

Firm Characteristics and Capital Structure of Quoted Chemicals and Paint Firms in Nigeria

By

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Certification

This dissertation titled “Firm Characteristics and Capital Structure in Quoted Nigerian Chemical and Paint Firms” by Larai Sannomo Garba (M.Sc./Admin/4814/2010-2011) meets the requirements governing the award of the Degree of Master of Science (M.Sc.) in Accounting and Finance of Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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Declaration

I declare that this dissertation on “Firm Characteristic and Capital Structure in quoted chemical and paints firms in Nigeria” is a product of my research effort conducted while in the Department of Accounting under the supervision of Dr Musa Inuwa Fodio, and Dr Luka Mailafia. The information sourced from the literature has been duly acknowledged in the work as well as referenced. There was no prior presentation of any portion of this dissertation for another Degree or Diploma at any institution.

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Dedication

I hereby dedicate this M.Sc. work to my father of blessed memory who has gone to be with the Lord, and my mother.

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Abstract

The motivation for this study hinges on the lingering debate on capital structure and the accompanying contributory evidence bothering on how companies should deploy various factors in determining an optimal capital structure at a particular point in time. The study assess firm characteristics and capital structure of listed Chemical and Paints companies in Nigeria for a period of Nine years, from 2004 to 2012. The study employed secondary data from the annual reports of the companies and the Nigerian Stock Exchange (NSE) fact books covering the study period. Ordinary least square (OLS) was employed to estimate the model. The study reveals that liquidity, tangibility, profitability and age have significant impact on leverage at 1% level, while size and growth have no significant impact on capital structure. The effect of tangibility on Capital Structure which suggests a negative correlation is contrary to both trade off theory and pecking order theory. The study therefore, recommends that the management of listed chemicals and paints firms in Nigeria should conduct a careful evaluation on capital mix using firm factors that affects capital structure before embarking on external financing decision to enable them to arrive at a favourable financing decision.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Capital structure decision is one of the most crucial decisions made by financial managers, which borders on the mix of debt and equity used by firms in financing assets. Since wealth maximization remains a primary motive to going concern business firms, capital structure decision should be considered germane to business firms. The decision facilitates maximisation of return on investment over a long-run perspective.

Enhancing the efficiency of capital structure supports diversification through project financing, financing of mergers, acquisition and expansion as well as dividend decisions, all of which contribute to minimising a firm's risk. Capital structure which is the proportion of financing mix of a firm in the form of debt-to-equity ratio, may thus be perceived as pivotal to the growth and survival of a firm. This calls for a concerted effort towards ensuring efficient capital mix by the firm's management so as to protect the shareholders' interest through maximization of their earnings and market value, while minimizing the inherent risks attributable to the mix.

An optimal capital structure entails a proper mix of funds sources towards attaining organisational objectives. Issues bordering on choice of debt to equity ratio, optimal capital structure of a firm, existence of optimal capital structure and potential determinants of such optimal capital structure require critical decision (Myers, 1984). Such decision requires financial and managerial acumen for deployment of knowledge, skills and experience, towards identifying the determinants of capital structure that would be most suitable for the firm. Several theories have been put forward on the subject, but it seems consensus is yet to be reached. While the

trade-off model prefers that cost and benefit should be the focal point in choosing a capital structure, pecking order model as propounded by Myers (1984), is of the view that financing deficit of a firm the basis for choosing a capital mix. Also, for the purpose of identifying an optimal capital structure level for a firm, there seems to be no existing formula or indices that may work for all firms, at all times, or scale of operations, reasons being that most firms chooses what formula to use that best suit them.

Financing decisions involve both the long term and short term sources of capital which entails the financial structure. The short term source of capital is a subject dealt with under working capital management. This study, however, focuses on the long term sources known as the capital structure of the firm. Capital structure decision is a significant managerial decision, which influences the shareholders' returns and risks. Consequently, the market value of shares might be affected by the capital structure mix. Finance literatures however have taken the maximization of shareholders' wealth as synonymous with maximizing the market (stock market) value of a company. This view was supported by Pandey (1999) who posited that the value of a firm depends upon expected earnings stream and the rate used to discount this stream, which is the firms' required rate of return or the cost of capital. Impliedly, capital structure decision can affect the value of the firm either by changing the expected earnings, the cost of capital, or both.

A firm can alter its debt/equity ratio by issuing more debt to buy back stock or issuing stock to pay debt. It is glaring that an optimal capital structure is required towards maximising a firm's wealth and minimising the cost of capital. It is therefore pertinent for policy makers or managers of companies to seek to address issues bothering on how to establish an optimal capital

structure, what the potential determinants of such capital structure are, as well as how to make related choices (Myers, 1984). In as much as firms seek to maximise their resources as well as sources of income, they need to limit their debt financing, maintain a balanced debt portfolio, as well as beware of imminent charges that could accompany their income.

Thus, determination of the appropriate capital structure for the wealth maximizing firm is a central area in the study of business finance and has generated numerous articles and studies by academics and practitioners alike. An important segment of this body of literature has received a notable acclaim from theoreticians and has served to focus most thinking in this area. Recently, an interesting discussion has been generated in studies designed to detect which of the two theories of capital structure best describes the financing choice of corporations but still there are conflicting views.

The chemical and paints industry has been in existence for a number of years. The industry has gone through different levels of development from the manual based processes to more technologically advanced production methods. However, the level of development of the sector in Nigeria is still low when compared to other countries with more advanced technical know-how. Some success factors associated with this sector include quality control, capital adequacy and distributive capacity. Manufacturers in Nigeria are categorized into tiers on the basis of the quality of their final products.

The Standards Organisation of Nigeria (SON) has made strict efforts to sustain minimum standards for paint manufacturing. As a result it has improved the overall quality level of paints made in recent times. The lower-tier companies therefore need to improve their quality to enable them compete effectively with their counterparts. Capital adequacy as another determinant of success in the chemical and paint industry is one that grants access to financial capital either through internally generated sources or through facilities from financial institutions and the

capital market. Producers experience difficulties in the expansion and distributive capacity and also in meeting up to the growing demand of the public especially when the capital is not available. An efficient distribution network is required for the success of paint manufacturers in Nigeria, this is because virtually all the areas of the country have high demand of paints, it is important that the end product gets to the final consumer as at when needed.

1.2 Statement of the problem

The basic problem of this study arises from the lingering theoretical debate on capital structure and the accompanying contradictory evidence bothering on how companies should deploy various factors towards obtaining an optimum capital structure at a particular point in time. Most of the studies carried out in developing countries provide contradictory views on the determinants of capital structure of firms. The few studies on Nigeria such as Odedokun (1995) Olatundun (2002), Eboh (2004), Salawu (2007), Kajola (2008), Adesola (2009), Ezeoha and Francis (2010), Iwarere (2010), Garba (2010) Iorper and Isaac (2012), Ajao and Ema (2012) and Olowoniyi, Akinleye, and Afolabi (2012) a lot more did not only focus on larger sectors of the economy, but have mixed findings on the various determinants of capital structure.

Although there are a few known studies on the Nigerian Manufacturing firms, there is hardly any study known to the researcher, which had a specific focus on the Nigerian Chemical and Paint sub-sector. Most researches on the determinants of capital structure are either of mixed results, foreign origin or very old. Most of the few studies on manufacturing firms did not include liquidity as one of the variables.

The noticeable gap in literature therefore points to the dearth of empirical research on smaller units of the quoted firms of the Nigerian economy in respect of the subject. Therefore,

this study sets to fill this obvious gap by investigating the determinants of capital structure among listed Chemical and Paints companies in Nigeria.

This study uses a longer observable periods and more recent data to examine the impact of firm characteristics and capital structure of quoted chemicals and paints firms in Nigeria as distinct from previous studies that mainly focused on banking, petroleum, and manufacturing industries and used study period that terminated mostly in 2010.

The basic questions which this study therefore seeks to address are;

- i.) How does liquidity impact on the leverage of the listed chemicals and paints firms in Nigeria?
- ii.) How does tangibility influence the leverage of chemical and paints firms in Nigeria?
- iii.) How does firm's size affect the leverage of listed chemical and paint firms in Nigeria?
- iv.) What is the impact of firm's growth on the leverage of listed chemical and paints firms in Nigeria?
- v.) What is the effect of firm' profitability on the leverage of chemical and paints firms in Nigeria?
- vi.) How does age affect the leverage of chemical and paints firms in Nigeria?

1.3 Objectives of the Study

The overall objective of this study is to examine the relationship between firm characteristics and capital structure of listed chemical and paints firms in Nigeria. The specific objectives are to:

- i. determine the impact of firm's Liquidity on the leverage of listed Chemical and Paints Firms in Nigeria;
- ii. Investigate the impact of Tangibility on the leverage of listed Chemical and Paints Firms in Nigeria;
- iii. evaluate the impact of firm's Size on the leverage of listed Chemical and Paints firms in Nigeria;
- iv. Establish the impact of firm's Growth on the leverage of listed Chemical and Paints Firms in Nigeria.
- v. Assess the impact of firm's Profitability on the leverage of listed Chemical and Paints Firms in Nigeria.
- vi. Ascertain the impact of Age on the leverage of chemical and paints firms in Nigeria

1.4 Research Hypotheses

In line with the foregoing objectives of the study, the following null hypotheses are being formulated:

H₀₁: Liquidity has no significant impact on the leverage of listed chemical and paints firms in Nigeria

H₀₂: Tangibility has no significant impact on the leverage of listed Chemical and Paints Firms in Nigeria.

H₀₃: Firm size has no significant impact on the leverage of listed Chemical and Paints Firms in Nigeria;

H₀₄: Firm growth has no significant impact on the leverage of listed Chemical and Paints Firms in Nigeria;

H₀₅: Profitability has no significant impact on the leverage of listed Chemical and Paints Firms in Nigeria.

H₀₆ Age of the firm has no significant impact on the leverage of listed Chemical and Paints Firms in Nigeria.

1.5 Scope of the study

This study examines firm characteristics and capital structure in the Nigerian Chemical and Paints industry for a period of nine (9) years, from 2004 to 2012. (This is due to the fact that the data for this study were collected in 2012 before the internal defence was in 2014, hence, warrant this chosen scope). The dependent variable is leverage and the independent variables are Liquidity, tangibility, firm size, profitability, firm growth and firm's age. The study focuses on firm characteristics and capital structure in all of the 9 (Nine) Chemical and Paints sub-sector of quoted firms on the Nigerian Stock Exchange.

1.6 Significance of the study

First, the study will be of great benefit to the Chemical and Paints companies by revealing the best capital structure variable, which Chemical and Paints companies are expected to adopt, towards adherence to safe and sound practices in Nigeria. This would enable such firms who are in need of new finance to have the best mix of debt and equity.

The study will also be of great benefit to corporate financial managers who are facing the challenge of making decisions on an optimal mix of debt and equity that will maximize wealth of shareholders and minimize cost. The study will also go a long way in particular to help the financial managers and management in general on how to plan the capital structure of their firms as well as maximizing the value of their firms and subsequently the shareholders' wealth.

The research will also be useful to regulatory bodies by making available to them some ideas on how firms characteristics affects its capital structure.

Lastly, the study will be of great benefit to future researchers. It will be of significance by way of adding to the pool of available literature in the subject and providing a frontier for future researches.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter addresses the various contributions by scholars on capital structure, including a critical analysis of the various works on the area. The chapter also conceptualises capital structure and related variables, as well as presents a historical background on the chemical and paints sub-sector in Nigeria. This is in addition to a review of the various determinants of capital structure both on local studies as well as international. Various theories of capital structure are reviewed.

2.2 Conceptualization

Capital structure has attracted a lot of definitions by numerous authors and scholars. Nevertheless, all these definitions are unambiguous and point to the same direction. According to Ali (2011), capital structure refers to the way in which a firm is financing its total assets, operations and growth through issuing equity and debt. Financing can be defined as a method through which money is raised from certain sources that could be used for purchasing and maintaining total assets for financing day-to-day operations of firm and any expected growth. Equity is obtained through the issuance of common stocks, preferred stocks and retained earnings whereas debt can either be long term debt, which include, long term note payable, bonds, debenture and short term debt, for example short term bank loan, account payable. Firms can also issue some hybrid securities apart from the above mentioned sources of finance these hybrid securities involve those securities that have the characteristics of both equity and debt.

Preferred stock refers to the class of ownership structure that poises higher claim on the entire assets in a business and net income more than common stock. There is always a fixed

amount of dividend attached to preferred stock at the end of every economic period usually a year regardless of whether a firm is running at a profit or loss. Any amount borrowed by a firm to finance its business through the issuance of debt instruments is referred to as debt. Firms are charged with interest on any amount borrowed at the end of every period either annually or quarterly.

Capital structure is a mix of debt and equity, and relates to the ability of companies to carry out their stakeholders' needs. The focus of capital structure for this research is in line with the view of Pandey (1999) who sees capital structure as debt level in relation to equity on the balance sheet. This has to do with the financing technique adopted by a firm and also the amount and type of capital that a firm has access to.

Based on the aforementioned, it can be understood that capital structure is a way a corporation finances its assets through the combination of equity and debt. In financial terms, capital structure refers to the way a firm finances its assets by combining equity, debt, or hybrid securities (Saad, 2010). Capital structure therefore, involves a mix of a company's debts, which include both long-term and short-term, common equity and preferred equity. It is a vital tool to guarantee the continual growth on how a firm finances its overall operations through the use of different sources of funds.

In reality, it is difficult to determine the firm's capital structure because different stakeholders have different ideas of what they refer to as capital structure. Financial managers find it difficult to ascertain the exact optimal capital structure. A firm will have to issue various securities in order to realise a combination or mixture that can maximize its overall value referred to as optimal capital structure. Despite the series of research and debate of what constitutes an optimal capital structure, there appears not to be a clear cut position, which represents a consensus about an optimal capital structure for a firm.

Information is crucial when managing a firm's capital structure. Information asymmetries mean that managers know more about their firms than outside investors do. Managers' perception of undervalued equity leads them to more highly levered capital structures. Thus the subsequent section(s) will address such related factors.

2.3 Factors Influencing Capital Structure Decision

This section briefly addresses different features and issues bordering on capital structure that are not contained in the financial statement of the selected sector as being put forward by diverse theories that may have an effect on the firm's debt-equity choice. The factors include:

Information asymmetry

Collaterals

Agency costs

Free cash flow

Taxes

2.3.1 Information asymmetry

The information asymmetry theory of capital structure advocates that firm insiders or managers have confidential knowledge about the firm's return stream or investment opportunities, but outside investors do not. Miller and Rock (1982) document in a model of dividend policy on asymmetric information that the amount of investment and external financing when held fixed will likely yield a cash dividend paid by the firm, which reveals its operating cash flow. An over-expected external financing has tendency for under-expected cash flow, which may not be a good signal to investors. It could therefore be deduced from the prediction by Miller and Rock that announcement of new security issues have tendency to lower stock price.

Consistent with the pecking order theory, firms with more intense information asymmetries have higher market leverage. This occurs probably because the information environment surrounding firms influences the comparative cost of their external capital. Firms with more information asymmetries attempt to avoid the large agency costs associated with equity capital and utilize more debt capital instead.

Empirical research has provided strong evidence on the impact of firms' information environment on the cost of both equity and bond securities. For example, Easley and O'Hara (2004) and Lambert, Leuz, and Verrechia (2007) reported that information asymmetries adversely affect firms' cost of equity. Especially, an increase in the amount of information disclosed would lead to an unambiguous decline in the cost of equity. Mansi, Maxwell, and Miller (2011) report that information contained in analysis forecasts reduces bond yield spreads, especially when the uncertainty about firm value is high. However, it is widely known that debt capital is less information-sensitive in comparison to equity capital.

2.3.2 Collaterals

Tangible assets influence the borrowing decisions of a firm since they are less subject to informational asymmetry and are generally more valuable in nature than intangible assets when it comes to bankruptcy. When the firm uses tangible assets as collateral, the risks associated to bankruptcy costs are minimized, because this will serve as a good signal to the creditors who can demand the selling of these assets any time when there is default in payment of debt. As such, tangible assets serve as good collateral for loans. Scott (1977), argued that an increase in the value of equity by issuing collateralized debt when the present creditors do not have such

guarantee. Firms therefore have an incentive to do so, and one would expect a positive relation between the importance of tangible assets and the degree of leverage.

Consistent with the agency problems between managers and shareholders, Harris and Raviv (1990) assumed that firms with more tangible assets should take more debt. This is as a result of the behaviour of managers who refuse to liquidate the firm even when the liquidation value is higher than the value of the firm as a going concern. Certainly, the possibility of default will increase by increasing the amount of leverage, which could be beneficial only to the shareholders.

Based on the pecking order theory, firms with few tangible assets are more sensitive to informational asymmetry and will therefore issue debt rather than equity when they need external financing (Harris and Raviv, 1991). This could lead to an expected negative relation between the intangible assets and leverage. However, several empirical researches point to a positive relation between collaterals and the level of debt (Rajan and Zingales, 1995; Kremp, Stoss and Gerdesmeier 1999; Frank and Goyal, 2002).

2.3.3 Agency costs

Agency cost is any amount that a firm uses as techniques to align management goal with organization goal that is maximizing the wealth of shareholders. There are two main sources of agency costs: separation of ownership from management and cost associated with using agents. Separation of ownership from management creates agency problem refer to as conflict of interest (between shareholder and managers) that managers will use organization resource for their own benefits instead of maximizing the wealth of shareholders. Cost associated with using agents are indeed agency costs such as monitoring cost, cost of producing financial statements, use of stock option among others Firms usually issue the debt in order to calm the conflict of interest but

appearance of leverage into picture creates another potential conflicts of interest between managers, shareholder and creditors because each of them has different goal.

According to Jensen and Meckling (1976), monitoring expenditures by principal, cost of management time and residual loss constitute the agency costs. It has been clearly recognized by literature that agency cost is important determinant of capital structure (Harris & Raviv, 1990), (Pushner, 1995).

Separation of ownership and control can make the managers to apply deficient work, indulging in bonuses, and select inputs and outputs that best suit their own interest. The managers may decide to invest on projects that will reduce the value of the firm and enhance their control over its resources. For instance, even when it becomes optimal for the investors to liquidate the firm, managers may choose to carry on operations to improve their position. Harris and Raviv (1990) agree that managers have a reason to go on with operations even when the shareholders wish to liquidate. Also, managers have the incentive to invest funds in risky business for shareholders' interest, because if the investment fails, the lenders are likely to bear the cost as the shareholders have limited liability. There are three problems associated with the agency cost: which is overinvestment, underinvestment and Free cash flow as put forward by Smith and Warner (1979).

Underinvestment problem centers on conflict of interest between shareholders and creditors and arises in a situation where by the shareholders influence the decision of managers in their favor at the expense of the creditors. This influenced behavior of manager is as a result of two situations called underinvestment and overinvestment. Underinvestment can be defined as that tendency of manager to be able to avoid low risk projects even though it contains positive net present value because they feel that holding safe project cannot produce surplus profit to the shareholders (Ali, 2011). Generally firms will rather embark on such risky projects that will

produce more return to the shareholders but at the same time, holding risky project does not promise any excess return to bondholders. In addition to this, if a firm performs beyond expectation, and thereafter turns bankrupt then the creditors will bear the whole loss.

According to Bradley and Myers (2000) the underinvestment have great impact on most levered firms, have a greater impact on highly levered firms that are suffering from financial distress. Underinvestment problem is mostly associated to those firms whose primarily value depends solely upon the investment and growth opportunities (Drobetz and Fix, 2003). Myers and Majluf (1984) on the other hand are of the view that equity has the tendency of being wrongly priced under the asymmetric information and if firm decide to finance new project through the issuing of equity, under-pricing of this new equity may be harsh and therefore new investors will gain a lot from those projects that have positive net present value (NPV) whereas the existing shareholders will lose. Myers (1977) posited that the agency conflict between manager and shareholder can lead to high leverage which has the ability to create underinvestment problem.

Overinvestment problem on the other hand refers to tendency of managers to take more risky projects from which the tendency of making extra profit is less. Decrease in firm value can also decrease the debt value but if project turns successful it increases the equity value. Degryse and De Jong (2006) revealed that overinvestment problem is more important than underinvestment problem, while investigating underinvestment and overinvestment problem with Dutch firms, since the probability of failure is more that may even remove the chance of survival for the firm.

Free cash flow (FCF) refers to that amount of cash that is available after funding all the projects that have positive value to managers. Free cash flow is a very vital part of agency cost because it affects conflict of interest between agent manager and principal owner. Firms

experiencing stable free cash flows may face agency conflict between the managers and principals, (Ali, 2011). Conflict of interests arises where there is the tendency of misuse of free cash flow by managers that is not in line with the goal of maximizing the wealth of stockholder and firm value. The argument put forward by Jensen (1986) says that the value of firm with large assets can be increased by high leverage and also generate stable cash flow. Managers may invest excess cash flow in order to enhance the size of firm or for the purpose of purchasing other luxuries for personal use. The firms issue debt as corrective mechanism, in order to avoid this problem because with the issuance of debt company pledge to pay interest and principal when due. If the managers fail to keep to their promise, the creditors can file petition against firm into bankruptcy court. Interest payment on debt helps to reduce the free amount of a manager's discretion and also discourage the managers from embarking on high risk investment.

2.3.5 Taxes

There are many empirical studies from major industrial countries that have explored the impact of taxation on corporate financing decisions. Some are directly linked with tax policy, for example: MacKie-Mason (1990), and Graham (2000). MacKie-Mason (1990) in a study on the tax effect on corporate financing decisions provided evidence of substantial tax effect on the choice between debt and equity. He concluded that changes in the marginal tax rate for any firm will affect financing decisions; a firm with high tax shield will find it difficult to finance with debt. This is because tax shields have the ability to lower the effective marginal tax rate on interest deduction. Graham (2000) advocated that the effect of taxes on corporate financial decisions is very small. On the other hand, DeAngelo and Masulis (1980) concluded that there are other alternative tax shields such a depreciation, research and development expenses, investment deductions, to mention but few that could substitute the economic role of debt.

Titman and Wessels (1998) discover that empirically, this replacement effect is hard to measure, because finding a precise alternative for tax reduction that excludes the effect of economic depreciation and expenses is tedious. Dammon and Senbet (1988) contend that investment decisions made simultaneously with financing decisions will have an effect on income. They argued that increases in acceptable investment-related tax shields as a result of changes in the corporate tax policy are not necessarily associated with reduction in leverage at the individual firm level when investment is allowed to adjust freely. They also explain that the effect of such increase depends seriously on the trade-off between the substitution effect explained by DeAngelo and Masulis (1980) and the income effect associated with an increase in optimal investment.

2.4 Review of Empirical Studies

Several studies shed light on the specific characteristics of firms and industries that determine leverage ratio. Just like in most empirical research, environmental characteristics or firm can be used as a substitute not directly for theoretical builds. There is complication in the relationship between the variables chosen and theoretical determinants in the empirical studies. They can only be justified by establishing more additional theories on empirical observations. Arising from these theoretical standpoints, a number of empirical studies have identified firm-level characteristics that affect the capital structure of firms. Some of these characteristics include age of the firm, profitability, size of the firm, asset structure, firm risk, growth, tax and ownership structure, other factors such as industry, location of the firm, entrepreneur's educational background and gender, form of business, and export status of the firm may explain their capital structure.

It is worthwhile to explore firm characteristics vis-a-vis capital structure in domains other than foreign economies, or other subs-sectors as against the commonly studied sectors and/ or economies. This would provide answers to questions such as, if there are differences in the predictability of determinants of capital structure between developed and developing economies, or between sectors in an economy.

A lot of empirical studies have been conducted by different scholars around the globe on capital structure since the ground paper of Modigliani and Miller (1958). Most of these studies demonstrated that the firm market value is determined by its earnings power and the risk of its underlying assets, and is independent of the way it chooses to finance its investments or distributes dividends.

Chowdhury (2004), conducted yet a study in line with Bangladeshi and Japanese panel data, on capital structure determinants with agency variables and finds that agency-debt bankruptcy risk, growth rate, profitability and operating leverage significantly affect the choice of capital structure. A study by Sen and Oruc (2008) revealed that there is a negative relationship between leverage ratio and total asset profitability, current rate and sales amount. While no significant relation was found for firm growth, a negative relation was established between asset structure and leverage level.

In a panel Data Analysis on the Determinants of capital structure for Turkish firms, Teker, Tassven and Tukul (2009) found that the capital structure of a company is made up of a particular mixture of debt and equity issues to reduce the possible pressures on its long-term financing. An empirical investigation of the impact of specialized assets and other unique characteristics of a firm in explaining the variance in capital structure across firms by Booth *et al.* (2001) believed that developing countries face more or less the same factors in determining capital structure. De Minguel and Pindado (2001), and Ozkan (2001) also looked at the issue of

capital structure decisions, but provided a better insight on the determinants explaining the target debt-to-equity ratio. Getzmann, Lang and Spremann (2010) studied the Determinants of the target capital structure and adjusted speed: Evidence from Asian capital market take profitability, size, market expectation, non-debt tax shield and tangibility of assets as determinants of capital structure. Their findings revealed that Size, tangibility and non-debt tax shield are positively correlated with leverage where as profitability and market expectation show a negative relation.

A long term perspective by Ghosh, Petrova and Wang (2008) examined whether market and operating performance have a long lasting effect on firms' use of leverage. They devised a weighting scheme that take into consideration the effect of profitability during the periods when the firm rebalances its leverage. The findings of the study revealed a strong negative impact between the constructed variable, weighted average historical profitability and the firm's current capital structure. The study concluded that the firm's capital structure is derived from the result of accumulating historical operating profits.

A study carried out by Shan and Khan (2007) on the determinants of capital structure with evidence from Pakistani panel data uses size, profitability, growth opportunity, tangibility, non-debt tax shield and earnings volatility as determinants of capital structure. The study revealed that three of the variables; profitability, growth and tangibility were significantly related to leverage ratio whereas the remaining three variables; non-debt tax shield, size and earnings volatility were not significant in relationship to debt ratio. Another research conducted in Pakistan by Mazha and Nasr (2010) used tangibility, profitability, size and growth as the major determinants of capital structure. The Results showed that both government and private owned companies in Pakistan employ different patterns of financing, and that government owned companies employ more leverage than private companies.

The work of Gurcharan (2010), reviewed optimal capital structure determinants of selected Asian countries, found that profitability and growth opportunities for all selected Asian countries show statistical significant relationship with leverage. Whereas non-debt tax shield has significant negative impact on leverage, firm size shows a positive significant relationship; stock market capitalization and GDP growth rate show significant relationship with leverage while bank size and inflation indicate insignificant impacts on leverage. Although the research was conducted in developing countries, but different sector was looked at in different countries, the study intend to find out if same will be applicable to the Nigerian economy with similar determinants.

The work of San and Heng (2010) on capital structure and corporate performance of Malaysian construction sector investigated the relationship of capital structure and corporate performance of firms. Their work laid more emphasis on construction companies which are listed in Main Board of Bursa Malaysia from 2005 to 2008. All the 49 construction companies were divided into big, medium and small sizes, based on the paid-up capital. Their result shows that a relationship exists between capital structure and corporate performance and also showed evidence that there is no relationship among the variables investigated. In respect of big companies, ROC with DEMV and EPS with LDC have a positive relationship whereas EPS with DC is negatively related. In the short-term, only OM with LDCE have positive relationship in medium companies and EPS with DC has a negative relationship in small companies. In summary, the finding reveals that the relationship exists between capital structure and corporate performance in selected proxies.

Nadeem Ahned Sheikh and Zungium Wang (2015), in a study determinants of capital structure: An empirical study of firm manufacturing industry of Pakistan, found out that profitability, liquidity earning volatility and tangibility are related negatively to the debt ratio,

while firm size has a positive relationship with debt ratio. Growth opportunity and non-debt tax shield are not related to the debt ratio.

Yakub, M.D. and Musharof Hossain¹.K. M. (2015): in a study Impact of firm characteristics on Capital Structure of Banking Industry of Bangladesh investigates the impact of firm characteristics on capital structure of banking industry of Bangladesh where includes 47 banks for the period of 2008 to 2012. Found a negative significant correlation between debt to asset ratio and tangibility of asset study

.A study by Adhegaonkar and Indi (2012) also enhanced the literature of capital structure by conducting a research in Indian chemical industry to find out the determinants of capital structure. 11 companies were selected using convenience sampling. The study covered time period of 6 years from 2006 to 2011. They used seven variables which are size, profitability, tangibility, non- debt tax shield, growth in asset, liquidity and interest coverage ratio as independent variables and capital structure as dependent variable. They used Total Debt to Total Asset as a measure of financial leverage, size is measured as natural logarithm of sales, sales prefers over asset as measure of size of the business because it reflects the current value, Profitability is measured as An Earnings before Interest and Tax(EBIT) to total Assets is uniform measure to study the firm's profitability, tangibility was defined as Fixed Asset to Total Asset (TA), Non Debt Tax Shield is defined as Depreciation to Total Asset, Growth was defined as Incremental Total Asset, that is Current Year TA –Previous Year TA to previous years TA, Interest coverage ratio was defined as Interest to Earnings before Interest and Tax and Liquidity is defined as current asset to current liabilities. Their results show that tangibility, non debt tax shield and interest coverage ratio have linear relationship with capital structure and the rest of the variables are non linear relationship with capital structure.

Previous studies revealed that the level of leverage depends upon the definition of leverage. Several research studies have used both market and book value based measures of leverage (Titman and Wessels 1988, Rajan and Zingales 1995). This can be justified by the argument that optimal level of leverage is determined by the trade-off between the benefit and costs of debt financing.

The work of Chudzinska and Van der Bijl (2007) contributes to the capital structure literature by studying the differences in capital structures and their determinants between Eastern and Western European Small and Medium sized Enterprises. The findings showed that there are differences between the two regions, and that firms have different financing patterns. Eastern European firms were found to have considerably lower amounts of debt in their capital structures. These lower leverage ratios in Eastern Europe were found to be due to the presence of lower corporate taxes and higher bankruptcy costs. This indicates that the position of shielding taxes is stronger in Western Europe. Although bankruptcy costs were found to be crucial in capital structure determination in both regions, they are higher in Eastern Europe, and have a more negative influence on leverage ratios. The research also confirms that agency costs do not have an important effect on capital structures in Small and Medium sized Enterprises. The Tradeoff Theory is proven to explain capital structure determination well on Small and Medium Sized Enterprises in both Eastern and Western Europe.

Gleason, Mathur and Mathur (2000) established the relationship between culture, capital structure and performance, using data from retailers in 14 European countries. Their findings show that there are different cultural Classifications of capital structures by the retailers which are strengthened by the addition of control variables that will influence capital structure. Hennessy and Whited (2005) argued that more liquid firms hold lower level of leverage,

according to their study, debt issue is more attractive especially when it is used to purchase back equity than when the amount borrowed is distributed to shareholders. The work of Barry, Mann, Mihov, & Rodríguez (2008) revealed that firms issue more debt when interest rate is lower as compared to its historical level of interest rate that affects the leverage.

Antoniou, Guney and Paudyal (2000) focused on capital market oriented versus bank oriented institutions by investigating how firms operated in capital market oriented economies in relation to their capital structure. The study used a panel data and a two-step system-GMM procedure, the findings of the study showed that the leverage ratio is positively influenced by the tangibility of assets and the size of the firm, but declines with an increase in firm profitability, growth opportunities and share price performance in both types of economies.

Shah and Khan (2007) argue that relatively little research work on firms' financing decision has been done in developing countries. The major difference between developing and developed world is that in developed world firms finance their leverage with long term debt and short term debt, which contributes mainly to leverage of firms in developing world.

Abor (2008) conducted a study on the determinants of capital structure in Ghanaian firms. They compared the capital structures of publicly quoted firms, large unquoted firms, and small and medium enterprises (SMEs) in Ghana. They used panel regression model for the estimation in the study. The findings revealed that both large quoted and unquoted firms show significantly higher debt ratios than do SMEs, but fail to reveal any significant difference between the capital structures of publicly quoted firms and that of large unquoted firms. The result also reveals that of all the sample groups, short-term debt comprises a relatively high percentage of totals debt. The regression results also indicate that age of the firm, size of the firm, asset structure, profitability, risk and managerial ownership are important in influencing the

capital structure decisions of Ghanaian firms. On the aspect of the SME sample, it was established that factors such as the gender of the entrepreneur, export status, industry, location of the firm and form of business are also important in explaining the capital structure choice. Eldomiaty and Ismail (2009) examined the capital structure of Egyptian firms. The result of the study revealed significant evidence in support of the trade-off theory.

Ajao and Ema (2013), in a study on Determinants of Capital Structure in Nigerian firms discovered some country specific factors such as cultural setting, development of capital markets, monetary policies, political risk and fiscal policies as major determinants of capital structure, and recommend that major country specific factors should be considered carefully in determining the capital structure of a firm.

Olowoniyi, Akinleye, & Afolabi (2012) investigated the determinants of capital structure of listed firms in Nigeria. The study employed Panel econometric approach to analyse panel data obtained from 70 listed firms for the period 2000 to 2009. Their findings suggest that expected growth and size positively influence stock return while tangibility have a negatively impact on capital structure of listed firms. Similarly, Chinaemerem and Anthony (2012) in a study examined the impact of capital structure on financial performance of Nigerian firms. They used thirty non-financial firms listed on the Nigerian Stock Exchange during 2004 to 2010. Panel data was generated and analyzed using ordinary least squares (OLS). Their result showed that a firm's capital structure proxied by debt ratio has a significantly negative impact on the firm's financial measures (Return on Asset, and Return on Equity). The findings are consistency with prior empirical studies and provide evidence in support of agency cost theory.

In another study, Luper and Isaac (2012) examined the impact of capital structure on the performance of manufacturing companies in Nigeria using ex-post facto design of 15 manufacturing companies listed on the Nigerian Stock Exchange for the period of five (5) years

from 2005 to 2009. They used multiple regression analysis method. Their finding shows that there is a negative and insignificant relationship between short-term debt and long term debt to total assets, while total debt to equity is positively related with ROA and negatively related with profit margin. They concluded that statistically, capital structure is not a major determinant of firm performance.

Oke and Babatunde (2011) examined the impact of capital structure on industrial performance in Nigeria using a panel data regression model which considered five (5) quoted firms between the period of 1999 to 2007. The findings of their study showed a positive relationship between firms' performance and equity financing and also a positive relationship between firms' performance and debt-equity ratio. They also revealed a negative relationship between firms' performance and debt financing as a result of high cost of borrowing in the country.

Also, Shehu (2011) investigated the determinants of capital structure in Nigerian listed insurance firms between 2001 and 2010. The analysis were performed using panel data pertaining to fifteen insurance firms obtained from annual report of the sampled firms, using multiple regressions as a tool of analysis. The entire result reveals that leverage is negatively correlated with firm Size and Age, Profitability and Tangibility are positively correlated with leverage and found a controversial relationship between Growth opportunity and leverage.

A study conducted by Garba (2010), examined the determinants of capital structure from a sample of Nigerian companies in the health care sector from 2001 to 2010 using multiple regression. The result reveals that all the independent variables, which include Profitability, Size, Tangibility and firm Growth, have a significantly relationship with leverage.

Little attention is paid to some studies carried out in Nigeria, such as those of Iwarere and Akinleye (2010), David & Olorunfemi (2010), Ezeoha & Francis work (2010) since they focus

more on the relationship between local corporate ownership and capital structure decision. There have been several studies on capital structure focusing on various regions and countries. This section addresses such studies so as to provide an insight as to the various trends on the subject.

2.4.1 Liquidity and Capital Structure

Williamson (1988) asserts that the firm's optimal debt level is limited by the liquidity of the assets which is also dependable on the average usage of the debt associated to an industry. According to Morallec (2001) the significance of liquid assets is associated by the value of its assessment – whether the value of liquid assets is measured by the liquidation value of the firm's assets or by the selling price of assets over the entire life of the firm. Sibilkov (2007) studied a sample of U.S. public companies and concluded that liquid assets increased leverage and debt of the companies. It can be deduced from this finding, that firms with more liquid assets, are more levered. If such firms have challenges with their current liabilities, they are still safe since they have sufficient liquid assets that can cover any outstanding arrears. Lipson and Mortal (2009) in their research showed that more liquid firms are more financed by its internal resources and are therefore less leveraged. Anderson (2002) has proved in his research on British companies the relationship between high leverage, high liquidity and slower growth of the firm.

The trade-off theory advocates that a positive relationship exist between leverage and liquidity. This is because higher liquidity ratio can support a relatively higher debt ratio as a result firms' ability to satisfy short-term contractual obligations without delay, but the pecking order theory has offered a contrary argument. The theory posits a negative relationship existing between liquidity and leverage in view of the fact that firms with enough liquidity may use internally available fund to finance investment. Empirical studies supporting this finding include Deesomsak, Paudyal, and Pescetto (2004), Mazur (2007) and Viviani (2008). A Nigerian evidence is provide in the work of Olayinka (2011) as cited in Kajanantha and Achchuthan

(2013) which shows a positive relationship between liquidity and leverage though in a different domain. DeAngelo, DeAngelo, and Wruck (2002), in their study of the 1989-1998 collapse of L.A. Gear, acknowledge that the firm's generally liquid asset structure supported the distressed company for many years and suggest that asset liquidity is an important determinant of capital structure, as it affects the expected costs of financial distress and expected agency costs. Based on the above empirical works, this study predicts a positive relationship between liquidity and leverage.

2.4.2 Tangibility of Assets and Capital Structure

Several of the theories on capital structure such as the trade off theory argue that the nature of assets owned by a firm in some way determines its choice of capital structure. The degree to which the firm's assets are tangible should result in the firm having greater liquidation value (Titman & Wessels, 1988; Harris & Raviv, 1991). Bradley, Jarell, and Kim, (1984) assert that firms that invest heavily in tangible assets also have higher financial leverage since they borrow at lower interest rates if their debt is secured with such assets. It is believed that debt may be available for use when there are durable assets to serve as collateral (Wedig, Sloan, Assan and Morrisey, 1988). It is further suggested that bank financing will depend upon whether the lending can be secured by tangible assets (Storey, 1994). According to Scott (1977), firms increase the value of their equity by taking wealth from their existing unsecured creditor and the selling of secured debt, Myers and Majluf (1984) also argued that it might be profitable for firms to sell secured debt. Both models reveal that there are possible costs associated with issuing securities on which the firm's managers have better information than outside shareholders. Therefore, firms with collateralized assets are expected to issue more debt to take advantage of this opportunity. The works of Jensen and Meckling (1976), and Myers (1977) indicate that

shareholders of leveraged firms have greater potentials for investment towards wealth maximization.

According to Grossman and Hart (1982) higher debt levels will reduce this tendency because of the increased risk of bankruptcy. Bondholders are inclining to examine the Managers of highly levered firms that use less excessive privilege. The agency costs are higher for firms with assets that are less collateralizable as monitoring the capital outlays of such firms is possibly hard. Thus, firms with fewer collateralizable assets may select higher debt levels to limit their managers' consumption of additional benefits.

Empirical results show a positive relationship consistent with theoretical argument between asset structure and leverage for the firms (Bradley *et al.* 1984, Wedig *et al.* 1988, Friend and Lang, 1988, MacKie-Mason, 1990 Shyam-Sunder and Myers, (1999), and Hovakimian, Hovakimian, and Tehranian 2004). Kim and Sorensen (1986), however, found a significant and negative relationship between depreciation expense and financial leverage.

Other studies specifically suggest a positive relationship between asset structure and long-term debt, and a negative relationship between asset structure and short-term debt Van der Wijst and Thurik, (1993); Chittenden, Hall and Hutchinson (1996); Jordan, Lowe and Taylor (1998); Michaelas, Chittenden, and Poutziouris (1999); Cassar and Holmes (2003); Hall, Hutchinson, and Michaelas (2004), while Shyam-Sunder and Myers (1999) found that tangibility has positive impact on capital structure, Kim and Sorensen (1986) documented negative findings.

Esperança, Ana and Mohammed (2003) found positive relationships between asset structure and both long-term and short-term debt. Marsh (1982) also maintains that firms with few fixed assets are more likely to issue equity since they have less assets to issue as collaterals. In a similar work, MacKie-Mason (1990) concluded that a high fraction of plant and equipment

(tangible assets) in the asset base makes the debt choice more easily. From the foregoing, a positive significant relationship is predicted between tangibility of assets and leverage.

2.4.3. Firm Size and Capital Structure

Several researchers have used size as one of the determinants of capital structure. Warner (1977) and Ang, Chua and McConnel (1982) provided evidence and suggested that direct bankruptcy costs appear to constitute a larger proportion of a firm's value as that value decreases. It is also reported that larger firms tend to be more diversified and less prone to bankruptcy. These arguments suggest that large firms should be more highly leveraged than smaller ones. The cost of issuing debt and equity securities is also related to firm size. Thus, larger firms are more diversified and hence have lower variance of earnings, making them able to tolerate high debt ratios (Castanias, 1983; Titman & Wessels, 1988; Wald, 1999). Smaller firms, on the other hand, may find it relatively more costly to resolve information asymmetries with lenders, thus, may present lower debt ratios (Castanias, 1983). Lenders to larger firms are more likely to get repaid than lenders to smaller firms, reducing the agency costs associated with debt. Therefore, larger firms will have higher debts.

According to Smith (1977), small firms pay more than large firms to issue new debts instead of issuing more long-term debt. This suggests that small firms may be more leveraged than large firms and may prefer to borrow short term debt through bank loans rather than issue long-term debt because of the lower fixed costs related to this option.

Titman and Wessels (1988) discovered further reason why smaller firms having lower debt ratios, where the relative bankruptcy costs are not in the same function with the firm size, It is believed that there are economies of scale in bankruptcy costs: larger firms face lower unit costs of bankruptcy than smaller firms, as shown in Prasad, Green & Murinde (2001).

Several works showed a positive relationship between firm size and leverage for example Barclay and Smith (1995), Friend and Lang (1988) Barton *et al.* (1989), Kim, Mauer, and Sherman (1998) and Hovakimian *et al.* (2004), all show in their findings that smaller firms are likely to use equity finance, while larger firms are prone to issue debt rather than stock. In a Ghanaian study, Aryeetey, Baah-Nuakoh, Duggleby, Hettige and Steel (1994) found that smaller enterprises have problems associated with credit than larger firms. Their results showed that the rate at which large firms apply for bank loans was higher than that of smaller firms. Bigsten *et al.* (2000) conducted a study of six African countries and showed that out of 64% of micro firms, 42% of small firms and 21% of medium firms appear constrained, while there is only 10% for the large firms. Cassar and Holmes (2003), Esperança *et al.* (2003), and Hall *et al.* (2004) found a positive relationship between firm size and long-term debt ratio, but a negative relationship between size and short-term debt ratio, also, Michaelas *et al.* (1999) concluded that a negative relationship exists between firm's size and capital structure.

Olderink (2013) argues that static trade-off theory posits that a positive relationship exist between firm size and the debt-to-capital ratio while a negative relationship is assumed in the pecking-order theory. The positive relationship provided by static trade-off theory as a result that larger firms might be able to reduce the transaction costs associated with long-term debt issuance. Nuri and Archer, S. (2001) agree that the trade-off theory is more consistent with the lodging and retail industries in the UK than the pecking order theory. Thus, results of his study were consistent with the propositions of the Pecking order theory, the trade off theory and the Agency Cost theory.

Some studies also showed a negative correlation between firm size and short-term debt ratio Chittenden *et al.* (1996). Titman and Wessels (1988) argued that, small firms seems to use more short-term finance than the larger firms since smaller firms have higher transaction costs

when they issue short-term debt or equity. The study is of the opinion that the size of the firm can grant it more opportunity to external finance because the size could connote growth. A positive relationship is therefore expected between size and leverage.

2.4.4 Growth and Capital Structure

Growth is likely to place a greater demand on internally generated funds and push the firm into borrowing (*Hall et al.*, 2004). According to Marsh (1982), firms with high growth will capture relatively higher debt ratios. In the case of small firms with more concentrated ownership, it is expected that high growth firms will require more external financing and should display higher leverage (Heshmati, 2002). Aryeetey *et al.* (1994) maintain that growing firms appear more likely to use external finance, although it is difficult to determine whether finance induces growth or not. As enterprises undergo various stages of growth, that is micro, small, medium and large scale, they are also expected to shift financing sources. They are first expected to move from internal sources to external sources.

As mentioned earlier, firms that are financed by equity have a propensity to invest optimally so as to appropriate wealth from the firm's bondholders. The cost of this agency relationship is expected to be higher for firms in growing industries which are more flexible in the choice of their future investments. Evidence on the relationship between firm growth and capital structure were provided by Kester (1986), Rajan and Zingales (1995). Expected future growth should thus be negatively related to long-term debt levels. Myers (1984) nevertheless, acknowledged that this agency problem could be reduced if the firm issues short-term rather than long-term debt. This suggests that short-term debt ratios might in fact be positively related to growth rates if growing firms' proxy short-term financing for long-term financing. Jensen and Meckling (1986), Smith and Warner (1979), and Green yet argued that the agency costs will be mitigated if firms issue convertible debt. This suggests that convertible debt ratios may be positively related to growth opportunities. It should be noted therefore that growth opportunities add value to the firm but cannot be collateralized. For this reason, the arguments suggest a negative relation between debt and growth opportunities.

Myers (1977), however, was of the opinion that firms with growth opportunities will have a smaller proportion of debt in their capital structure. This is because the conflicts of interest arising between debt and equity holders are particularly associated to assets that provide the firm the option to carry out such growth opportunities in the future. He argued further that growth opportunities can produce moral hazard situations and small-scale entrepreneurs have an incentive to take risks to grow.

There are a lot of arguments regarding the correlation between growth rate and leverage. Based on the pecking order theory predictions, a firm will first use internally generated funds which may not be sufficient for the firm, and the next option for the firms is to use debt financing which indicates high leverage Drobetz and Fix (2003). In line with agency costs, growing firms are expected to be higher in leverage since these firms have more flexibility with regard to future investments. The basis being that bondholders have the feelings that those firms may embark on risky projects in future since they have the option of choosing between risky and safe investment opportunities. With the thought that their investments will be at risk in future, bondholders will propose higher costs of lending to growing firms. Some studies documented positive relationship between sales growth and leverage (Kester, 1986; Titman & Wessels, 1988; and Barton *et al.* 1989). Other evidence suggests that higher growth firms use less debt. Kim & Sorensen (1986), Stulz (1990), and Al-Sakran (2001) found future growth to be positively related to leverage and long-term debt. Cassar & Holmes (2003) and Hall *et al.* (2004) showed positive relationship between growth and both long-term debt and short-term debt ratios, while Chittenden *et al.* (1996), Jordan *et al.* (1998), and Esperança *et al.* (2003) all found mixed evidence.

Different research studies have used different measures of growth; like market to book value of equity, research expenditure to total sales value and annual percentage increase in total assets (Titman and Wessels, 1988). The study with assumption of the pecking order theory

which provides negative relationship between growth and leverage, but disagree with the positive relationship provided by the trade off theory. Indicators of growth include capital expenditures over total assets and the growth of total assets measured by the percentage change in total assets, it is predicted that leverage level of Chemical and Paints Firms in Nigeria is significantly positively related to the growth opportunities.

2.4.5 Profitability and Capital Structure

There are no consistent theoretical predictions on the effects of profitability on leverage. Based on the trade-off theory perspectives, more profitable firms should have higher leverage since they have more income to shield from taxes. The free cash-flow theory also suggests that more profitable firms should use more debt in order to control managers, and to encourage them to pay out cash as a substitute to spending money on unproductive projects. However, from the pecking-order theory point of view, firms prefer internal financing to external financing. More profitable firms have a less need for external financing and hence should have lower leverage. The pecking order theory of capital structure also shows that if a firm is profitable, then it is more likely that financing would be from internal sources rather than external sources. In other words, firms tend to use internally generated funds first and then resort to external financing. This implies that profitable firms will have less amount of leverage (Myers and Majluf, 1984). By this, profitable firms that have access to retained profits can rely on them as opposed to depending on outside sources (debt). Murinde, Agung and Mullineux (2004) observe that retentions are a principal source of finance. Titman and Wessels (1988) and Barton *et al.* (1989) agree that firms with high profit rates would maintain relatively lower debt ratios since they can generate such funds from internal sources.

Most empirical studies observe a negative relationship between leverage and profitability. For example, Rajan and Zingales, (1995), Huang and Song, (2002), Booth, Aivazian, Demircug-Kunt, and Maksimovic, (2001), (1988), Friend and Lang, (1988) and Kester, (1986) in their studies reported a negative relationship between profitability and capital structure. Van der Wijst and Thurik, (1993), also found a negative relationship. Recently, Gatsi and Akoto's (2010) study on capital structure and profitability of Ghanaian Banks revealed a significantly negative association between short-term debts and net interest margin (profitability).

However, Ross (1977) and Leland and Pyle's (1977) approaches the choice of the firm's capital structure that signals to outside investors the information of insiders, in which case investors take larger debt levels as a signal for the true return streams of the firm and management's confidence as the performance of the managers. According to them, investors take larger levels of debt as a signal of higher quality. They then concluded that profitability and leverage are positively related. In addition, Petersen and Rajan (1994) established a positive link between profitability and capital structure. Petersen and Rajan (1994), however, found a significantly positive association between profitability and debt ratio.

The study provided that firms will prefer internal finance to external finance because external finance is more riskier. Based on the pecking order theory, this study proposes that a negative relationship exist between profitability and leverage.

2.4.6 Age and Capital Structure

Age is a significant determinant of capital structure of a firm, for instance Abor (2005), Shehu (2011). The age of the firm connotes a standard measure of reputation in capital structure models (Shehu, 2011). As a firm grows longer in business, it establishes itself as an ongoing business and therefore increases its capacity to take on more debt; hence age is positively related to debt.

To address issues of creditworthiness, Diamond (1984) suggests the use of firm reputation, which must have been developed over the years. With respect to a firm's age relationship with capital structure, a Nigerian evidence was provided by Shehu (2011), in a study determinants of capital structure in Nigerian insurance firms, although it was on a different domain from that of this study. By implication, reputation entails good name a firm has built up, which must factor in its age; this is recognized by the market, which has observed the firm's ability to meet its obligations efficiently. This perspective has also been seconded within the context of small business (see Ang, 1991). It is important to note the extension of firm risk to the personal area of the business person to be a way of managing the agency costs resulting from cases of more opportunistic behaviour. Given the fragmentation of information, and the high costs of control and evaluation, the firm's and the entrepreneur's reputations become a valuable asset in the management of relations between the principal and the agent (Landström, 1993). Petersen and Rajan (1994) found that older firms should have higher debt ratios since they should be higher quality firms. Hall et al. (2004) agreed that age is positively related to long-term debt but negatively related to short-term debt. Esperança et al. (2003), however, found that age is negatively related to both long-term and short-term debt. Green, Murinde and Suppakitjarak (2002) also found that age has a negative influence on the probability of incurring debt in the initial capital equation, and no impact in the additional capital equation. This study therefore hypothesized that age of the firm is positively related to leverage.

2.5 Theoretical Framework

The traditional theory of capital structure states that there exists a right combination of debt and equity in the capital structure, where the market value of a firm is maximum. According

to this theory, the existence of debt in the capital structure is to a specific point, after which, any increase in leverage would lead to the reduction in value of the firm.

This means that there exists an optimum value of debt to equity ratio that places the weighted average cost of capital (WACC) lower than the market value of the firm. As soon as the firm reaches that optimum value of debt to equity ratio, the cost of equity rises to give a negative effect to the WACC. Above the threshold, the WACC increases and market value of the firm starts a downward movement. The theory assumed that the rate of interest on debt will remain constant for a period of time and thereafter increased with increase in leverage. The expected rate by equity shareholders also remains constant or increase gradually. After which the equity shareholders, perceiving a financial risk and then from the optimal point and the expected rate increases speedily. As a result of activity of rate of interest and expected rate of return, the WACC first decreases and then increases.

The modern theory of capital structure originated from the seminal paper of Modigliani and Miller (1958) which deployed some restrictive set of assumptions and contended in their first proposition that the impact of financing on the value of the firm is irrelevant. The Miller and Modigliani (M&M) proposition posited that there would be arbitrage opportunities in the perfect capital market provided the value of the firm depends on its capital structure. The theories below try to address some of the imperfections by relaxing some of the assumptions made in the M&M model such as no taxes, no transactions or distress costs, common objectives among decision-makers (value maximization) and perfect information.

The following theories in capital structure are discussed, they include;

Static Trade-Off Theory

The Signalling Theory

Agency Costs Theory

Pecking Order Theory

2.5.1 Static Trade-Off Theory

The trade off theory developed by De Angelo and Masulis (1980) postulate the non-existence of optimal capital structure. They posit that a firm sets its target debt level and then works towards it. The theory refers to the idea that a company chooses how much debt finance and how much equity finance to use by balancing the costs and benefits. It identifies the benefit of financing with debt, the tax benefit of debt, as well as a cost of financing with debt, and financial distress including bankruptcy costs of debt.

The static trade off theory of capital structure predicts that firms will choose their mix of debt and equity financing to balance the cost and benefits of debt. It should however be realized that a company cannot continuously minimize its overall cost of capital by employing debt. There is a combination of debt and equity which minimizes the firm's average cost of capital and maximizes the market value per share (Myers, 1984).

The trade-off between cost of capital and earnings per share (EPS) set the maximum limit to the use of debt. However, other factors should also be evaluated to determine the appropriate capital structure for a company. According to the trade off theory, the tax advantages of debt will be traded off against the costs of financial distress for which the tax advantage is lower. Firms with non-debt tax shields and firms with higher costs of financial distress will have lower leverage (De Angelo and Masulis, 1980). As debt financing causes monitoring by lenders and reduces the free cash flow, debt can be used as an instrument to bring together the interest of managers and shareholders (Jensen & Meckling 1976, Jensen 1986). However, debt financing

can equally cause conflicts of interests between shareholders and creditors, which could result to optimal investment policies.

This theory recognizes that there are three competing forces responsible for the firm's target leverage. They are taxes, bankruptcy costs, and agency costs. Tax-based and agency-cost-based models belong to the static trade off models as advocated by Kraus and Litzenberger (1973), Jensen and Meckling (1976), Grossman and Hart (1982), Bradley, Jarrel and Kim (1984), Jensen (1986), Stulz (1990) and Chang (1999).

The theory has suffered many criticisms by many scholars, some of which believe that it creates conflict of interest between shareholders and creditors. Graham (2000), Miller (1977) and Goyal, Lehn, and Racic (2002) both are on the opinion that, the tax savings appear larger than the bankruptcy costs, this implies that many firms are highly levered than they appear to be. Myers (1984) being one of the major critics of this theory states that it negates conventional debt ratio derivable from tax-paying firms.

2.5.2 The Signalling Theory

Signaling theory as developed by Ross (1977) assumes that managers being insiders have a better knowledge about the true distribution of future returns of the firm whereas investors do not. Investors choose larger level of leverage as a signal of the firms' current stable income, future cash flows as well as managers' reliance on the output of their firm. He posited that investors take higher levels of debt as a signal of higher quality. Profitability, which is a proxy of quality performance is therefore viewed to be positively correlated with leverage, as concluded by the proponents of the signaling theory.

In a situation where by the capital market find it very difficult to differentiate between good and bad borrowers, profitable firms can signal their quality by taking some actions that would be expensive for non profitable firms to take (Spence, 1974). A good number of the

signaling models in financial economics have to do with how firms make use of their capital structure, and managerial ownership as a signal for their underlying value to the capital market (Myers and Majluf, 1984; Ross, 1977). In a broader sense, there could be situations where by a firm wants to embark on a particular line of action in order to enable her gain credibility with the other players in the game.

Brander and Lewis (1986, 1988) have developed models in which firms commit themselves to being insistent in their product markets by taking on additional debt. The firm that increases its debt commits itself to increasing output for each level of its competitor's output. In this game-theoretic model, the firms' strategic options are limited to output decisions.

On the other hand, aggressiveness in the product market can be in the form of any of the following which include; product segregation, increase in advertisement, improvement in product quality, segmentation and focus, and many more. Another scenario is the situation whereby in some markets firms may consider it necessary to invest in reputable assets in order to compete well and be successful (Klein & Leffler, 1981; Shapiro, 1982,). As time goes on, these reputable assets will form a basis of security for lenders, even though they are firm specific and intangible in nature.

The firm's reputation will be at risk and can be seriously damaged if it defaulted on loan payment. The firm can find itself in a situation in which, if there is reduction in its level of advertising, the action can be taken by the capital market as proof that the firm is in some kind of trouble and maybe it is planning to harvest and exit the market. The implication is that once there are investments in brand name among others, it will be realized as reputational assets, they may require more continue expenditure like maintenance in order to keep physical assets from depreciating too fast. The presence and maintenance of reputable assets may therefore be taken

by lenders as commitment by the firm to be an aggressive competitor in its product market, leading to lower cost of debt financing for such firms.

2.5.3 Agency Costs theory

Another theory that has generated empirical support is the agency theory which was built on the work of Fama and Miller, (1972) and Jensen and Meckling, (1976). They posited that capital structure is determined by agency cost that is cost due to conflict of interest. Jensen and Meckling (1976) also suggested that, for an optimal debt level in capital structure, the agency costs arising from the divergent interest of managers with shareholders and debt holders should be minimized. They suggest that either ownership of the managers in the firm should be increased in order to align the interest of managers with that of the owners or use of debt should be motivated to control managers' tendency for excessive perk consumptions. Jensen (1986) presents agency problem associated with free-cash flow. He suggests that free cash flow problem can be somehow controlled by increasing the stake of managers in the business or by increasing debt in the capital structure, thereby reducing the amount of "free" cash available to managers.

Corporate managers are the agents of shareholders, a relationship form with conflicting interests. The separation of management and ownership in a firm causes the agency problems. Because both management and shareholders attempt to act in their own self-interests, managers may make decisions that are not in line with the goal of maximization of shareholders' wealth.

In Agency theory, the analysis of such conflicts is now a major concern of the finance literature. The distribution of cash to shareholders creates major conflicts that have received little attention, this Payout to shareholders reduce the resources under managers' control, thereby reducing managers' power, and making it more likely they will invite the monitoring of the capital markets which occurs when the firm must obtain new capital (Easterbrook, 1984; Rozeff,

1982). Financing projects internally avoids this monitoring and the possibility the funds will be unavailable or available only at high explicit prices.

Murphy (1985) posited that Managers have the incentives to cause their firms to grow beyond the optimal size. Growth increases managers' power by increasing the resources under their control. It is also associated with increases in managers' compensation, because changes in compensation are positively related to growth in sales.

There are several positive net present value projects that the shareholders would accept if the firm were financed totally by equity, but would reject these projects if the firm is partly financed by debt. Although the returns on these investments may be profitable large enough but, might not be sufficient enough to repay the debt holders. In this case, the gain from the project will be accruing to debt holders rather than shareholders. Thus, management has an incentive to reject positive Net Present Value projects, even though they have the potential to increase firm value (Hirth and Uhrig-Homburg, 2007), unless free cash flow is given back to investors, management has an incentive to destroy firm value through empire building and bonuses (Jensen, 1986).

Jensen and Meckling (1976) argue that these relationships between the agency costs of debt and the amount of the debt may result in an optimal capital structure. Thus, optimal capital structure can be achieved in two distinct ways. First, agency costs of debt may offset the tax advantage of debt financing. The theory predicts that growth firm should have less debt. Firms that are expected to make profitable investments should have less need for discipline that debt provides. Regulated firms are likely to have fewer agency problems and so debt is less valuable as a control mechanism. There is a trade-off between the tax benefits and agency costs since both the tax benefits and agency costs of debt are positively related to the amount of the debt employed. Secondly, an optimum proportion of outside debt and equity may be chosen in order

to minimize total agency costs. This is the trade-off between agency costs of debt and agency costs of equity, even in a world without taxes.

2.5.4 Pecking Order Theory

Pecking order theory of capital structure addresses the efficacy of various financing sources such as retained earnings, debt financing, and equity financing (vis-a-vis the firms' profitability, without recourse to a target debt level). The pecking order theory of capital structure states that firms do not have a target amount of debt in mind, but that the amount of debt financing employed depends on the profitability of the firms, which could utilise funds from different sources until they are exhausted or the cost becomes too high (Servaes and Tufano, 2006).

The theory which is based on asymmetric information reflects the problems created by asymmetric information, which implies that managers know more about their firms than outside investors do. From many researches conducted, for example Rose (1977), and Myers and Majluf (1984) using the asymmetric information models, it is documented that leverage increases with the extent of the informational asymmetry.

The theory emphasizes that firms will not have a target optimal capital structure, but will instead follow a pecking order of incremental financing choices that places internally generated funds at the top of the order, followed by debt issues, and finally only when the firm exhausts its debt capacity, issue equity financing. The cost of equity includes the cost of new issue of shares and the cost of retained earnings. The cost of debt is cheaper than the cost of both these sources of equity funds. Considering the cost of new issue and retained earnings, the latter is cheaper because personal taxes have to be paid by shareholders on distributed earnings while no taxes are paid on retained earnings as also there is no floatation costs incurred when the earnings are

retained. As a result, between the two sources of equity funds, retained earnings are preferred. It has been found in practice that firms prefer internal financing. If the internal funds are not sufficient to meet the investment outlays, firms go for external finance, issuing the safest security first. They start with debt, then possible hybrid securities such as convertible debentures, then perhaps equity as a last resort. There are other theories, such as Modigliani and Miller's theory and also those based on agency theory.

. This study is therefore centred on the "Pecking Order Theory" (POT) and Static Trade-Off Theory based on the results of the earlier research studies that were conducted in developed economy using the theories as indicated above. Thus, given the need for adopting these theories to the Nigeria's context became essential. This study therefore adopts the pecking order theory and trade-off theory.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter discusses the methodology of this study. Areas addressed include research design, population, sample size, selection and techniques employed for data gathering and data analysis.

3.2 Research Design

The research design adopted for the study is correlation research design. It is sufficient and suitable for determining the relationship that exists between leverage and the variables used as firms characteristics (and capital structure variables) in the Nigerian Chemical and Paints Firms.

3.3 Sources and Method of Data Collection

The study used panel data generated from secondary source. The data was extracted from the annual reports and accounts of the sampled companies obtained from the NSE fact book for the years 2004 to 2012 editions published by the Nigeria Stock Exchange. The study focuses on the Chemical and Paints companies of the Nigeria Stock Exchange, which is the domain.

3.4 Population and Sample Size

The population of the study consists of all the Nine Chemical and Paints companies quoted on the Nigeria Stock Exchange between 2004 and 2012. One of the firms was dropped because it was delisted as at 2012. Consequently, the remaining 8 firms were used as the sample size of the study.

LIST OF CHEMICALS AND PAINTS FIRMS IN NIGERIA AS AT 2012:

List of Firms	Years of Listed
African Paints (Nigeria) plc	1996
Berger Paints plc	1974
Chemical and Allied Products plc	1957
DN Meyer plc	1960
IPWA plc	1992
Paints and Coatings Manufacturers Nigeria plc	2010
Portland Paints and Products Nigeria plc	2009
Premier Paints plc	1988

3.5 Techniques of Data Analysis

The ordinary least squares (OLS) regression is employed to establish whether relationship exist between leverage ratio and the various independent variables in the model. Stata software is being used to analyse the OLS regressions.

3.6 Variables Definition and Measurement

Table 3.6

Variable	Definition/Name	Measurement
LEV	Leverage	Total debts divided by total Assets
LIQ	Liquidity	Current Asset divided by Current Liabilities
TAN	Tangibility	Fixed Assets divided by Total Assets
SIZE	Size	Natural log of total Assets
GWTH	Growth	Percentage Change in Net Total Assets

PRF	Profitability	Profit After Tax divided by Total Assets
AGE	Age	Natural log of Number of Years of Firm's since Incorporation
$\alpha_0 =$	Constant or intercept	
$\alpha_{1-6} =$	Coefficients of explanatory variables	
$\varepsilon_t =$	Error term representing other explanatory variables that were not captured	
it	Panel data subscript (time series and cross-sectional)	

Source: Compiled by the Author from various literatures

3.7 Model Specification

The model used in this study is originally adopted from Shehu (2011), as follows:

$$DR_t = f(TANG_t, SIZE_t, GROWTH_t, PROF_t, AGE, \varepsilon_t)$$

This is arranged as follows:

$$LEV = f(LIQ, TAN, SIZE, GWTH, PRF, AGE) \dots \dots \dots \text{ i}$$

In order to incorporate the time and panel is expressed as:

$$LEV_{it} = \alpha_0 + \alpha_1 LIQ_{it} + \alpha_2 TAN_{it} + \alpha_3 SIZE_{it} + \alpha_4 GWTH_{it} + \alpha_5 PRF_{it} + \alpha_6 AGE_{it} + \varepsilon_{it} \dots \dots \dots \text{ ii}$$

3.8 Justification of Methods and Techniques

Linear regression is the chosen model for this study due to its flexibility, strength, and high predictive ability. Regression model enables the concurrent analysis, harmonisation and interpretation of several related variables. This model will enable tests of linearity, normality, stability of variance and independence of observations, which are essential in such parametric analysis. The OLS technique is sufficient because a pilot test of heteroschedasticity was

insignificant which suggest that there is no problem of heteroschedasticity. Thus, the OLS result would be sufficient and not spurious.

The ordinary least squares (OLS) technique of regression is adopted for this study, and is used to address the estimated parameters of the respective variables of the models, which aligns with objective of the study. This is in line with studies carried out by Dodd (1986), and Chowdhury (2004) cited in Lima (2009), as well as cited in Garba (2010).

CHAPTER FOUR
DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter begins with analysis of the variables using descriptive statistics. This is immediately followed by correlation matrix along with the presentation of the results of the model estimations. Inferences were drawn from the tests of the hypotheses stated in chapter one. In addition, findings are discussed and policy implications are explained. The chapter concludes the chapter with some various robustness tests so as to ensure that the results from the study are not misleading.

4.2 Descriptive Analysis

Table 4.1 shows the descriptive statistics of both the dependent and independent variables where minimum, maximum, mean, standard deviation and kurtosis are reported.

Table 4.1: Descriptive Statistics of

VARIABLES	LEV	LIQ	TAN	SIZE	GWTH	PRF	AGE
MINIMUM	1.83	0.42	-5.72	4.17	-2.03	-0.81	3.04
MAXIMUM	3.22	44.85	35.94	7.24	3.92	0.67	3.95
MEAN	0.09	4.20	2.12	5.49	-0.10	-0.04	3.60
STD DEV	1.13	8.61	6.98	0.93	1.98	0.31	0.30
SKEWNESS	0.39	3.21	3.07	-2.99	-5.55	-1.95	0.86
KURTOSIS	3.33	12.94	15.07	17.32	41.90	8.74	2.38
OBSERV	72	72	72	72	72	72	72

Source: output from STATA 9.1 generated by the author, 2012

Table 4.1 contains the descriptive statistics for all the variables involved in the study. There are 72 observations in the panel for the variables as this data contains strongly balanced panel of 8 chemical and paint firms for 9 years from 2004-2012. Average value of dependent variable (leverage) is 9%. Standard deviation which is a measure of dispersion shows that leverage of the firm in the panel deviates from its mean around 1.13%. The least value of firm leverage in the panel is -1.83% while the highest value of leverage is 3.22%. An interesting aspect about the result is the high standard deviation of liquidity (8.61), tangibility of asset (6.98) and growth (1.98) in relation to the standard deviation of other variables included in the model of the study which ranges from 0.30 to 0.93. This high standard deviation of tangibility, liquidity and growth suggest that the sample firms differ in terms of assets owned and maturity. This is supported by their average value of 4.20, 2.12 and -0.10 respectively.

However, the mean value of size is 5.49, and standard deviation of 0.93. This implies that there were moderate differences of firm size as measured by natural logarithm of total assets across the sample of listed chemical and paints in Nigeria, and this is as a result of the value of its standard deviation. More so, the mean value of age is 3.60 and its standard deviation is 0.30. This implies the presence of moderate variation in age across the sample of listed chemical paints in Nigeria. Finally, the average value of performance shows a value of -0.044 with standard deviation of 0.30. These show there were no wide variations among the value of profitability as measured by ratio of profit after tax to total assets across the sample of listed chemical and paints firms in Nigeria.

4.3 Correlation Matrix

This section presents the correlation between the dependent variable and independent variables and among the independent variables themselves. The analysis of the correlation is shown in table 4.2.

Table 4.2 correlation matrix of dependent and independent variables.

VAR	LEV	LIQ	TAN	SIZE	GWTH	PRF	AGE
LEV	1.0000						
LIQ	-0.0802	1.0000					
TAN	-0.4531*	0.3321*	1.0000				
SIZE	0.1427	0.3029*	0.2010	1.0000			
GWTH	0.2840*	0.1519	0.5002	0.1207	1.0000		
PRF	0.2630*	0.7344*	0.2448*	0.2991*	0.0255	1.0000	
AGE	0.2916*	0.1200	0.1215	0.4788*	0.1655	0.0240	1.0000

Source: output of data analysis by author 2012 using STATA 9.1

Table 4.2 shows correlation between the dependent variable which is proxied by leverage and independent variables proxied by liquidity (LIQ), tangibility (TAN) size (SIZE), growth (GWTH), profitability (PRF) and age (AGE) of listed chemical and paints firms in Nigeria as well as the correlation among the independent variables. The table shows that liquidity is negatively associated with leverage of listed chemical and paints in Nigeria. Also, the tangibility of assets which is measured by fixed asset divided by total asset is negatively and significantly associated with the leverage. Thus both tangibility and leverage moved in an inverse direction which implies that the more the assets, the lesser the leverage of listed chemical and paints firms in Nigeria. In addition, growth, profitability and age of listed chemical and paint

firms are positively associated with leverage at about 28%, 26% and 29% respectively all significant at 1% level. This implies that the older the firm, the higher the leverage and the more the firm sells and makes profit, the more the firms engage in debt finance. However, size is positively associated with the leverage of listed chemical and paint in Nigeria.

4.4 Heteroscedasticity Test

This test is conducted to know if the disturbances appearing in the population regression are homoscedastic. The presence of heteroscedasticity signifies that it contradicts one of the assumptions of classical linear regression which states that the disturbances appearing in the population regression are homoscedastic, implying that the variance of the error term is constant. A low chi-square value with low probability of chi-square indicates the presence of heteroscedasticity while a low chi-square with high probability of chi-square indicates the absence of heteroscedasticity.

In the result obtained from the heteroscedasticity test conducted in this work, the chi-square value of 1.08 is low and the p-value of 0.2982 is insignificant indicating the absence of heteroscedasticity and compliance with one of the assumption of classical linear regression. Therefore, as a result of the absence of heteroscedasticity, the regression result for the Ordinary Least Square (OLS) technique is interpreted.

4.5 Presentation and Discussion of Regression Result

The summary of the regression results is presented in Table 4.3 while the detailed results are captured in the appendix.

4.5: Summary of Regression Result

Variables	Coefficient	Std error	t-values	P-values
LIQ	0.0644607	0.0191963	3.36	0.001
TAN	0.0668466	0.0186569	3.58	0.001
SIZE	0.1852801	0.1408684	1.32	0.193
GWTH	0.0532447	0.0633366	0.84	0.404
PRF	2.063642	0.5268217	3.92	0.000
AGE	1.40338	0.424601	3.31	0.002
R-square	0.4128			
Adj R²	0.3586			
F-Stat.	7.62			
F-Sig	(0.0000)			

Source: Extracted from STATA 9.1 Output by the author, 2012

4.5.1 Liquidity and Leverage

The regression result in respect of the association between liquidity and leverage of shows that liquidity is positively related with leverage and significant at 1% level. This result implies that a higher investment in short liquid asset, would enhance the leverage of listed chemical and paints firms in Nigeria. The outcome may be as a result of the argument put forward by Sibiklov (2007) that liquid assets increase leverage and debt of companies, which implies that firms with more liquid assets are more levered because if such firms default in payment of their debt, they are on the safe side since they have sufficient liquid assets that can cover the debt. The result is also in consonance with trade off theory which advocates positive relationship between high liquidity and leverage because higher liquidity ratio can support a relatively higher debt ratio as a result of firm's ability to satisfy short term contractual

obligations without delay. The result therefore is in line with the works of Olayinka (2011), Karjanantha and Achchuthan (2013) but contradict those of Mazur (2007), Viviani (2008) and Deesomsak et al (2004).

4.5.2 Tangibility and Leverage

The regression result in respect of the association between tangibility and leverage shows that tangibility is negatively related with leverage as the coefficient value is -0.066, and it is statistically significant at 1 percent level. This implies that tangibility is negatively correlated with leverage of listed Chemical and Paint firms. The negative relationship means that a one point increase in tangibility will reduce leverage by 0.07, this may be as a result of low investment in tangible asset as most listed chemical and paint firms may not have enough durable assets to serve as collateral. The result confirms with the study of Bradley *et al.* (1984), Kim and Sorensen (1986), Wedig *et al.* (1988), Friend and Lang, (1988), MacKie-Mason, (1990), Shyam-Sunder and Myers, (1999), and Hovakimian *et al.* (2004), however, the result contradicts the views of Van der Wijst and Thurik, (1993); Chittenden *et al.*, (1996); Jordan *et al.*, (1998); Michaelas *et al.*, (1999); Cassar and Holmes, (2003); Hall *et al.*, (2004), and also the positive relationship between size and leverage earlier predicted in this study studies.

4.5.3 Size and Leverage

The regression result reveals that size of the firms which is measured by the natural logarithm of total assets is negatively and insignificantly related to leverage as the coefficient value shows -0.1852801. The result also show that size has no significant impact on leverage as the p-value is 0.193 which is not significant at any level. Though many scholars suggested that size should be a determinant of capital structure, which is also the expectation of this study may be as a result of less diversification of listed chemical and paint firms and higher variance of

earnings making them unable to tolerate high debt ratio. This result is in line with the study of Chittenden *et al.* (1996) and Michaelas *et al.*, (1999). and contradicts the study of Barclay and Smith, (1995), Friend and Lang, (1988) Barton *et al.* (1989), Kim *et al.* (1998) and Hovakimian *et al.* (2004), and also contradicts the earlier prediction of a positive relationship in this study.

4.5.4 Growth and Leverage

Growth of the firm which is measured as the percentage of change in net total shows a positive relationship with leverage as the coefficient value is 0.0532. It can be deduced from the regression result that there is no significant relationship between growth of the firms and leverage as the p-value of 0.404 shows that growth variable is not significant at any level. This implies that increase or decrease in growth of listed chemical and paint firms in Nigeria will have no effect on leverage. This result is in line with the work of Kester (1986); Kim and Sorensen (1986), Titman and Wessels (1988); Barton *et al.*(1989), Stulz (1990), Al-Sakran, (2001), Cassar and Holmes (2003) and Hall *et al.* (2004). The result is contrary to the earlier prediction of this study.

4.5.5 Profitability and Leverage

Profitability which is measured as a ratio of profit after to total assets showed a positive relationship with leverage as the coefficient value is 2.0636, this implies that, the higher the profitability the higher the leverage and vice-versa. It is also seen in the regression result that profitability is significantly related to leverage at 1% as the p-value is 0.000 which implies that one percent increase in profitability will lead to 2.06 increases in leverage. This is in line with the trade-off theory perspective that more profitable firms should have higher leverage since they have more income to shield from taxes. The result is in line with the study of Titman and Wessels, (1988), Friend and Lang (1988), Kester (1986), Petersen and Rajan (1994), and

contrary to the findings of Rajan and Zingales (1995), Booth *et al.* (2001), Huang and Song (2002), The result also contradicts the prediction made in this study of negative relationship between profitability and leverage.

4.5.6 Age and Leverage

The age of the firm which is measured as the natural logarithm of the number of years of firms since incorporation shows a positive relationship with leverage as the coefficient value is 1.40338, an indication that the higher the age of the listed chemical and paint firms in Nigeria, the more the leverage. The regression results also show a p-value of 0.002 which implies that age significantly influences leverage of listed chemical and paint firms in Nigeria. A one point increase in age of the firms will lead to 1.40 increase in the firm's leverage. This may be because age of the firm connotes a standard measure of reputation in capital structure models and as a firm grows older in business, it establishes itself as an ongoing business and therefore increases its capacity to take on more debt. The result is in line with the works of Diamond (1984), Shehu (2011) and the earlier prediction of this study.

In terms of the fitness of the model, the co-efficient of multiple determination (R²) indicates that about 41.2% of the variations in capital structure proxied by leverage are explained by the combined influence of the statistically significant variables used in the model. The adjusted R² buttress on co-efficient of multiple determination (R²) which is confirming the position of R². In addition, the overall significance of the regression is tested using Fisher's statistics. In this study, F value is 7.62 which is significant at 1% level of significance. This implies that the model is well fit and explanatory variables are properly selected and combined.

4.6 Robustness Test Results

This section deals with the issue of multicollinearity problem. In multiple regression model, the existence of high correlation between the explanatory variables can lead to multicollinearity problem. To check the existence of multicollinearity, the study carried out multicollinearity test using variance inflation factors (VIF) and tolerance value (TV) the results are shown in Table 4.6

Table 4.6: Collinearity Test

VARIABLES	TV	VIF
LIQUIDITY	0.42	2.38
TANGIBILITY	0.68	1.48
SIZE	0.67	1.49
GROWTH	0.73	1.38
PERFORMANCE	0.42	2.39
AGE	0.71	1.40

Source: output of analysis using STATA 9.1

Table 4.6 shows the result of multicollinearity. In the table above, the highest VIF is 2.39 indicating complete absence of multicollinearity as confirmed in the work of Montgomery and Peck (1982) that for a collinearity to exist, the VIF must lie between 1 and 10. In addition, the tolerance value of not more than 1.0 indicates that the model is free of multicollinearity. The study has the tolerance value ranging from 0.42 to 0.73.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

This study investigated firm characteristics and capital structure of listed chemical and paints firms in Nigeria. The study adopted both the pecking order and trade-off theory. The objectives of the study are to empirically investigate the effect of six explanatory variables which are Liquidity, Tangibility, Size, Growth, Profitability and Age on one explained variable, leverage for a period of 9 years (2004 to 2012) using annual reports extracted from the Nigerian Stock Exchange fact books and individual firms financial report covering the period of the study.

The study revealed that higher investment in short liquid assets would enhance the leverage of listed chemical and paints firms in Nigeria. In other words, firms with more liquid assets are more levered because if such firms default in payment of their debt, they are on the saver side since they have sufficient liquid assets that can cover the debt.

The results also showed a negative association between tangibility and leverage which implies that as tangibility rises, leverage of listed Chemical and Paint Firms will decrease. It was also discovered that size of the firm is negatively and insignificantly related to leverage. The study further revealed that there is no significant relationship between growth of the firms and leverage. The analysis of profitability and age of the firm in relation to leverage revealed that the higher the profitability and age of the firm, the higher the leverage and vice-versa.

5.2 Conclusions

In line with the findings of the study, the following conclusions are drawn:

The study has provided both empirical and statistical evidence on the influence of six independent variables: liquidity, tangibility, size, growth, profitability and age in explaining and predicting the position of capital structure of listed chemical and paints firms in Nigeria. The liquidity ratio of the firm has positive impact on leverage of Nigeria listed chemical and paints firms. This signifies that the more the liquid firms are, the higher the leverage.

There is a negative and significant association between tangibility of assets and leverage of listed chemical and paints in Nigeria. This implies that the more the fixed asset of the firms, the lower the reported leverage. There is also a positive and insignificant relationship between size and leverage of Nigeria listed chemicals and paints. This shows that size does not determining the position of capital structure of listed chemicals and paints but explained the variation.

The growth of the firms revealed a negative and insignificant relationship with leverage of listed chemical and paints firms in Nigeria. The result indicates that the growth does not affect the capital structure position of listed chemicals and paints firms in Nigeria. There exist a positive and significant relationship between performance and leverage of Nigerian listed chemicals and paints firms in Nigeria. This means that both the variables move in the same direction which means that the higher the performance, the higher the leverage of listed chemicals and paints in Nigeria. The older the firms, the more the leverage as the result revealed a positive and significant relationship between age and leverage of listed chemicals and paints firms in Nigeria.

5.3 Recommendations

In line with the findings and conclusion of this study, the following recommendations are deemed pertinent:

- (i) Managers of Chemical and Paints firms in Nigeria are encouraged to ensure adequate level of liquidity by ensuring that the current ratio is always within the acceptable industry average.
- (ii) Policy makers, that is the Security and Exchange Commission (SEC) are encouraged to initiate strategies and innovations towards having a larger share of the market within the subsector, so as maintain higher level of profitability, which should in turn enhance an optimum capital structure.
- (iii) Lenders and potential investors should pay more attention to older firms because of the reputation they build over the years in the industry as well as considering their tendency towards enhanced capital structure.
- (iv) Lenders should consider not just the value but quality of tangible assets before accepting such as collateral for loan matters.

5.4 Limitations of the study

The following are some of the limitations that surround the findings of this study:

Macro-economic variables determinants such as inflation, and interest rate as well as risk could not be captured in the model of the study.

5.5 Suggestions for Further Research

The following areas of further research are suggested below:

The same research can be replicated using the whole manufacturing sector of the economy and considering other determinants of capital structure such as inflation, interest rate, GDP, industry size.

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APPENDIX I (a)

POPULATION OF THE STUDY

LIST OF CHEMICALS AND PAINTS FIRMS IN NIGERIA (2004-2011):

AFRICAN PAINTS (NIGERIA) PLC

BERRGER PAINTS PLC

CHEMICAL AND ALLIED PRODUCTS PLC

DN MEYER PLC

IPWA PLC

NIGERIA-GERMAN CHEMICALS PLC

PAINTS AND COATINGS MANUFACTURERS NIGERIA PLC

PORTLAND PAINTS AND PRODUCTS NIGERIA PLC

PREMIER PAINTS PLC

LIST OF CHEMICALS AND PAINTS FIRMS IN NIGERIA AS AT 2012:

AFRICAN PAINTS (NIGERIA) PLC

BERRGER PAINTS PLC

CHEMICAL AND ALLIED PRODUCTS PLC

DN MEYER PLC

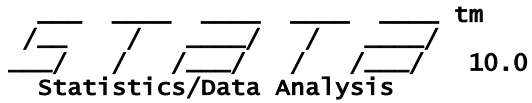
IPWA PLC

PAINTS AND COATINGS MANUFACTURERS NIGERIA PLC

PORTLAND PAINTS AND PRODUCTS NIGERIA PLC

PREMIER PAINTS PLC

APPENDIX II: REGRESSION RESULTS



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(1 var, 9 obs pasted into editor)
(1 var, 9 obs pasted into editor)
(7 vars, 72 obs pasted into editor)
- preserve

. xtset id year, yaerly
option yaerly not allowed
r(198);

. xtset id year, yearly
panel variable: id (strongly balanced)
time variable: year, 2004 to 2012
delta: 1 year
```

. su LEV LIQ TAN SIZE GWTH PRF AGE, detail

LEV				
	Percentiles	Smallest		
1%	-3	-3		
5%	-1.83	-2.53		
10%	-1.71	-2.04	Obs	72
25%	-.625	-1.83	Sum of Wgt.	72
50%	.295		Mean	.0852778
		Largest	Std. Dev.	1.126314
75%	.845	1.64		
90%	1.29	1.66	Variance	1.268583
95%	1.64	1.9	Skewness	-.3927211
99%	3.22	3.22	Kurtosis	3.330427

LIQ				
	Percentiles	Smallest		
1%	.29	.29		
5%	.42	.34		
10%	.46	.35	Obs	72
25%	.585	.42	Sum of Wgt.	72
50%	1.01		Mean	4.197083
		Largest	Std. Dev.	8.608423
75%	2.565	30.68		
90%	10.62	33.03	Variance	74.10494
95%	30.68	35.76	Skewness	3.209287
99%	44.85	44.85	Kurtosis	12.9367

TAN				
	Percentiles	Smallest		
1%	-9.66	-9.66		
5%	-5.72	-8.65		
10%	-2.01	-7.39	Obs	72
25%	.2	-5.72	Sum of Wgt.	72
50%	.865		Mean	2.1175
		Largest	Std. Dev.	6.98309
75%	2.28	14.56		
90%	6.56	18.52	Variance	48.76355
95%	14.56	34.08	Skewness	3.069457
99%	35.94	35.94	Kurtosis	15.06779

SIZE

Percentiles		Smallest		
1%	.1	.1		
5%	4.17	3.2		
10%	4.65	3.91	Obs	72
25%	5.065	4.17	Sum of wgt.	72
50%	5.76		Mean	5.49125
		Largest	Std. Dev.	.9287625
75%	6.025	6.27		
90%	6.19	6.39	Variance	.8625998
95%	6.27	6.42	Skewness	-2.994008
99%	7.24	7.24	Kurtosis	17.31811

GWTH

Percentiles		Smallest		
1%	-14.66	-14.66		
5%	-2.03	-3.44		
10%	-.78	-2.76	Obs	72
25%	.025	-2.03	Sum of wgt.	72
50%	.145		Mean	-.10375
		Largest	Std. Dev.	1.983968
75%	.46	.86		
90%	.75	1.12	Variance	3.936131
95%	.86	2.9	Skewness	-5.546177
99%	3.92	3.92	Kurtosis	41.89666

PRF

Percentiles		Smallest		
1%	-1.45	-1.45		
5%	-.81	-.95		
10%	-.33	-.86	Obs	72
25%	-.125	-.81	Sum of wgt.	72
50%	.04		Mean	-.0440278
		Largest	Std. Dev.	.314108
75%	.11	.28		
90%	.17	.34	Variance	.0986638
95%	.28	.43	Skewness	-1.950056
99%	.67	.67	Kurtosis	8.738234

AGE

Percentiles		Smallest		
1%	2.89	2.89		
5%	3.04	2.94		
10%	3.14	3	Obs	72
25%	3.37	3.04	Sum of wgt.	72
50%	3.74		Mean	3.603889
		Largest	Std. Dev.	.2983643
75%	3.83	3.91		
90%	3.89	3.93	Variance	.0890213
95%	3.91	3.93	Skewness	-.857627
99%	3.95	3.95	Kurtosis	2.386876

. pwcorr LEV LIQ TAN SIZE GWTH PRF AGE. star(0.05) sig
05 invalid name
r(198);

. pwcorr LEV LIQ TAN SIZE GWTH PRF AGE. star (0.05) sig
variable star not found
r(111);

. pwcorr LEV LIQ TAN SIZE GWTH PRF AG, star(0.05) sig

	LEV	LIQ	TAN	SIZE	GWTH	PRF	AGE
LEV	1.0000						
LIQ	-0.0802 0.5030	1.0000					
TAN	-0.4531* 0.0001	0.3321* 0.0044	1.0000				
SIZE	0.1427 0.2317	-0.3029* 0.0097	-0.2010 0.0905	1.0000			
GWTH	0.2840* 0.0156	-0.1519 0.2026	-0.5002* 0.0000	0.1207 0.3125	1.0000		
PRF	0.2630* 0.0256	-0.7344* 0.0000	-0.2448* 0.0382	0.2991* 0.0107	0.0255 0.8317	1.0000	
AGE	0.2916* 0.0130	-0.1200 0.3152	-0.1215 0.3093	0.4788* 0.0000	0.1655 0.1647	-0.0240 0.8416	1.0000

. reg LEV LIQ TAN SIZE GWTH PRF AGE

Source	SS	df	MS	Number of obs =	72
Model	37.1833426	6	6.19722377	F(6, 65) =	7.62
Residual	52.8860518	65	.813631566	Prob > F =	0.0000
Total	90.0693944	71	1.26858302	R-squared =	0.4128
				Adj R-squared =	0.3586
				Root MSE =	.90202

LEV	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
LIQ	.0644607	.0191963	3.36	0.001	.0261231 .1027983
TAN	-.0668466	.0186569	-3.58	0.001	-.104107 -.0295863
SIZE	-.1852801	.1408684	-1.32	0.193	-.4666138 .0960535
GWTH	.0532447	.0633366	0.84	0.404	-.0732473 .1797367
PRF	2.063642	.5268217	3.92	0.000	1.011507 3.115778
AGE	1.40338	.424601	3.31	0.002	.5553929 2.251366
_cons	-3.987544	1.351229	-2.95	0.004	-6.686134 -1.288954

. vif

Variable	VIF	1/VIF
PRF	2.39	0.418489
LIQ	2.38	0.419652
SIZE	1.49	0.669473
TAN	1.48	0.675145
AGE	1.40	0.714025
GWTH	1.38	0.725755
Mean VIF	1.75	

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

Ho: Constant variance
Variables: fitted values of LEV

chi2(1) = 1.08
Prob > chi2 = 0.2982

