each model have contributed to knowledge in relation to capital structure attributes on financial performance in listed telecommunication companies in Nigeria.

### **Policy makers**

The policy makers will find this work very useful in policy direction and in making impactful future policies in relation to the optimal capital structure so as to satisfy stakeholder diverse needs. The study recommendation will equally assist the policy maker in advising companies to seek more of short term debt and long term debt than equity as both short term and long term debt affect financial performance of companies positively.

### **Concepts**

From the conceptual perspective, the researcher reviewed the concepts of all the variables used in this study. The concepts of profit before tax, return on asset, return on equity and return on capital employed and their proxies as well as that of capital structure characteristics were considered. All these concepts were defined and explained from both the researcher's view point and previous studies.

### **Investors and Shareholders**

The cost of taking wrong decision is enormous most especially when it relate to investment decision. Investors and other company's stakeholder ultimate aim is wealth maximization. Shareholders are interested in the investment that promises highest return with the lowest risk. This study shall avail investors the opportunity to understand the different combination of debt and those that promises the highest financial performance. They will also find this study useful in making informed investment and divestment decisions.

## **Accounting Profession**

This study would be useful to those in accounting practice, the financial consultants, academia and the general public as an addition to the existing literature on corporate governance firm characteristics and accounting information disclosure in Nigeria. The professional accountants and accounting firms will have a better understanding of the impact of the annual account on the stake holder and that in their preparation of annual report they should note that their liability is not to the shareholders only but to the entire stakeholders but existing and the future one.

## **Researchers and Analysts**

Research students and other researchers will also benefit from this study, as it could provide additional information and create a platform for further research work in the area of the study and also help analysts in making certain predictions and generalizations from the findings and results of the study.

## **5.5 Suggestions for Further Studies**

This study put forward the following suggestion for the benefit of extending the frontiers of knowledge and for further research studies related to capital structure on financial performance of listed telecommunication companies in Nigeria. Further studies could consider other capital structure attributes not covered in this study. Also, Further research can still be done on other facet of Nigeria economy such as financial and oil and gas.

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## Appendix 1

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

FinitPopulation

## APPENDIX ii

### Title: Data Analysis

\_\_\_\_\_ (R)  
/ \_ / \_\_\_ / / \_\_\_ /  
\_\_\_ / / \_\_\_ / / \_\_\_ / 13.0 Copyright 1985-2013 StataCorp LP  
Statistics/Data Analysis      StataCorp  
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College Station, Texas 77845 USA  
800-STATA-PC      <http://www.stata.com>  
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Notes:

. \*(10 variables, 70 observations pasted into data editor)

. xtset cid year

panel variable: cid (strongly balanced)

time variable: year, 2012 to 2021

delta: 1 unit

```
. sum
```

Variable	Obs	Mean	Std. Dev.	Min	Max
cid	70	4	2.014441	1	7
year	70	2016.5	2.89302	2012	2021
std	70	163292.7	334692.2	0	1533480
ltd	70	92003.97	233781.8	0	1087634
equity	70	510758.9	1202147	-1582	4566864
td	70	255300.8	513057.6	1	2148365
pbt	70	64040.9	138517.7	-3278	621546
roa	70	-.0044286	.2013263	-.86	.72
roe	70	-.1698571	2.788291	-20.53	2.73
roce	70	-.1064286	1.662727	-9.74	3.4

```
. corr std ltd equity td pbt roa roe roce  
(obs=70)
```

	std	ltd	equity	td	pbt	roa	roe	roce
std	1.0000							
ltd	0.6170	1.0000						
equity	0.9037	0.3412	1.0000					
td	0.9335	0.8582	0.7450	1.0000				
pbt	0.8610	0.7149	0.7592	0.8874	1.0000			

```

roa | 0.2662 0.3095 0.1553 0.3146 0.3400 1.0000
roe | 0.0883 0.1376 0.0460 0.1202 0.1124 0.4319 1.0000
roce | 0.0772 0.0822 0.0507 0.0878 0.0935 0.3930 0.8969 1.0000

```

```
. regres pbt std ltd eqty td
```

```

Source |      SS      df      MS      Number of obs =   70
-----+-----
Model | 1.0788e+12    4 2.6969e+11      Prob > F   = 0.0000
Residual | 2.4514e+11   65 3.7714e+09      R-squared   = 0.8148
-----+-----
Total | 1.3239e+12   69 1.9187e+10      Adj R-squared = 0.8034
Root MSE   = 61411

```

```

-----
pbt |      Coef.   Std. Err.      t    P>|t|   [95% Conf. Interval]
-----+-----
std | 22.90556   241.8643    0.09  0.925   -460.1309   505.942
ltd | 23.08199   241.8629    0.10  0.924   -459.9516   506.1156
eqty | .0483803   .018733     2.58  0.012   .0109679   .0857926
td | -22.8195   241.8642   -0.09  0.925   -505.8557   460.2167
_cons | 1222.854   8327.463    0.15  0.884   -15408.24   17853.95

```

```
. vif
```

```

Variable |      VIF      1/VIF
-----+-----
std | 6.69  0.00000
ltd | 3.27  0.00000

```

```

eqty | 10.58 0.094434
pbt | 5.66 0.176751
roe | 15.63 0.094674
roce | 6.54 0.152446
roa | 1.45 0.6889713
td | 1.57 0.00000

```

```
-----+-----
Mean VIF | 3.21
```

MODEL 1

Hausman fixed random

---- Coefficients ----

```

      | (b)      (B)      (b-B)  sqrt(diag(V_b-V_B))
      | fixed   random  Difference  S.E.
-----+-----
ltd | 23.08199 -1.000013   24.082   241.8629
equity | .0483803 1.38e-06  .0483789  .018733
td | -22.8195 1 -23.81951  241.8642

```

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(2) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 23.66 \end{aligned}$$

Prob>chi2 = 0.0000

. testparm pbt std ltd eqty td

(1) ltd = 0

(2) eqty = 0

- (3)  $td = 0$
- (4)  $pbt = 0$

$$F(4, 62) = 9.6e+09$$

$$\text{Prob} > F = 0.0000$$

. testparm std ltd eqty td pbt roa roe roce

- (1)  $ltd = 0$
- (2)  $eqty = 0$
- (3)  $td = 0$
- (4)  $pbt = 0$
- (5)  $roa = 0$
- (6)  $roe = 0$
- (7)  $roce = 0$

$$F(7, 62) = 5.9e+09$$

$$\text{Prob} > F = 0.0000$$

. xttest3

Modified Wald test for groupwise heteroskedasticity

in fixed effect regression model

H0:  $\sigma(i)^2 = \sigma^2$  for all i

$$\chi^2(7) = 5.5e+16$$

$$\text{Prob} > \chi^2 = 0.0000$$

xtserial pbt std ltd equity td

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F( 1, 6) = 1.857

Prob > F = 0.2219

. xtcsd, pesaran abs

Pesaran's test of cross sectional independence = 0.612, Pr = 0.5406

Average absolute value of the off-diagonal elements = 0.304

. xtserial std ltd eqty td pbt roa roe roce

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F( 1, 6) = 0.209

Prob > F = 0.6637

. xtscce std ltd eqty td pbt roa roe roce, fe

Regression with Driscoll-Kraay standard errors Number of obs = 70

Method: Fixed-effects regression Number of groups = 7

Group variable (i): cid F( 7, 6) = 2.03e+11

maximum lag: 2 Prob > F = 0.0000

within R-squared = 1.0000

---

	Drisc/Kraay					
std	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ltd	-1.00001	8.48e-06	-1.2e+05	0.000	-1.000031	-.9999893
eqty	3.58e-06	1.61e-06	2.22	0.068	-3.60e-07	7.51e-06
td	.9999999	4.61e-06	2.2e+05	0.000	.9999886	1.000011
pbt	-3.82e-06	3.88e-06	-0.98	0.364	-.0000133	5.68e-06
roa	-.9998449	8.420565	-0.12	0.909	-21.60423	19.60454

---

roe		14.26801	2.369316	6.02	0.001	8.470502	20.06552
roce		-8.779609	5.219139	-1.68	0.144	-21.55038	3.991163
_cons		-3.267722	1.704859	-1.92	0.104	-7.439361	.903918

. xtreg std ltd eqty td pbt roa roe roce, fe cluster()

Fixed-effects (within) regression                      Number of obs    =    70

Group variable: cid                                      Number of groups =    7

R-sq: within = 1.0000                                  Obs per group: min =    10

          between = 1.0000                                  avg =    10.0

          overall = 1.0000                                  max =    10

F(7,56)    = 9.98e+08

corr(u\_i, Xb) = -0.4620                                  Prob > F            = 0.0000

	std		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ltd		-1.00001	.0000287	-3.5e+04	0.000	-1.000068	-.9999526
eqty		3.58e-06	.0000129	0.28	0.782	-.0000222	.0000294
td		.9999999	.0000182	5.5e+04	0.000	.9999635	1.000036
pbt		-3.82e-06	.0000308	-0.12	0.902	-.0000656	.000058
roa		-.9998449	12.72881	-0.08	0.938	-26.49871	24.49902
roe		14.26801	1.453812	9.81	0.000	11.35567	17.18035
roce		-8.779609	2.401791	-3.66	0.001	-13.59097	-3.968245
_cons		-3.267722	5.735486	-0.57	0.571	-14.75728	8.221838

sigma\_u | 5.3235691

sigma\_e | 13.617303

rho | .13257339 (fraction of variance due to u\_i)

-----  
F test that all u\_i=0: F(6, 56) = 1.04 Prob > F = 0.4073

Model 2

Hausman fixed random

---- Coefficients ----

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
ltd	23.08199	-1.000013	24.082	241.8629
equity	.0483803	1.38e-06	.0483789	.018733
td	-22.8195	1	-23.81951	241.8642

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\text{chi2}(2) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 23.66$$

$$\text{Prob}>\text{chi2} = 0.0000$$

. xtset cid year

panel variable: cid (strongly balanced)

time variable: year, 2012 to 2021

delta: 1 unit

```
. sum
```

Variable	Obs	Mean	Std. Dev.	Min	Max
cid	70	4	2.014441	1	7
year	70	2016.5	2.89302	2012	2021
std	70	163292.7	334692.2	0	1533480
ltd	70	92003.97	233781.8	0	1087634
eqty	70	510758.9	1202147	-1582	4566864
td	70	255300.8	513057.6	1	2148365
pbt	70	64040.9	138517.7	-3278	621546
roa	70	-.0044286	.2013263	-.86	.72
roe	70	-.1698571	2.788291	-20.53	2.73
roce	70	-.1064286	1.662727	-9.74	3.4

```
. corr
```

```
(obs=70)
```

	cid	year	std	ltd	eqty	td	pbt	roa	roe	roce
cid	1.0000									
year	0.0000	1.0000								
std	0.0252	-0.0089	1.0000							
ltd	-0.2735	0.1517	0.6170	1.0000						
eqty	0.1742	-0.0014	0.9037	0.3412	1.0000					
td	-0.1082	0.0633	0.9335	0.8582	0.7450	1.0000				

```

pbt | -0.0744  0.0550  0.8610  0.7149  0.7592  0.8874  1.0000
roa | -0.4581 -0.0790  0.2662  0.3095  0.1553  0.3146  0.3400  1.0000
roe | -0.0246  0.0354  0.0883  0.1376  0.0460  0.1202  0.1124  0.4319  1.0000
roce | -0.0344  0.1343  0.0772  0.0822  0.0507  0.0878  0.0935  0.3930  0.8969
1.0000

```

```
. regres roa std ltd eqty td
```

```

Source |      SS      df      MS      Number of obs =   70
-----+-----
Model |   .56871908    4   .14217977      F( 4, 65) =   4.15
Residual |  2.22800813   65   .034277048      Prob > F   =  0.0047
-----+-----
Total |  2.79672721   69   .040532278      R-squared   =  0.2034
                          Adj R-squared =  0.1543
                          Root MSE    =  .18514

```

```

-----
roa |   Coef.  Std. Err.   t   P>|t|   [95% Conf. Interval]
-----+-----
std |   .0019476   .0007292    2.67  0.010   .0004914   .0034039
ltd |   .0019474   .0007292    2.67  0.010   .0004912   .0034037
eqty | -5.59e-08   5.65e-08   -0.99  0.326  -1.69e-07   5.69e-08
td |  -.0019473   .0007292   -2.67  0.010  -.0034036  -.0004911
_cons | -.0238059   .0251053   -0.95  0.347  -.0739445   .0263328
-----

```



overall = 0.1668

max = 10

Wald chi2(4) = 13.97

corr(u\_i, X) = 0 (assumed)

Prob > chi2 = 0.0074

```
-----+-----
```

roa	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
std	.0022127	.000644	3.44	0.001	.0009504	.003475
ltd	.0022125	.000644	3.44	0.001	.0009502	.0034748
eqty	-3.00e-08	5.60e-08	-0.54	0.592	-1.40e-07	7.98e-08
td	-.0022125	.000644	-3.44	0.001	-.0034748	-.0009502
_cons	-.0113937	.0421846	-0.27	0.787	-.094074	.0712865

```
-----+-----
```

sigma_u	.08613931
sigma_e	.15133744
rho	.24469807 (fraction of variance due to u_i)

```
-----+-----
```

. xtreg roa std ltd eqty td, fe

Fixed-effects (within) regression      Number of obs = 70

Group variable: cid                      Number of groups = 7

R-sq: within = 0.1912                      Obs per group: min = 10

          between = 0.0280                      avg = 10.0

          overall = 0.1233                      max = 10

F(4,59) = 3.49

corr(u\_i, Xb) = -0.0354      Prob > F = 0.0127

---

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
std	.0022872	.0006315	3.62	0.001	.0010237	.0035508
ltd	.0022869	.0006315	3.62	0.001	.0010234	.0035505
eqty	-2.34e-08	1.26e-07	-0.19	0.853	-2.75e-07	2.28e-07
td	-.002287	.0006315	-3.62	0.001	-.0035506	-.0010235
_cons	-.003137	.0596375	-0.05	0.958	-.1224714	.1161973

---

sigma_u	.13553051
sigma_e	.15133744
rho	.445065 (fraction of variance due to u_i)

---

F test that all u\_i=0: F(6, 59) = 6.38      Prob > F = 0.0000

. xttest3

Modified Wald test for groupwise heteroskedasticity  
in fixed effect regression model

H0:  $\sigma(i)^2 = \sigma^2$  for all i

chi2 (7) = 279.68

Prob>chi2 = 0.0000

. xtcsd, pesaran abs

Pesaran's test of cross sectional independence = 0.200, Pr = 0.8413

Average absolute value of the off-diagonal elements = 0.342

. xtserial std ltd eqty td pbt roa roe roce

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F( 1, 6) = 0.209

Prob > F = 0.6637

. xtscce std ltd eqty td pbt roa roe roce, fe

Regression with Driscoll-Kraay standard errors Number of obs = 70

Method: Fixed-effects regression Number of groups = 7

Group variable (i): cid F( 7, 6) = 2.03e+11

maximum lag: 2 Prob > F = 0.0000

within R-squared = 1.0000

---

	Drisc/Kraay					
std	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ltd	-1.00001	8.48e-06	-1.2e+05	0.000	-1.000031	-.9999893

---

```

eqty | 3.58e-06 1.61e-06 2.22 0.068 -3.60e-07 7.51e-06
td | .9999999 4.61e-06 2.2e+05 0.000 .9999886 1.000011
pbt | -3.82e-06 3.88e-06 -0.98 0.364 -.0000133 5.68e-06
roa | -.9998449 8.420565 -0.12 0.909 -21.60423 19.60454
roe | 14.26801 2.369316 6.02 0.001 8.470502 20.06552
roce | -8.779609 5.219139 -1.68 0.144 -21.55038 3.991163
_cons | -3.267722 1.704859 -1.92 0.104 -7.439361 .903918

```

```

-----
. xtreg std ltd eqty td pbt roa roe roce, fe cluster()

```

```

Fixed-effects (within) regression      Number of obs = 70

```

```

Group variable: cid                   Number of groups = 7

```

```

R-sq: within = 1.0000                  Obs per group: min = 10

```

```

    between = 1.0000                    avg = 10.0

```

```

    overall = 1.0000                    max = 10

```

```

                                F(7,56) = 9.98e+08

```

```

corr(u_i, Xb) = -0.4620              Prob > F = 0.0000

```

```

-----+-----
std |   Coef.  Std. Err.   t  P>|t|  [95% Conf. Interval]

```

```

ltd | -1.00001  .0000287 -3.5e+04  0.000  -1.000068  -.9999526

```

```

eqty | 3.58e-06  .0000129  0.28  0.782  -.0000222  .0000294

```

```

td | .9999999  .0000182  5.5e+04  0.000  .9999635  1.000036

```

```

pbt | -3.82e-06 .0000308 -0.12 0.902 -.0000656 .000058
roa | -9.998449 12.72881 -0.08 0.938 -26.49871 24.49902
roe | 14.26801 1.453812 9.81 0.000 11.35567 17.18035
roce | -8.779609 2.401791 -3.66 0.001 -13.59097 -3.968245
_cons | -3.267722 5.735486 -0.57 0.571 -14.75728 8.221838

```

```

-----+-----
sigma_u | 5.3235691
sigma_e | 13.617303
rho | .13257339 (fraction of variance due to u_i)
-----

```

F test that all  $u_i=0$ :  $F(6, 56) = 1.04$        $\text{Prob} > F = 0.4073$

### Model 3

#### Hausman fixed random

---- Coefficients ----

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
ltd	23.08199	-1.000013	24.082	241.8629
equity	.0483803	1.38e-06	.0483789	.018733
td	-22.8195	1	-23.81951	241.8642

b = consistent under  $H_0$  and  $H_a$ ; obtained from xtreg

B = inconsistent under  $H_a$ , efficient under  $H_0$ ; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned}\text{chi2}(2) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 23.66 \\ \text{Prob}>\text{chi2} &= 0.0000\end{aligned}$$

. xtset cid year

panel variable: cid (strongly balanced)

time variable: year, 2012 to 2021

delta: 1 unit

. sum

Variable	Obs	Mean	Std. Dev.	Min	Max
cid	70	4	2.014441	1	7
year	70	2016.5	2.89302	2012	2021
std	70	163292.7	334692.2	0	1533480
ltd	70	92003.97	233781.8	0	1087634
eqty	70	510758.9	1202147	-1582	4566864
td	70	255300.8	513057.6	1	2148365
pbt	70	64040.9	138517.7	-3278	621546
roa	70	-.0044286	.2013263	-.86	.72
roe	70	-.1698571	2.788291	-20.53	2.73
roce	70	-.1064286	1.662727	-9.74	3.4

. corr

(obs=70)

```
      |   cid   year   std   ltd   eqty   td   pbt   roa   roe   roce
-----+-----
cid |  1.0000
year |  0.0000  1.0000
std |  0.0252 -0.0089  1.0000
ltd | -0.2735  0.1517  0.6170  1.0000
eqty |  0.1742 -0.0014  0.9037  0.3412  1.0000
td | -0.1082  0.0633  0.9335  0.8582  0.7450  1.0000
pbt | -0.0744  0.0550  0.8610  0.7149  0.7592  0.8874  1.0000
roa | -0.4581 -0.0790  0.2662  0.3095  0.1553  0.3146  0.3400  1.0000
roe | -0.0246  0.0354  0.0883  0.1376  0.0460  0.1202  0.1124  0.4319  1.0000
roce | -0.0344  0.1343  0.0772  0.0822  0.0507  0.0878  0.0935  0.3930  0.8969
1.0000
```

. regres roe std ltd eqty td

```
Source |   SS   df   MS           Number of obs =   70
-----+-----           F( 4, 65) = 56.23
Model | 416.181263   4 104.045316       Prob > F   = 0.0000
Residual | 120.263857  65  1.85021319       R-squared   = 0.7758
-----+-----           Adj R-squared = 0.7620
Total | 536.44512  69  7.77456696       Root MSE   = 1.3602
```

```
roe |   Coef.  Std. Err.   t  P>|t|  [95% Conf. Interval]
```

```
-----+-----
```

std		.079348	.0053571	14.81	0.000	.0686491	.090047
ltd		.0793485	.0053571	14.81	0.000	.0686496	.0900474
eqty		-1.97e-07	4.15e-07	-0.47	0.637	-1.03e-06	6.32e-07
td		-.0793475	.0053571	-14.81	0.000	-.0900465	-.0686486
_cons		.088401	.184448	0.48	0.633	-.2799671	.4567692

```
-----+-----
```

. vif

```
-----+-----
```

Variable		VIF	1/VIF
std		6.69	0.00000
ltd		3.27	0.00000
eqty		10.58	0.094434
pbt		5.66	0.176751
roe		15.63	0.094674
roce		6.54	0.152446
roa		1.45	0.6889713
td		1.57	0.00000

```
-----+-----
```

Mean VIF | 3.21

. testparm roe std ltd eqty td

- (1) std = 0
- (2) ltd = 0
- (3) eqty = 0
- (4) td = 0

F( 4, 65) = 56.23

Prob > F = 0.0000

. xtreg std ltd eqty td

Random-effects GLS regression                      Number of obs    =    70

Group variable: cid                                  Number of groups =    7

R-sq: within = 1.0000                              Obs per group: min =    10

          between = 1.0000                              avg =    10.0

          overall = 1.0000                              max =    10

   Wald chi2(3)    = 4.92e+09

corr(u\_i, X) = 0 (assumed)                          Prob > chi2    = 0.0000

---

std	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
ltd	-.9999954	.000062	-1.6e+04	0.000	-1.000117	-.9998738
eqty	1.43e-06	9.83e-06	0.15	0.884	-.0000178	.0000207
td	.999999	.0000399	2.5e+04	0.000	.9999208	1.000077
_cons	-5.037367	5.649429	-0.89	0.373	-16.11004	6.03531

---

sigma\_u | 9.6707116

sigma\_e | 30.940427

rho | .08899863 (fraction of variance due to u\_i)

---

. xtreg roe std ltd eqty td

note: td omitted because of collinearity

Random-effects GLS regression                      Number of obs    =    70

Group variable: cid                                  Number of groups =    7

R-sq: within = 0.0024                              Obs per group: min =    10

          between = 0.3672                              avg =    10.0

          overall = 0.0192                             max =    10

  Wald chi2(3)    =    1.29

corr(u\_i, X) = 0 (assumed)                      Prob > chi2    =    0.7317

---

roe	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
-----+-----						
std	4.57e-07	3.69e-06	0.12	0.902	-6.78e-06	7.70e-06
ltd	1.42e-06	2.41e-06	0.59	0.557	-3.31e-06	6.14e-06
eqty	-1.02e-07	8.61e-07	-0.12	0.905	-1.79e-06	1.59e-06
td	0 (omitted)					
_cons	-.3225966	.3785142	-0.85	0.394	-1.064471	.4192775
-----+-----						
sigma_u	0					
sigma_e	2.8800112					
rho	0 (fraction of variance due to u_i)					

---

. xtreg roe std ltd eqty td, fe

Fixed-effects (within) regression                      Number of obs    =    70

Group variable: cid                                  Number of groups =    7



H0:  $\sigma(i)^2 = \sigma^2$  for all i

chi2 (7) = 1.3e+05

Prob>chi2 = 0.0000

. xtcsd, pesaran abs

Pesaran's test of cross sectional independence = 0.170, Pr = 0.8650

Average absolute value of the off-diagonal elements = 0.272

. xtserial roe std ltd eqty td

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F( 1, 6) = 2.155

Prob > F = 0.1924

. xtscs std ltd eqty td pbt roa roe roce, fe

Regression with Driscoll-Kraay standard errors Number of obs = 70

Method: Fixed-effects regression Number of groups = 7

Group variable (i): cid F( 7, 6) = 2.03e+11

maximum lag: 2 Prob > F = 0.0000

within R-squared = 1.0000

---

| Drisc/Kraay

std	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ltd	-1.00001	8.48e-06	-1.2e+05	0.000	-1.000031	-.9999893
eqty	3.58e-06	1.61e-06	2.22	0.068	-3.60e-07	7.51e-06
td	.9999999	4.61e-06	2.2e+05	0.000	.9999886	1.000011
pbt	-3.82e-06	3.88e-06	-0.98	0.364	-.0000133	5.68e-06
roa	-.9998449	8.420565	-0.12	0.909	-21.60423	19.60454
roe	14.26801	2.369316	6.02	0.001	8.470502	20.06552
roce	-8.779609	5.219139	-1.68	0.144	-21.55038	3.991163
_cons	-3.267722	1.704859	-1.92	0.104	-7.439361	.903918

. xtreg std ltd eqty td pbt roa roe roce, fe cluster ()

Fixed-effects (within) regression      Number of obs      =      70

Group variable: cid                      Number of groups      =      7

R-sq: within = 1.0000                      Obs per group: min =      10

      between = 1.0000                      avg =      10.0

      overall = 1.0000                      max =      10

   F(7,56)                      = 9.98e+08

corr(u\_i, Xb) = -0.4620                      Prob > F                      = 0.0000

std	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----	-------	-----------	---	------	----------------------	--

```

ltd | -1.00001 .0000287 -3.5e+04 0.000 -1.000068 -.9999526
eqty | 3.58e-06 .0000129 0.28 0.782 -.0000222 .0000294
td | .9999999 .0000182 5.5e+04 0.000 .9999635 1.000036
pbt | -3.82e-06 .0000308 -0.12 0.902 -.0000656 .000058
roa | -.9998449 12.72881 -0.08 0.938 -26.49871 24.49902
roe | 14.26801 1.453812 9.81 0.000 11.35567 17.18035
roce | -8.779609 2.401791 -3.66 0.001 -13.59097 -3.968245
_cons | -3.267722 5.735486 -0.57 0.571 -14.75728 8.221838

```

```
-----+-----
sigma_u | 5.3235691
```

```
sigma_e | 13.617303
```

```
rho | .13257339 (fraction of variance due to u_i)
```

```
-----+-----
F test that all u_i=0: F(6, 56) = 1.04 Prob > F = 0.4073
```

#### MODEL 4

Hausman fixed random

---- Coefficients ----

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fixed	random	Difference	S.E.
ltd	23.08199	-1.000013	24.082	241.8629
equity	.0483803	1.38e-06	.0483789	.018733
td	-22.8195	1	-23.81951	241.8642

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(2) &= (b-B)'[(V_b-V_B)^{-1}](b-B) \\ &= 23.66 \end{aligned}$$

Prob>chi2 = 0.0000

. corr

(obs=70)

	cid	year	std	ltd	eqty	td	pbt	roa	roe	roce
cid	1.0000									
year	0.0000	1.0000								
std	0.0252	-0.0089	1.0000							
ltd	-0.2735	0.1517	0.6170	1.0000						
eqty	0.1742	-0.0014	0.9037	0.3412	1.0000					
td	-0.1082	0.0633	0.9335	0.8582	0.7450	1.0000				
pbt	-0.0744	0.0550	0.8610	0.7149	0.7592	0.8874	1.0000			
roa	-0.4581	-0.0790	0.2662	0.3095	0.1553	0.3146	0.3400	1.0000		
roe	-0.0246	0.0354	0.0883	0.1376	0.0460	0.1202	0.1124	0.4319	1.0000	
roce	-0.0344	0.1343	0.0772	0.0822	0.0507	0.0878	0.0935	0.3930	0.8969	1.0000

. regress roce std ltd eqty td

Source	SS	df	MS	Number of obs =	70
				F( 4, 65) =	15.24
Model	92.3345948	4	23.0836487	Prob > F =	0.0000
Residual	98.4270029	65	1.51426158	R-squared =	0.4840

```
-----+-----
Total | 190.761598 69 2.76466084      Adj R-squared = 0.4523
      |                               Root MSE   = 1.2306
```

```
-----+-----
roce |   Coef.  Std. Err.   t  P>|t|  [95% Conf. Interval]
-----+-----
std  |  .0375173  .0048464   7.74  0.000   .0278383   .0471963
ltd  |  .0375167  .0048464   7.74  0.000   .0278378   .0471956
eqty | -1.35e-07  3.75e-07  -0.36  0.721  -8.84e-07  6.15e-07
td   | -0.0375167 .0048464  -7.74  0.000  -0.0471957 -0.0278377
_cons | .0184302  .1668644   0.11  0.912  -0.3148209  .3516813
```

```
. vif
```

```
Variable |   VIF   1/VIF
-----+-----
std      |  6.69   0.00000
ltd      |  3.27   0.00000
eqty     | 10.58  0.094434
pbt      |  5.66  0.176751
roe      | 15.63  0.094674
roce     |  6.54  0.152446
roa      |  1.45  0.6889713
td       |  1.57   0.00000
```

```
-----+-----
Mean VIF |  3.21
```

```
. testparm roce std ltd eqty td
```

- (1) ltd = 0
- (2) eqty = 0
- (3) td = 0
- (4) roce = 0

F( 4, 62) = 2.7e+09  
 Prob > F = 0.0000

. xtreg roce std ltd eqty td

Random-effects GLS regression                      Number of obs    =    70

Group variable: cid                                    Number of groups =    7

R-sq: within = 0.4992                                Obs per group: min =    10

          between = 0.3997                                avg =    10.0

          overall = 0.4840                                max =    10

Wald chi2(4)    =    60.98

corr(u\_i, X) = 0 (assumed)                      Prob > chi2    =    0.0000

roce	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
std	.0375173	.0048464	7.74	0.000	.0280184	.0470161
ltd	.0375167	.0048464	7.74	0.000	.0280179	.0470155
eqty	-1.35e-07	3.75e-07	-0.36	0.720	-8.70e-07	6.01e-07
td	-.0375167	.0048464	-7.74	0.000	-.0470155	-.0280178
_cons	.0184302	.1668644	0.11	0.912	-.3086179	.3454783

sigma\_u |        0

sigma\_e | 1.2341808

rho |        0 (fraction of variance due to u\_i)

-----  
. xtreg roce std ltd eqty td , fe

Fixed-effects (within) regression            Number of obs    =    70

Group variable: cid                            Number of groups =    7

R-sq: within = 0.5009                        Obs per group: min =    10

          between = 0.3408                                avg =    10.0

          overall = 0.4817                                max =    10

   F(4,59)        =    14.80

corr(u\_i, Xb) = -0.1644                        Prob > F        =    0.0000

-----  
roce |    Coef.   Std. Err.    t   P>|t|   [95% Conf. Interval]

-----+-----  
std |   .0396056   .0051496    7.69   0.000    .0293012    .04991

ltd |   .0396048   .0051496    7.69   0.000    .0293005    .0499092

eqty | -9.84e-08   1.03e-06   -0.10   0.924   -2.15e-06   1.95e-06

td |  -.0396051   .0051496   -7.69   0.000   -0.0499095   -0.0293007

\_cons | .0546337   .4863532    0.11   0.911   -0.9185569   1.027824

-----  
sigma\_u | .39274862

sigma\_e | 1.2341808

rho | .09195573 (fraction of variance due to u\_i)

-----  
F test that all u\_i=0:    F(6, 59) =    0.94            Prob > F = 0.4760

. xttest3

Modified Wald test for groupwise heteroskedasticity  
in fixed effect regression model

H0:  $\sigma(i)^2 = \sigma^2$  for all i

chi2 (7) = 97616.01

Prob>chi2 = 0.0000

. xtcsd, pesaran abs

Pesaran's test of cross sectional independence = 1.853, Pr = 0.0638

Average absolute value of the off-diagonal elements = 0.282

. xtserial roce std ltd eqty td

Wooldridge test for autocorrelation in panel data

H0: no first-order autocorrelation

F( 1, 6) = 1.760

Prob > F = 0.2329

. xtscce std ltd eqty td pbt roa roe roce, fe

Regression with Driscoll-Kraay standard errors Number of obs = 70  
 Method: Fixed-effects regression Number of groups = 7  
 Group variable (i): cid F( 7, 6) = 2.03e+11  
 maximum lag: 2 Prob > F = 0.0000  
 within R-squared = 1.0000

---

	Drisc/Kraay					
std	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ltd	-1.00001	8.48e-06	-1.2e+05	0.000	-1.000031	-.9999893
eqty	3.58e-06	1.61e-06	2.22	0.068	-3.60e-07	7.51e-06
td	.9999999	4.61e-06	2.2e+05	0.000	.9999886	1.000011
pbt	-3.82e-06	3.88e-06	-0.98	0.364	-.0000133	5.68e-06
roa	-.9998449	8.420565	-0.12	0.909	-21.60423	19.60454
roe	14.26801	2.369316	6.02	0.001	8.470502	20.06552
roce	-8.779609	5.219139	-1.68	0.144	-21.55038	3.991163
_cons	-3.267722	1.704859	-1.92	0.104	-7.439361	.903918

---

. xtreg std ltd eqty td pbt roa roe roce, fe cluster ()

Fixed-effects (within) regression Number of obs = 70  
 Group variable: cid Number of groups = 7  
 R-sq: within = 1.0000 Obs per group: min = 10  
 between = 1.0000 avg = 10.0

overall = 1.0000

max = 10

F(7,56) = 9.98e+08

corr(u\_i, Xb) = -0.4620

Prob > F = 0.0000

---

std	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ltd	-1.00001	.0000287	-3.5e+04	0.000	-1.000068	-.9999526
eqty	3.58e-06	.0000129	0.28	0.782	-.0000222	.0000294
td	.9999999	.0000182	5.5e+04	0.000	.9999635	1.000036
pbt	-3.82e-06	.0000308	-0.12	0.902	-.0000656	.000058
roa	-.9998449	12.72881	-0.08	0.938	-26.49871	24.49902
roe	14.26801	1.453812	9.81	0.000	11.35567	17.18035
roce	-8.779609	2.401791	-3.66	0.001	-13.59097	-3.968245
_cons	-3.267722	5.735486	-0.57	0.571	-14.75728	8.221838

sigma\_u | 5.3235691

sigma\_e | 13.617303

rho | .13257339 (fraction of variance due to u\_i)

F test that all u\_i=0:

F(6, 56) = 1.04

Prob > F = 0.4073

## **Bio- data**

### **A. Personal Data**

Full Names: Abisola Mutiat LASISI  
Email Address: abisolamutiat946@gmail.com  
Phone Number: 08142438592  
Sex: Female  
Marital Status: Single  
Residence No: 6, Orisunmibare Street, Celica Bus-stop, Adegbayi/ olode, Ibadan,  
Oyo State.  
Date of Birth: 9<sup>th</sup> October 1998  
State of Origin: Osun State  
Town: Iree  
Nationality: Nigerian  
Name of Next of Kin: Mrs. Lasisi Ronke  
Address of Next of Kin: 6, Orisunmibare Street, Celica Bus-stop, Adegbayi/ olode  
Ibadan, Oyo State.

### **B. Educational Institution Attended with Dates and Qualifications**

- i. Primary School: Kiddies Nursery and Primary School, Ijebu Ode, Ogun State.
- ii. Secondary School: Mount Sinal College, Ibadan.
- iii. Higher Institution: Fountain University, Osogbo, Osun State.  
Lead City University, Ibadan (MSc-in view)

### **C. Working Experience with Dates**

Aza Ogunsola & Co – Audit Assistant  
Treasury Cash Office, Ota, Ogun State.

### **D. Membership of Professional Bodies**

Institute of Chartered of Accountants of Nigeria (in view)

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**Signature**

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**Date**

### **University Compliance Certification**

This is to Certify that this Thesis is written by **Abisola Mutiat LASISI** with Matric No: LCU/PG/001870 in the Department of Management and Accounting, Faculty of Management and Social Science, Lead City University, Ibadan is in full compliance with the approved University format and style.

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Signature

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Date

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