

Determinants of Profitability of Listed Industrial Goods Firms in Nigeria

BY

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DECLARATION

I declare that this dissertation titled “Determinants of Profitability of Listed Industrial Goods Firms in Nigeria” has been performed by me in the Department of Accounting, Ahmadu Bello University, Zaria under the supervision of Dr I. L. Chechet and Mal Ibrahim Yusuf. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this dissertation was previously presented for another degree or diploma at this or any other institution.

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CERTIFICATION

This dissertation, titled “Determinants of Profitability of Listed Industrial Goods Firms in Nigeria” by **Masekaven Martin U-UNGWA**, meets the regulations governing the award of the degree of Master of Science (M.Sc.) in Accounting and Finance of the Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This dissertation is dedicated to God.

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ABSTRACT

This study examined the determinants of profitability of listed industrial goods firms in Nigeria. The major objective of the study was to determine whether leverage, liquidity, board size, firm size, cash flows and audit committee meeting significantly affect profitability of listed industrial goods firms in Nigeria. This was necessitated by the conflicting findings documented by studies that have investigated determinants of profitability of firms. Correlational research design was used. Secondary source of data were gathered for a sample of 15 firms out of 21 firms in the industrial goods sector over a period of seven years from 2009-2015. The data were analysed using multiple regression analysis. Results show that firm size and cash flows have positive and significant relationship with profitability of listed industrial goods firms in Nigeria. The results also reveal that leverage, liquidity and board size have negative and significant relationship with profitability of listed industrial goods firms in Nigeria while audit committee meeting has no significant relationship with profitability of listed industrial goods firms in Nigeria. The study concludes that leverage, liquidity, board size, firm size and cash flows can drive profitability of listed industrial goods firms in Nigeria. Therefore, it is recommended that management of the firms should restrict the level of debt financing by limiting it to the tone of their assets. Also, management of listed industrial goods firms should invest more in assets as such would increase their size and ultimately profitability. In addition, minimum amount of liquidity should be maintained by listed industrial goods firms to reduce the extra cost attached to holding unnecessary liquid assets, while high proportion of cash flows should maintained. Finally, the firms should avoid having large board sizes so as to reduce high costs of maintaining large board sizes.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

With increase in global competition, survival of every business entity is a very pertinent question in business arena. In such a competitive environment, good performance is considered essential for business success. Thus, all over the world, the issue of firm performance has been a major focus by stakeholders as business organizations exist to make commensurate profit on their investment. It is this desire to make profit that prompts most investors to sacrifice their resources in anticipation of the profit. It can differentiate one company from the other. Therefore, a key measure of performance is profitability as business organizations are mostly concerned with profit and wealth maximization. Without profitability, a firm would find it difficult to attract investors and sustainability of business' operations in the long run would be at risk. Magaretha and Supartika (2016) posit that in a competitive marketplace, business owners must learn how to achieve a satisfactory level of profitability.

Profitability is a major aspect in current financial reporting by corporate bodies. The profitability of a company shows the company's ability to generate profit from utilization of its assets. Profit is realized when the amount of revenue gained from a business activity exceeds the expenses and the cost incurred to carry out the activity. Therefore, profitability measures the performance of a company in terms of profit it realizes from assets utilized or capital employed in business. Since most investors put their resources in expectation of commensurate returns, the profit earned by a business is often used to serve as a measure of success of that investment. Niresh and Velnampy (2014) explain that profitability is the amount of money a firm can create with whatever resources the firm has, implying that its inability to generate income is a loss.

There is profit when income realized is greater than input cost, otherwise, it reflects poor performance.

Firm profitability and ways of improving it are extensively debated issues among managers and scholars (Pratheepan, 2014). This is born out of the fact that the primary objective of a business unit is to achieve maximum profit in addition to secondary objectives such as increase in sales, assets, and market share (Aparna, 2015). Profit is the indicator of efficiency of a business unit as it shows the level of efficiency with which a business unit makes use of funds or assets. The higher the profit, the more will be the efficiency of the business unit.

Some researchers such as Burja (2011), Saleem and Rehman (2011), Lobos and Szewczyk (2013), Asgari, Pour, Zedeh and Pahlavan (2015) contend that profit is affected by number of variables such as proportion of leverage, which affects the expense of the firm in terms of interest payment, firm size, liquidity, cash flows, corporate governance mechanisms such as board size, and audit committee meeting. It is the task of the firm's management to utilize right strategies from time to time taking into account of these factors that might exert considerable influence on the profit of the firm.

A number of studies such as Akinmulegun (2012), Syed (2013) and Siyanbola, Olaoye and Olurin (2015) document evidence suggesting that leverage has relationship with profitability. Such studies hold basis from the logic that use of debt subjects the firm under monitoring mechanisms which exert pressure on managers to run the business in a less costly manner as to easily generate profit to settle debt obligations. Contrary to this argument, it can be contended that use of debt attracts extra charges in terms of interest payments, which reduce profitability. This study conjectures that leverage positively affects firm profitability.

The importance of liquidity management as it affects firm profitability in today's business cannot be over emphasized. Liquidity forms a crucial part in management of working capital as it ensures day-to-day running of business operations and settling recurring obligations (Eljelly, 2004). Therefore, liquidity plays a significant role in the successful functioning of a business firm. An essential dilemma in liquidity management is to achieve desired trade-off between liquidity and profitability (Ismail, 2016). While liquidity can be seen as being necessary for day to day running of the business, any level of liquid fund constitutes a cost to the organization. This cost is the opportunity cost for which the liquid (idle) funds would be invested to command positive returns. Moreover, availability of liquid funds constitutes agency costs as managers are prone to go for perquisites that are counter-productive. Managers will have the free will to run the company with extravagance. Therefore, following the tenets of agency theory, a negative relationship between liquidity and firm profitability can be hypothesized.

Several studies have established that board size influences firm profitability. Fauzi and Locke (2012), Saibaba and Ansari (2012) and Ujunwa (2012) argue that a large board size attracts more innovation, creativity, visionary thinking, strategic direction and investment proposals that would ultimately result to profitability. Smaller boards might lack capacity to make strategic changes due to their inefficiency in considering various alternatives for firm profitability. On the other hand, some researchers favour smaller boards and are of the view that large boards are susceptible to disagreements, non-cooperation and waste of time in decision making as they are prone to suffer from social loafing. Thus, their wealth of knowledge, innovative thinking, strategic focus, competences, and skills remain unutilized (Drakos & Bekiris, 2010; Jensen, 1993; Lin, 2011). Therefore, it can be stated that board size has negative relationship with firm profitability.

Firm size is a very critical factor for the success of a business as it might wield significant influence on profitability. According to Glancey (1998), when larger firms take advantage of economies of scale, then a positive relationship is expected between profitability and size of the firm. Large firms have the advantage of exploring the benefits of economies of scale; their average unit cost declines over a range of output. They can also benefit from economies of scope; through extra cost savings as a result of the use of separate products that share some production facilities. They can purchase raw materials in bulk at lower cost and even enjoy discounts for bulk purchase. Furthermore, large firms, comparative to small firms can easily source in the finance market using their large assets base as collateral and utilize such funds for profitable investment opportunities. Contrary to the above line of thought, large firms might tend to be inflexible; the lack of flexibility of which would affect their smooth operations and ultimately reduce profitability. This study conjectures a positive relationship between firm size and profitability.

Cash flow is another variable of concern as far as profitability of firms is concerned. Due to the relevance of cash flow in the company's performance, corporate organizations need to develop a suitable cash flow mix and apply it in order to maximize profitability (Ali, Alireza & Jalal (2013). In spite of the fact that cash flows are needed for meeting daily financial obligations of any enterprise, cash flows, just as liquidity, constitute cost to the organization. A similar argument can be extended to audit committee meeting. Frequency of audit committee meeting gives management foresight on ways of improving financial reporting as well as ways of mitigating agency costs (Al-Matari, Al-Swidi, Fadzil, & Al-Matari, 2015). A contrary argument to this is that frequent audit committee meetings serve as harbor for extravagant spending on allowances to the members.

Identification of the sources of variation in firm level profitability is an important research theme in economics, strategic management and accounting and finance (Mutuku & Kyalo, 2015). In the literature, researchers such as Jensen and Meckling (1976) have made a number of efforts to explore theoretical models which could be used to explain the relationship between variables such as leverage, liquidity, firm size, board size, cash flow and audit committee meeting on profitability. These theories, among others, include agency theory, resource based theory and structural inertia theory.

Knowledge of the internal determinants of profitability is crucial as it helps managers in developing an effective profitability strategy for their company. These factors are important because they give insights into fluctuations in profitability. Such knowledge of firm profitability determinants gives feedback to management. Management can then devise a set of strategies that should be taken to improve profitability in particular and overall performance in general. This process is also applicable to industrial goods firms.

Industrial goods firms, which constitute firms that operate in the industrial goods sector, have been reckoned, under the current administration, as having the potential to accelerate economic development. Industrial goods firms propel industrialization as they produce products which continue to be relevant to industries. Amidst dwindling fuel prices, credence is currently paid on the industrial goods sector. Since these firms exist to make profit and their survival is significantly dependent on their ability to make profit, it is necessary that internal determinants of their profitability be assessed. In view of the present administration's resolve to revitalize the spate of industrialization in the country, it has become imperative that the determinants of profitability of the industrial goods firms, which are fast growing due to increasing demand for their products, be examined. It is therefore necessary to carry out this study to better understand

the key determinants of profitability of listed industrial goods firms which would provide basis for improvement of their profitability. It is against this backdrop that this study is undertaken to examine the determinants of profitability of listed industrial goods firms in Nigeria.

1.2 Statement of the Problem

Studies on the determinants of firm profitability have continued to gain momentum. These studies have established that variables such as firm size, liquidity, board size, leverage, cash flows and audit committee meeting wield significant influence on profitability of firms. This notwithstanding, some studies found that the variables have insignificant relationship with profitability (Dogan & Topal, 2014).

However, the challenge is, studies that have found that firm size, liquidity, board size, leverage, cash flows and audit committee meeting significantly affect firm profitability have produced mixed results. Findings of these studies have fallen into two divergent groups. On the one side of the divide is a group of studies which conclude that firm size, liquidity, board size and leverage have positive relationship with firm profitability. On the other side of the pole is another group of studies which submit that firm size, liquidity, board size, leverage, cash flows and audit committee meeting have negative relationship with firm profitability. These mixed results have made it difficult for good policy formulation in the context of emerging economies such as Nigeria.

Studies on the relationship between firm size and profitability have produced mixed findings. The vast empirical evidence on the relationship between firm size and profitability suggests variations in results as some studies such as Babalola (2013), Baloch, Ihsan, Kakakhel & Sethi (2015), Asgari, Pour, Zadeh & Pahlavan (2015) and Dogan (2013) report that firm size has significant relationship with profitability while others, including Kumar and Kaur (2016),

Niresh & Velnampy (2014), find that firm size does not have any significant effect on profitability.

Studies on the relationship between liquidity and firm profitability have also produced inconsistent findings. Some scholars (Kidmat & Rehman, 2014; Ibe, 2013) find that liquidity has positive relationship with firm profitability. Such empirical findings hold support from the understanding that liquid funds assist an organization to settle its short term obligations and sustain operations. On the other hand, Larty, Antwi and Boadi (2013) submit that such relationship does not hold.

Still, some studies such as Adams and Mehran (2005), Oyerogba, Memba and Riro (2016) conclude that board size positively affects firm profitability. Their findings are linked to the argument that larger board sizes have more array of experienced technocrats from whose wealth of experience, profitable innovative strategies can be tapped. In contrast to this submission, the empirical studies of Pathan (2011) and Staikouras, Pasiouras and Nnadi (2007) prove that board size inversely affects firm profitability.

The conflicting findings in the context of the relationship between leverage and firm profitability remain worrisome as lack of consensus in the literature would make it difficult for good policy formulation. Works such as Syed (2013), Mohammad (2014) hold that leverage positively affects firm profitability; however, Enekwe, Agu and Eziedo (2014) found that leverage has negative relationship with firm profitability.

In the context of the preceding arguments, it is exigent that a clear relationship between liquidity, firm size, board size and leverage be examined. This is necessary as most of the recent studies that have done this are foreign based. Although there are many Nigerian studies, they are not sufficient for current reliance as they suffer from one methodological pitfall to the other,

prominent of which include: use of primary data where secondary data would have been better, use of scope whose period of coverage lags years behind, abrupt selection of variables without use of scientific approach such as stepwise regression, and selection of very few firms from which possible generalisations might be difficult. For instance, Siyanbola, Olaoye and Olurin (2015) used primary data, based on questionnaire distributed to only 20 respondents. Consequently, findings of the study might be susceptible to subjectivity. Akinmulegun (2012), Aqsa and Ghulam (2014), Kidtmat and Rehman (2014), Marozva (2015), Johl, Kaur and Cooper (2015), Bulan, Sanyal and Yan (2009), Niresh and Velnampy (2014), Dogan (2013), among others, fail to cover current period.

Moreover, in the context of industrial goods firms, literature on the impact of firm size, liquidity, board size, and leverage are still sparse. The few available studies (Bashar & Islam, 2014; Aparna, 2015; Devi & Devi, 2014; Mutuku & Kyalo, 2015; Magaretha & Supertika, 2016) rather utilize data from foreign firms, thereby, making application of their findings to listed industrial goods firms in Nigeria untenable.

Therefore, the basic question this study seeks to answer is, to what extent do leverage, firm size, liquidity, cash flows, board size and audit committee meeting affect profitability of listed industrial goods firms in Nigeria? It is in an attempt to seek answer to the above question that this study undertakes to empirically examine internal determinants of profitability of listed industrial goods firms in Nigeria. The absence of this examination would make it difficult for good policy formulation as far as the growth of the industrial goods sector is concerned.

1.3 Objectives of the Study

The main objective of this study is to examine internal determinants of profitability of the listed industrial goods firms in Nigeria. The specific objectives of the study are to:

- i. Determine how leverage affects profitability of listed industrial goods firms in Nigeria.
- ii. Assess whether firm size affects profitability of listed industrial goods firms in Nigeria.
- iii. Examine whether liquidity affects profitability of listed industrial goods firms in Nigeria.
- iv. Evaluate whether board size affects profitability of listed industrial goods firms in Nigeria.
- v. Ascertain whether cash flows affect profitability of listed industrial goods firms in Nigeria.
- vi. Examine whether audit committee meeting affects profitability of listed industrial goods firms in Nigeria.

1.4 Research Hypotheses

The following hypotheses are formulated to guide the study:

Ho₁: Leverage does not significantly affect profitability of listed industrial goods firms in Nigeria.

Ho₂: Firm size does not significantly affect profitability of listed industrial goods firms in Nigeria.

Ho₃: Liquidity does not significantly affect profitability of listed industrial goods firms in Nigeria.

Ho₄: Board size does not significantly affect profitability of listed industrial goods firms in Nigeria.

Ho₅: There is no significant relationship between cash flows and profitability of listed industrial goods firms in Nigeria.

Ho₆: Audit committee meeting does not significantly affect profitability of listed industrial goods firms in Nigeria.

1.5 Scope of the Study

The aim of this study is to examine the determinants of profitability of listed industrial goods firms in Nigeria. The study covers a period of seven years from 2009 to 2015. This period is chosen so as to obtain most recent data that reflect current economic circumstances of the companies. As the industrial firms sector is rapidly growing, it is necessary to properly carry out this study. Also amidst dwindling oil prices in Nigeria, there is need to revitalize the industrial sector so as to stem the tide of recent economic recession which has eaten deeply into the fabric of the Nigerian economy.

1.6 Significance of the Study

This study is important as the findings would extend the frontier of knowledge in respect to the determinants of profitability. The study would be beneficial to management of organizations especially industrial goods firms in Nigeria, government and regulators as well as current and potential researchers in the following respects:

The management of organizations especially in Nigeria would benefit immensely from the study. This is because, the appropriate application of the findings of the study would result to improvement in management decision making. Understanding of the relationship between liquidity and profitability will aid management to ascertain the right proportion of liquid assets to hold. Similarly, the outcome of this investigation would provide useful information on the relationship between leverage and profitability which would aid management in assessing the optimum level of leverage. The management of industrial goods firms also stand to benefit this

study in the context of constituting their board sizes, taking bearing from the outcome of the study. Management can also use the findings of the study to plan their sizes as the study would uncover the relationship between firm size and profitability. Depending on the direction of the relationship, management can decide the size of their organization that would not be injurious to profitability. Furthermore, knowledge of the direction of the relationship between cash flows and profitability would aid management of listed industrial goods in Nigeria to ascertain the level of cash flows to be maintained. This study is also important as management of listed industrial goods firms can leverage on the outcome of the study to ascertain the frequency of audit committee meetings that should be held which would not be counter-productive.

The findings of the study would be of immense benefits to government and regulators in Nigeria as it would provide a useful guide for the formulation of policies and decisions that would have positive impact on profitability of industrial goods sector. The empirical evidence that the study would provide could be used by regulatory authorities such as the Securities and Exchange Commission (SEC) and Central Bank of Nigeria (CBN) among others, to strengthen existing regulatory policies that would enhance the profitability of industrial goods firms in Nigeria. This is considered essential as the current administration is poised to reviving the ailing industrial goods sector as heavy reliance on oil revenue is now heading the economic fortunes of the country to a crash as evidenced by the current economic recession.

The study would also contribute to the existing literature on determinants of profitability of companies in a developing economy as Nigeria. This is because, the study upon completion, could serve as a good library material for students and researchers who intend to carry out similar studies in this area. It is considered relevant as the study would serve as a research tool for further studies. It would add to theoretical knowledge on internal determinants of profitability

and the methodology required for carrying out further studies. It is noteworthy to state that studies on internal determinants of profitability of firms in Nigeria are relatively scanty compared to foreign literature. Based on this, the study would provide a modest contribution to the existing local literature.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals with literature review on determinants of profitability of firms. It contains conceptual issues, review of empirical studies and theoretical framework as captured in the following sections.

2.2 Conceptual Issues

The concepts of profitability, leverage, firm size, liquidity, board size, cash flows and audit committee meeting underlie this study. It is necessary to gain firm understanding of these concepts as they are discussed below.

2.2.1 Profitability

Profitability, which is frequently used as measure of financial performance, is one of the main objectives for the existence of many companies. Profit is an essential prerequisite for any company operating in today's increasingly competitive and globalized market. In addition, profit does not only serve as a means of attraction to investors; it also improves the level of solvency, and thus, strengthens consumers' confidence (Ismail, 2013).

The concept of profitability is fundamental to both accounting and economic theories. Since it is an offshoot of income, it also has its foundation from the famous Hicks' concept of income. Using the Hicksian approach, profit can be explained as the maximum value which can be consumed at a given period of time without tempering with "well-offness" (Glautier, Underdown & Morris, 2011). This definition has been staunchly supported by economists. It provides a sound basis for appreciation of what actually constitutes income and hence, profit.

Profit can also be conceived as the residual arising from netting revenue realized against cost consumed (Igben, 2009). Again, this definition suffers general acceptance as economists do not subscribe to what they call 'arbitrary allocation of cost' to realized revenues as accountants do. The implication of this is that profitability can be explained in various ways.

Devi and Devi (2014) define profitability as the level to which an organization can successfully and efficiently make the most of its obtainable funds and assets, and alter them into outstanding profit. This forms the basis for boosting income of employees, providing better quality products for customers, and having better environment friendly production units. Also, more profits precipitate more future investments, thereby creating more employment opportunities and enhancing income of people.

The concept, profitability, depicts the financial success of a venture. It is used to refer to the ability of an entity to make profit. Profit is what is left of the revenue a business generates after it pays all expenses directly related to the generation of the revenue, such as producing a product, and other expenses related to the conduct of the business' activities. According to the Institute of Chartered Accountants of Nigeria (ICAN) (2014), profit refers to the total income earned by the enterprise during the specified period of time, while profitability refers to the operating efficiency of the enterprise. It is the ability of an enterprise to make profit on sales. This also implies the ability of an enterprise to get sufficient return on capital and employees used in business operation. To the financial manager, profit is the test of efficiency and measure of control (Oko, Ugwunta & Agu, 2013). To the owners, it is a measure of the worth of their investment; to the creditors, it is used as the margin of safety; to the government, it is a measure of taxable capacity and a basis of legislation; and to the country, profit is an index of economic

progress, national income generated and the rise in the standard of living (Oko, Ugwunta & Agu, 2013).

Profitability is commonly measured using the following ratios: return on assets (ROA), return on equity, gross margin, operating margin, and return on capital employed. For the purpose of this study, ROA is adopted for the measurement of profitability. This is because it is more encompassing than other profitability variables and is the proxy commonly used by researchers for measuring performance. The return on assets (ROA) indicator expresses the company's ability to generate profit as a consequence of the productive use of resources and efficient management. Therefore, this study sees profitability as return realized from utilization of asset, the return of which is the excess of revenues over expenses.

The amount of profit a firm makes depends on several factors, among which include leverage, the size of the organization, liquidity and the size of the board. Each of these factors is discussed hereunder.

2.2.2 Leverage

There seems to be common consensus in the literature that leverage has to do with use of debt capital, by a firm in relation to equity capital. Syed (2013) describes leverage as the extent to which a business or investor is using borrowed money. This means that leverage shows the extent to which the total assets of the company are funded by loans. It is necessary to state that an increase in the ratio ensures an increase in the amount of the business's financing sources. The negative aspect of it is that it also leads to lesser degree of independence by a firm and threatens its financial solvency. Mohammad (2014) explains that leverage is referred to as the

capacity of an organization to use borrowed money. This definition seeks to imply that leverage is the extent of use of fixed interest securities by an organization.

Leverage is measured as the ratio of debt to total assets. This is in alignment with the measurement basis of Lobos and Szewczyk (2013) who measured leverage ratio as the ratio of total debt to total assets. This study adopts the definition offered by Syed (2013) and concludes that leverage involves extent of use of borrowed money in financing a firm.

2.2.3 Liquidity

The concept of liquidity has been defined in several ways. This is largely due to the fact that the concept of liquidity arises from different economic perspectives (Marozva, 2015). Adler (2012) asserts that liquidity can be defined in the context of how easy one can obtain funding to trade a security, the former being called market liquidity and the latter being funding liquidity. In this manner, liquidity is seen as a cost, whose impact on return on assets has to be assessed.

Taking bearing from the banking sector, Marozva (2015) posits that liquidity is simply the ability of a bank to maintain sufficient funds and/or reserves to pay for its maturing obligations. Marozva (2015) explains further that liquidity can be linked to the firm's ability to immediately meet cash, cheques, other withdrawal obligations and legitimate new loan demand while abiding by existing reserve requirements. This definition is insightful, however, it holds much more relevance in the banking sector than industrial goods firms. This is because, industrial goods firms are not under obligation to abide by predetermined reserve requirements. This limitation is also inherent in the definition proffered by Ibe (2013) who contends that liquidity is a financial term that means the amount of capital that is available for investment.

Nweazeaku (2006) defines liquidity as the degree of convertibility to cash or the ease with which any asset can be converted to cash. This is essential to meeting short-term obligations of an organization. Umonbong (2015) describes liquidity as the ability of a firm to meet its short-term obligations using its most liquid assets (cash, receivables, among others). Liquidity is the ease with which a company can pay its bills and liabilities over the next year, especially if it must convert its assets into cash in order to do so. This study adopts this definition, which was earlier conceived by Saleem and Rehman (2011), and sees liquidity as a measure of the short-term solvency of the business. It is calculated as the ratio of current assets to current liabilities.

2.2.4 Board Size

Board size is one of the key corporate governance mechanisms that has been discussed by many researchers. Although it generally relates to board of directors, Johl, Kaur and Cooper (2015) emphasize that board size seems to differ from one country to another. In Nigeria, the Code of Corporate Governance stipulates that the Board should be of a sufficient size relative to the scale and complexity of the company's operations and be composed in such a way as to ensure diversity of experience without compromising independence, compatibility, integrity and availability of members to attend meetings.

The Code specifies that membership of the board should not be less than five (5). The Board should comprise a mix of executive and non-executive directors, headed by a Chairman. The majority of Board members should be non-executive directors, at least one of whom should be independent director. In Malaysia, the corporate governance code does not specify the size of the board. Instead, every board of a company is expected to examine its size, with respect to its impact on the firm (Johl, Kaur & Cooper, 2015).

There is no ideal size for a board. However, the right size for a board should be driven by the effectiveness and efficiency of the board in its operations as a team. There have been conflicting arguments in the literature with respect to the relationship between board size and firm profitability. Companies with small boards tend to show more favorable values of financial discipline and provide stronger performance incentives through compensation and the threat of dismissal (Lin, 2011). Contrary to this view, Dalton and Daily (2000) explain empirically that larger boards enhance better corporate financial performance. Board size is seen by this study as the number of directors that constitute the board. This is in line with the submission of Doga and Yildiz (2013).

2.2.5 Firm Size

There are different measurements for firm size (Kouser, Bano & Azeem, 2012). Basically, there three measures are documented in literature. The first group of such measurements is through inputs into the productive process. Here, the number of employees of a firm, the labour input, some measures of assets representing the capital input, raw material used or amount of power consumed can be included. Studies that have used this measurement basis include Archarungroj and Hoshino (1998), Josson (2007) and Banchuevijit (2012) who measured firm size in terms of total employment. They construe firm assets as total number of employees hired by a firm.

The second style of measurement is through output. Under this category, firm size is commonly measured in terms of physical output such as sales turnover, units of products produced, among others, instead of a monetary value. The last form of measurement is through 'values' of firm. Studies that have used this style of measurement include Saliha and Abdessatar (2011), Asgari, Pour, Zedeh and Pahalavan (2015) who measured firm size as total assets

However, others such as Serrasqueiro and Nunes (2008) and Pratheepan (2014), define size in terms of total sales. This study conceptualizes firm size in the context of total assets.

2.2.6. Cash Flows

Cash flows constitute significant asset for any business organization. Adelegan (2003) notes that cash flows are more direct measure of liquidity. It represents an index of the money that involves cash inflows and outflows. This is exclusive of non-cash accounting charges such as depreciation (Okpe, Duru & Alor, 2016). Cash serves as the vascular system of any organization as mere profitability does not guarantee the solvency of an enterprise. Rather, the solvency, and the financial performance of the firm reflects the firm's ability to manage effectively cash flows from the operating, investing and financing activities.

Okpe, Duru and Alor (2016) define Cash flows as constituting cash and cash equivalents. Cash equivalents imply investments that can easily be converted into cash without a significant risk of change in value. This study sees cash flows as a proportion of net operating cash flows to total assets.

2.2.7 Audit Committee Meeting

Audit committee meeting defines the level of activity of the audit committee. Al-Matari, Al-Swidi, Fadzil and Al-Matari (2015) assert that audit committee meeting has to do with the number of meetings held by the committee in a year. An audit committee is an arm of the board of directors that oversees the integrity of financial reporting and disclosure. It committee assists the board of directors in terms of oversight responsibilities in relation to an entity's financial reporting, internal control system, risk management system as well as internal and external audit functions.

A key attribute of the audit committee is audit committee meeting. The number of audit committee meetings reflects its effectiveness. This explains why frequency of audit committee is used by some studies such as Saat, Karbhari, Xiao, Ashikin and Heravi (2012) and Beasley, M., Carcello, Hermanson and Lapidés (2000) as a proxy for audit committee activity. The audit committee that meets frequently has tendency to be better informed about auditing and financial reporting concerns.

Beasley, Carcello, Hermanson and Lapidés (2000) observe that companies whose audit committee members meet frequently experience less financial scandals as they render more effective monitoring and control. However, audit committee members that meet less frequently are prone to offer less supervision and monitoring roles. Consequently, firm performance increases with frequency of audit committee meeting.

2.3 Review of Empirical Studies

A good number of empirical studies have been conducted to examine determinants of profitability of firm, though, largely foreign. These can easily be grouped into two: those that generally examine microeconomic determinants or firm specific attributes and those that select one or few of such determinants to examine their influence on profitability.

2.3.1 Determinants of Profitability

Burja (2011) examined factors influencing companies' profitability in the Romanian Chemical industry over the period, 1999-2009. Four chemical companies were selected. Based on regression analysis, results reveal that inventories, debts level, financial leverage, efficiency of capitals affect the profitability (Return on Assets) of the company. The methodology and the techniques are fitting, however, the period covered by the study is too backward for conclusions

to be drawn on current realities and issues affecting profitability, the sample size selected by the study appears too small to warrant generalizations even in the Romanian chemical industry.

Lobo and Szewczyk (2013) sought to identify the variables that affect profitability of the manufacturers of mushroom compost in Poland. The variables used by the study were cost of sales to sales ratio, debt ratio, days sales outstanding, cash conversion cycle and return on assets where return on asset was used as the dependent variable. A sample of 6 firms were drawn and the period of coverage was 5 years from 2006- 2010. The selection was based on the best five manufacturers of mushroom compost in Poland as documented by the Official Journal of the Republic of Poland, Monitor Polski. Using descriptive analysis, correlation analysis and forward regression analysis, the result shows a strong and significant relationship between Cost of Sales to Sales Ratio and profitability (ROA). The study also found a weak and negative relationship between Days Sales Outstanding and profitability (ROA). Also, a weak and negative relationship between Days Inventories Outstanding and profitability (ROA) and between CCC and profitability (ROA) was found while the relationship between Days Payables Outstanding and profitability was found to be weak but positive. The study is appraised for providing clear evidence on the relationship between cost of sales to sales ratio and return on assets. In addition, study's use of mushroom compost manufacturers, is appraised given the very good profitability indexes and recorded increases in sales, can be considered a very attractive domain of business activity. In relation to available literature, as this review unveils, there are various other factors that can explain variation in firm profitability such as leverage, liquidity, among others for which this study ignored. Still, its foreign orientation might make its findings unreliable, at least in the Nigeria context.

Ismail (2013) investigated the determinants of financial performance of general Islamic and conventional insurance companies in Malaysia using panel data over the period of four (4) years from 2004 to 2007. Investment yield was used as the proxy for the dependent variable, financial performance while the independent variables were solvency margin (measured by net assets to net contributions written), solvency margin (measured by net assets to net premiums written), Stability of underwriting operation (measured by the change in the gross contributions written of current year as compared to previous year) and liquidity (measured by total liability to liquid assets). Four companies were used as sample size. Three models of estimation were employed, namely generalized least squares with non-effects, generalized least squares with fixed effects and generalized least squares with random effects. Results of the Lagrange Multiplier, Likelihood Ratio and Hausman tests revealed the fixed effect is the best model. Based on the fixed effect results, the study finds that size of company positively affects performance of the general Islamic insurance companies in Malaysia while stability of underwriting operation, liquidity and solvency margin have negative relationship with financial performance of the firms. Its foreign orientation and backward time period make its findings unreliable, at least in the Nigerian context. It is necessary to state that the economic meltdown that thwarted economic activities to a standstill might affect the relationship of even the few variables employed in the study.

Saliha and Abdesatar (2011) assessed the determinants of financial performance with emphasis on Tunisian firms. The key variables used by the study were size and debt. Firm size was measured as the logarithm of total assets while debt was measured as the ratio of total debt to total assets. The study covered a period 8 years from 1998 to 2006. Two samples of Tunisian companies were established: one comprised 20 listed companies on the Tunis Stock Exchange

and the other contained 20 unlisted companies. The criterion for selection of companies was based on three parameters: size (annual turnover or annual average), sectoral membership and listing / not listing on the stock exchange and system of simultaneous equations (SES). The result shows that debt negatively affects the level of performance of firms in Tunisia while firm size was reported to have positive effect on the financial performance of the studied firms. The study is appraised for its use of a reasonable coverage (9 years). In addition, choice of 40 firms is considered quite reasonable. Nevertheless, the scope of the study is an issue of concern as findings then might not reflect current economic circumstances.

Swarnapali (2014) investigated the relationship between firm-specific factors and financial performance of licensed commercial banks in Sri Lanka. The study used operating expenses, credit risk, liquidity risk, capital strength and the bank size of Sri Lankan Licensed Commercial Bank (LCBs) as proxies for determinants of financial performance while return on assets (ROA) and return on equity (ROE) were used to represent financial performance. Operating expenses was measured as ratio of non-interest expense to average assets while credit risk was measured as the ratio of loan loss provisions to net interest revenue. In addition, the measurements for liquidity risk, capital strength and size were the ratio of net loans to deposit and short-term funding and ratio of equity to total assets and the natural logarithm of the accounting value of bank's total assets. The study covered a period of four years from 2009-2012 and used a sample of five (5) domestic LCBs. According to the findings using regression analysis, banks' performances in Sri Lanka are only affected by the operating expense and bank size. The variables used such as credit risk, liquidity, capital strength are largely regulated in the banking sector by regulatory authorities of the banking sector. For this reason, the relationship

between these variables on banks might not be the same with a sector as industrial goods firms in Nigeria.

Seelanatha (2011) explored the factors that affect the performance of Chinese firms. The study utilized secondary data from a sample of 31 companies over the period of 8 years from 1999 to 2007. The major variables used were operational liquidity, growth and potential growth, asset structure and firm size. Regression analysis was used. It was found that, such factors as operational liquidity, growth and growth potential, asset structure and size have significant effects on the firms' profitability. The period covered by the study is quite large (8 years) and the sample size is quite large. Yet, the study focused on a period prior to the period of economic meltdown. This backward period contradicts the presents study's aim of utilizing recent data (2009-2015) that reflect current economic circumstances. The liquidity position of companies after the period of economic meltdown changed dramatically. Furthermore, some firms were downsized, thereby affecting their size. With these altercations, it is imperative that a recent study be conducted.

Mistry (2012) examined the determinants of profitability of Indian automobiles industry. The study covered a period of five years from 2004 to 2008. The study employed Return on Capital Employed as the dependent variable and size, liquidity, inventory turnover ratio and debt-equity ratio as the independent variables. A sample of six (6) firms was used by the study and ordinary least squares analysis was employed by the study to analyse data. The study found that leverage, interest rate and size are the most important determinants of the profitability while liquidity was found to have negative effect on the profitability. The finding of this study seems to go in line with other studies with regard to relationship between leverage, firm size, liquidity and profitability. Worthy of note is the fact that the relationship that exist among these variables in

the Indian automobiles industry might not be same with the industrial goods sector considering the fact that both sectors operate in different economic, social, legal and political environments.

Florian (2013) focused on the determinants of firms' performance of some selected firms in the Romanian economy. The study used a pooled dataset of 1204 observations over the period of 3 years from 2005 to 2007 in Romanian economy. The variables included in the dataset were growth of sales over the period, operating margin, financial leverage and current ratio, where operating margin was the dependent variable. Regression analysis was adopted. It was found that sales and current ratio have insignificant influence on the performance of the Romanian firms. The study also reported that the influence of financial leverage on organizational performance is limited to certain industries. The study could not provide a clear cut relationship between leverage and profitability to pave way for possible reliance on its findings. Rather, it dwelt so much emphasis on comparative analysis of the relationship between financial leverage and organizational performance of various firms across the sector of the Romanian economy which is not the preoccupation of this study.

Vatavu (2014) studied the determinants of financial performance of firms in Romania. Financial performance, the dependent variable, was proxied by return on assets and measured as the ratio of earnings before interest and tax to total assets. The independent variables were tangibility, size, liquidity, risk and tax. Tangibility was measured as the ratio of fixed assets to total assets, while size, liquidity, risk and tax were measured as the logarithm of turnover, the ratio of current assets to short term debt, the ratio of earnings before interest and tax to total assets divided by standard deviation, and the ratio of taxes to profit before interest and tax respectively. The study selected 126 Romanian companies listed on the Bucharest Stock Exchange, over a period of ten years (2003-2012). Three sets of regression analyses were

performed based on pooled OLS, fixed effect and random effects. Hausman specification test suggested that differences across companies influence the relationships between variables. Therefore, the fixed effect model was selected, and the results indicate that profitable companies operate with limited borrowings. The results reveal that debt, tangibility, size, liquidity and the variable of inflation are the determinants of return on assets. Tangibility, business risk and the level of taxation, debt were reported to have a negative impact on return on assets while firm size and asset tangibility had positive relationship with profitability. The study noted that although earnings are sustained by significant sales turnover, performance is affected by high levels of liquidity. The sample size used by the study is quite large to warrant possible generalizations, however, the firms selected were only foreign firms. Therefore, in spite of its wide period of coverage (10 years), it would be difficult to rely on its findings.

Bashar and Islam (2014) studied determinants of profitability of five of the top pharmaceutical firms in Bangladesh over the period 2008-2012. The sample size of 5 firms was used out of population of 173 listed pharmaceutical firms. The study used selling and general administrative expenses to net sales ratio, average inventory to cost of goods sold ratio, average accounts receivable to net sales ratio, average accounts payable to cost of goods sold and depreciation to net sales ratio as independent variables. The dependent variables, profitability, was represented by gross profit to sales ratio. Pearson coefficient model and multiple regression analyses were adopted by the study. The study established that only the inventory/cost of goods and account payable/cost of goods sold ratios can be considered as significant determinants of profitability of the pharmaceutical firms of the country. The findings of the study are crucial, particularly to the Pharmaceutical firms in Bangladesh in the sense that very few studies have concentrated on the sector. Furthermore, the study lays the foundation for more detailed studies

into identifying the internal determinants of profitability of pharmaceutical companies in Bangladesh. Pharmaceutical firms leverage so much on intellectual capacity and technology. Therefore, its determinants of profitability will not be same to the industrial goods firms in Nigeria. Moreover, the study used only two variables, all of which fall on liquidity, a single variable in this study. There is therefore, the need to carry this study to incorporate more variables which might have influence on profitability.

Burca and Batrinca (2014) analyzed determinants of financial performance in Romanian insurance market during the period, 2008-2012. Secondary data were collected from a sample size of 21 Romanian insurance companies. Results, through panel data analysis, show that financial leverage, company size, growth, underwriting risk, risk retention and solvency ratio are major determinants of profitability of insurance firms. This study is valuable only that its application in the Nigerian context would be an issue due to its focus on foreign firms. Furthermore, insurance companies are service oriented companies. Hence, variables that affect its profitability might be different from those of industrial goods firms in Nigeria that are product oriented firms.

Osuka and Osadume (2013) examined the major determinants of the financial performance of Deposit Money Banks (DMBs) quoted in the Nigeria Stock exchange over a period of ten years from 2001 to 2010. The study used three banks out of 24 banks. The study used regression analysis method and established that; asset quality, capital adequacy and employee motivations apart from profits are key success factors in the financial performance of banks. The study's choice of only 3 banks raises serious concern as findings from these few banks might not be reflective of the entire banking sector. Even if the issue of representativeness of the sample size is side-tracked, the fact that the population of the banks has been reduced

(from 24 to 15) and others have been merged, restructured imply that relationship that previously existed among the variables might no longer hold.

Kouser, Bano and Zeem (2012) examined the inter-relationship between firm size, growth and profitability of Non-Financial Companies from Pakistan. The study used firm growth and firm size and the independent variables where firm growth was measured as the ratio of retained earnings to net income multiplied by return on equity while firm size was measured as natural logarithm of total assets. Seventy (70) non-financial companies listed on Karachi Stock Exchange from 2001- 2010 were randomly selected across the thirteen sectors of the economy. Panel data techniques were employed, and the study concluded that growth has strong positive relationship with profitability of the firms, however, size has less significant and negative impact on the profitability. The limitation of this study is as similar as the one of Vatavu (2014). The limitation of the study is hinged on this concentration on foreign firms.

Margaretha and Supartika (2016) assessed factors affecting profitability such as firm size, firm age, growth, lagged profitability, productivity, and industry affiliation of Small and Medium Scale Enterprises (SMEs) firms listed on Indonesia Stock Exchange. Firm size was measured as logarithm of total assets; firm age as logarithm of the number of years since the firms was established; growth as current sales less previous sales, scaled by previous sales; lagged profitability as profitability in the immediate previous year; productivity as the ratio of value added to total number of employees; while industry affiliation was linked to valued added and measured as sales less cost of goods sold. The study covered the period of six years from 2007-2012. A sample size of 22 SMEs was drawn. The sample was taken based on PEFINDO 25 ranking index of 2012. Secondary data was collected from the published annual reports of the sampled firms over the period of coverage. Multiple regression analysis was employed and the

results show that firm size, growth, lagged profitability, productivity and industry affiliation significantly affect profitability. The scope of the study is quite wide, considering the number of cross-sections used. Furthermore, the study is appraised for its use of quite a reasonable sample size which has the potential for derivation of possible generalizations. This notwithstanding, the applicability of the findings of the study on industrial goods firms in Nigeria would be difficult as both the SMEs and industrial goods firms in Nigeria operate in different economic environments.

In a study by Pratheepan (2014), a balanced panel data of Sri Lankan listed manufacturing companies was used for examining the determinants of profitability of manufacturing companies. The dependent variable, profitability, was represented by return on assets and measured as ratio of profit to total assets. The independent variables included were firm size, leverage, liquidity and tangibility. Firm size was measured as logarithm of sales; leverage was measured as the ratio of debt to total assets; liquidity was measured as the ratio of current assets to current liabilities while tangibility was measured as the ratio of fixed assets to total assets. Fifty-five (55) listed manufacturing companies were selected. Secondary source of data were collected from the sampled firms over a period of ten years from 2003 to 2012, amounting to 550 observations. Various robustness tests were carried out including test for multicollinearity and Hausman specification tests. The study adopted panel data regression analysis in contrast to previous studies in Sri Lanka which used cross-sectional data analysis. According to findings, size has statistically significant positive relationship with profitability for selected listed manufacturing companies in Sri Lanka. Leverage and liquidity indicated insignificant impacts on profitability. Although industrial goods firms in Nigeria are also manufacturing companies, they operate in different environment from those of Sri Lanka. Hence,

it will be difficult to conclude that findings from Pratheepan's study will also be applicable to industrial goods firms in Nigeria.

Aparna (2015) sought to identify and analyse determinants of profitability of Steel Authority of India. The study used size, growth, liquidity, leverage and productivity as surrogates for determinants of profitability, based on existing literature. Size was measured as logarithm of total assets as distinct from Pratheepan (2014) who measured it as logarithm of sales. The measurement for growth was measured on the basis of year over year growth, while productivity, liquidity and leverage were measured as the ratio of total number of employees to total assets, ratio of current assets to current liabilities, and ratio of debt to equity respectively. Secondary data were collected for a single firm, Steel authority of India, over the period of 11 years from 2004 to 2014. The data, which amounted to 11 observations, were analyzed by using correlation and regression techniques through SPSS. Empirical evidence suggests that liquidity and productivity are positively correlated with profitability while Leverage, growth and size are negatively correlated with profitability. A key restraint with this study is that it utilized only one firm. Therefore, even though the methodology used is considered fitting, the findings of the investigation are limited due to the study's concentration on a single firm.

Sivathaasan, Tharanika, Sinthuja and Hanitha (2013) investigated factors that determine profitability with emphasis on selected manufacturing companies listed on Colombo Stock Exchange in Sri Lanka. The variables used to represent factors of profitability were capital structure, working capital, firm size, non-debt tax shield and growth rate. Capital structure, working capital and firm size were measured as the ratios of total debt to total equity, current assets to current liabilities and logarithm of total assets respectively while non-debt tax shield and growth rate were measured as the ratio of the summation of earnings after interest and tax to

total assets and ratio of the difference between current sales to previous sales to previous sales. The study covered a period of five years from 2008 to 2012. The results, based on regression analysis, revealed that while capital structure and non-debt tax shield have statistically significant impact on profitability, working capital, growth rate and firm size have insignificant effect. This study is very significant in that it employed most of the variables that are under consideration. However, it is subjected to the same limitation suffered by Pratheepan (2014).

Devi and Devi (2014) studied the determinants of firm's profitability firms with emphasis on Pakistani firms. The variables used in the study were the independent variables which included capital structure, financial leverage, firm size and the dependent variable which included corporate profitability. Capital structure was measured as the summation of reinvested profit, new capital, and long-term debt financing; leverage was calculated as the amount of fixed interest bearing funds while firm size was symbolized by sales turnover. Corporate profitability was proxied by return on assets. Secondary data on the variables were used for analysis. The data was collected from 50 companies for period of 7 years from 2006-2012. Using ordinary least square regression, the study found positive correlation between financial leverage and corporate profitability, and firm size and corporate profitability. However, further analysis revealed that all the explanatory variables conversely display non-significant relations with the dependent variable as they accounted merely about only 2% of the variation in the dependent variable. Capital structure revealed negative relationships with corporate profitability. The size of Pakistan firms, coupled with their different capital structure and financial leverage, are quite distinct from those of Nigerian studies. Hence, there is need to confirm the relationship among the variables used in the study in the context of industrial goods firms in Nigeria.

In addition to the above studies that examined determinants of profitability of firms, some studies the individual effect of the determinants of profitability such as leverage, liquidity, firm size, board size, cash flows and audit committee meeting on profitability. Some of these studies are reviewed below.

2.3.2 Leverage and Profitability

Syed (2013) investigated the influence of financial leverage on financial performance by taking evidence from listed sugar companies of Pakistan. Financial performance, the dependent variables was measured using five (5) performance indicators, viz; return on assets, return on equity, earnings per share, net profit and percentage growth. The independent variable, financial leverage, was represented by debt to equity ratio. The study used 35 listed companies from food producer sector of Karachi Stock Exchange over a period of 6 years from 2006 to 2011. Regression analysis was used to analyse the data collected through secondary sources. The results reveal positive relationship of debt equity ratio with return on asset and negative relationship of debt equity ratio with earning per share, net profit margin and return on equity. However, the study's strict reliance on foreign firms makes its result unsuitable for possible application to the Nigerian context as the economic environment in Nigeria is quite distinct.

Siyanbola, Olaoye and Olurin (2015) examined the impact of gearing on performance of selected companies in Nigeria. The population comprised different categories of workers of selected manufacturing companies in Nigeria. From the population, a sample of 20 workers was obtained through the simple random selection technique. Direct interviews were also held with customers and other stakeholders of the companies involved. T-test statistic was used to analyse data gathered. Finding reveals that leverage plays an important role in the companies' performance over the years. From direct interview, it was discovered that if the gearing of a

company is efficiently managed and utilised, earnings of that company would increase and would have direct impact on performance and its market share in the industry it belongs. The choice of a survey design for such a research might be questionable. Issues such as response bias cannot be avoided. Thus, it may be more objective to use the financial statements of the selected firms.

Saber (2013) examined the effect of financial leverage and environment risk on performance of firms of listed in Tehran Stock Exchange. Financial leverage was represented by debt ratio which was measured as the ratio of average debts to book value of assets. Environmental risk was represented by economic risk and market risk. Economic risk was measured as the β coefficient of changes in price while environmental risk was measured as the ratio of the covariance of the product of gross domestic product growth rate and sales growth rate to the standard deviation of gross domestic product rate. Firm performance, the dependent variable, was represented by return on equity. The study covered a period of seven (7) years from 2005 to 2011. Multiple regressions was used to test research hypotheses. The findings of the study showed that there is a negative relationship between variables of financial leverage, market risk and economic risk with return on equity. It is the opinion of this study that that return on equity is not a good proxy for profitability where the target firms are not service oriented. This is because, the non-social oriented firms such as industrial goods firms deal mostly in assets. Therefore, a better proxy would be return on total assets.

Akinmulegun (2012) empirically examined the effect of financial leverage on corporate performance in Nigeria. The study used debt ratio, measured as ratio of debt to equity, as a proxy for financial leverage while corporate performance was represented by earnings per share and net assets per share. Vector Auto Regression (VAR) model was used to analyse the secondary data

collected over a period of 6 years from 1999 to 2005. 17 firms were randomly selected and studied. The findings reveal that leverage shocks exert substantially on corporate performance in Nigeria especially when the net assets per share (NAPS) is used as an indicator of corporate performance in Nigeria over the period covered by the study. Earnings per share depend on feedback shock and less on leverage shock. Also, the finding revealed that the leverage shock on earnings per share indirectly affect the net assets per share of firms as the bulk of the shocks on the net assets per share was received from earnings per share of the firms. The strength notwithstanding, the study's scope (1999-2005) raises serious concern as changes in economic circumstances might mar the applicability of the findings to current economic happenings. Hence, there is need for current research on similar topic.

Mohammad (2014) sought to find out the relationship between financial leverage and financial performance of listed chemical companies in Pakistan. Financial leverage was measured as the ratio of total debt to equity while financial performance was represented by return on total assets. The period of coverage of the study was 7 years from 2006 to 2013. Sample size which consisted of 20 listed companies from chemical sector of Karachi Stock Exchange was used. Using multiple regression analysis, the results of the study show a positive relationship between financial leverage and financial performance of the studied firms. The population of the study being top Pakistani chemical companies is good, but it could be viewed that a study on industrial goods firms could produce a different result.

Aqsa and Ghulam (2014) examined the relationship between financial leverage and financial performance of Pakistani firms. Financial leverage was proxied by debt equity ratio, both in percentage and in ratio and gearing ratio (the ratio of long-term debt to shareholders' equity). Financial performance was represented by return on assets, return on equity, return on

capital employed, net profit margin, profit before tax and profit after tax. The study covered a period of ten years from 2001 to 2009. Twelve (12) listed companies were selected as sample from fuel and energy sector listed on the Karachi Stock Exchange (KSE). The study found out that financial leverage variables positively affects financial performance variables of the selected Pakistani firms. The study adopted regression analysis, which confirms that firms having high profits must improve their financial performance by increasing financial leverage. The period covered by the study is considered to have been long for its conclusion to be drawn on present issues.

Enekwe, Agu and Eziedo (2014) studied the effect of financial leverage on financial performance of the Nigeria pharmaceutical companies. Financial leverage was represented by debt ratio (measured as the ratio of total liabilities to total assets), debt equity ratio (measured as the ratio of total liabilities to total equity) and interest coverage (measured as the ratio of interest before interest and tax to interest). The surrogate used for financial performance was return on assets. The period of coverage by the study was twelve (12) years from 2001 to 2012. The sample size used by the study was three (3) selected companies, while Pearson correlation and regression techniques were employed. The results show that debt ratio (DR) and interest coverage ratio (ICR) have positive relationship with Return on Assets (ROA) of Nigerian pharmaceutical industry. The use of three companies from a subsector as the basis for analysis might produce results that would be difficult for generalization even in that specific sector.

2.3.3 Liquidity and Profitability

Ahmad (2016) assessed the effect of liquidity on profitability with emphasis on Standard Chartered Bank in Pakistan. The variables used by the study to represent liquidity were current

ratio, quick ratio, and net-working capital while profitability was represented by return on assets. The study covered a period of ten (10) years from 2004 to 2013. Secondary data was collected from annual reports of Standard Chartered Bank. Regression analysis was employed and the findings suggest that there is a positive relation between liquidity and profitability. The import of the finding of the study is that banks need to focus on liquidity management which has a positive relation with profitability. Although the bank selected was one the largest bank in Pakistan, the study's concentration on only one firm is a cause for concern as the findings of the study cannot be generalized. This is in spite of the ability of the study to capture the key variables of liquidity (acid test ratio, liquid ratio) in its analysis.

Similarly, an analysis of the relationship between liquidity and profitability was made by Reddy (2015). The study concentrated on the annual financial reports of Tata Steel Limited. Secondary data collected was subjected to analysis using Spearson Rank Correlation. The study found that there is negative and significant relationship between liquidity and profitability. Although the evidence submitted by the study could provide useful insights to the understanding of the relationship between liquidity and profitability, an essential issue which cannot be overemphasized is the study's choice of correlation which does not reveal causation but rather relationship.

Bala, Garba and Ibrahim (2015) examined the effect of corporate liquidity on the profitability of listed food and beverages firms in Nigeria. The variables used by the study include profitability, the dependent variable, which was proxied by return on assets and measured as the ratio of profit after tax to total assets. The independent variables include quick ratio (measured as the ratio of current assets less stock to current liabilities), average collection period, average payment period and cash conversion cycle. Seven (7) firms in the food and

beverages sub-sector were used. Secondary data were gathered from the selected firms over a period of six years from 2009 to 2014. Multiple regression analysis was employed. The study found that there is a positive relationship between quick ratio, accounts payable with profitability. However, the study reported a negative relationship between accounts receivable and profitability of the studied firms.

Vintilă and Nenu (2016) opined that liquidity and profitability are issues of significant influence on companies' stability and development. Based on this background, the study investigated to test the relationship between liquidity and profitability, using firms listed on the Bucharest Stock Exchange. An unbalanced panel data set was gathered over a period of ten years from 2005 to 2014. Multivariate regression models were applied on the data, and it was found that there is a negative relationship between liquidity and corporate financial performance. The study is commended for its use of current data, covering a reasonable period of time. However, because of the uniqueness of the Nigerian environment, particularly, the economic environment, the findings of the study might change if a similar study is carried out in Nigeria. This is relevant as a similar study was carried out in a different environment by Maqsood, Anwar, Raza, Ijaz and Shouqat (2016) and the results differed.

Maqsood, Anwar, Raza, Ijaz and Shouqat (2016) explored the relationship between liquidity and profitability with focus on some selected banks in Pakistan. Liquidity was represented by current ratio and cash ratio. The study used eight (8) banks as its sample size. Secondary data were gathered from the annual reports of the banks over a period of twelve (12) years from 2004 to 2015. The data collected were analysed through correlation and regression analysis. The results show that liquidity has significant influence on profitability of the studied banks. The period covered by the study can be considered as quite reasonable as the period captures current period and the number cross-sections is reasonable. However, the fact that the

drivers of profitability of deposit money banks cannot be same with those of the industrial goods firms, which are the concern of this study.

Kidmat and Rehman (2014) assessed the impact of liquidity and solvency on profitability of chemical sector of Pakistan. Profitability was measured by return on assets. Ten listed chemical companies in Pakistan were sampled for the study and their published annual reports were used to obtain data over a period of 10 years from 2001-2009. Based on regression analysis, it was discovered that solvency ratio has negative and highly significant impact on return on assets and return on equity. It was also concluded that liquidity has high and positive effect over return on assets of the sector. The limitation of this study is similar to the shortcoming of Vintila and Nenu (2016).

Ibe (2013) examined the impact of liquidity management on the profitability of banks in Nigeria. Three banks were randomly selected to represent the entire banking industry in Nigeria. The proxies for liquidity management include cash and short term fund; bank balances such as treasury bills and certificates, while profit after tax was the proxy for profitability. The study covered a period of six years from 2006-2011. Secondary data was gathered from the three selected banks in Nigeria. Regression analysis was used to analyse the data gathered. The results indicate that liquidity management affects performance of Nigerian banking industry. The strength of the study lies in its inclusion of solvency ratio as one of the proxies of liquidity as solvency is a critical issue particular with respect to the sustainability of banks in Nigeria. Banks in Nigeria possess economic features quite distinct from those of industrial goods firms.

Saleem and Rehman (2011) studied the relationship between liquidity and profitability of oil and gas companies in Pakistan. Liquidity was proxied by current ratio (measured as the ratio of current assets to current liabilities), quick ratio (measured as the ratio of current assets less

inventories to current liabilities) and liquid ratio (measured as the ratio of cash plus investments to current liabilities). Profitability was proxied by return on assets and return on equity. The study covered the period of 6 years from 2004 to 2009. A sample of 26 listed oil and gas companies on the Karachi Stock Exchange was drawn. The results, using regression analysis, show that there is a significant impact of liquidity ratio on (ROA), but return on equity is not affected by current ratio, quick ratio and liquid ratio. The study provides results that can explain the relationship between key variables (liquidity and profitability) which are core to this current study. The major pitfall of the study by Saleem and Rehman (2011) is that the period covered might not reflect present economic circumstances even in Pakistan.

Marozva (2015) evaluated the influence of liquidity on bank performance in South-Africa. The study covered a period of eight years from 1997 to 2004. A sample of five (5) banks was used. Multiple regression analysis was adopted for analysis of data collected, and the results show that there is a significant negative relationship between liquidity and banks' performance. The findings of the study might not provide sufficient understanding of the relationship between liquidity and performance of asset-oriented firms such as industrial goods firms in Nigeria.

2.3.4 Board Size and Profitability

Studies on the relationship between board size and profitability have increased considerably. This underscores the growing influence of board size on profitability as the following review suggests.

Johl, Kaur and Cooper (2015) examined the impact of board characteristics on firm performance, with emphasis on the effects of board meeting, board independence, board size and

directors' accounting expertise on firm accounting performance. The study used both financial and non-financial data from annual reports of the 700 public listed firms in Malaysia for the year 2009. The result shows that board size positively affects firm performance. These firms were selected for just one year, therefore, time effect was ignored.

Doğa and Yildiz (2013) investigated the impact of board of directors' size on bank performance. The study concentrated on banks listed on the Istanbul Stock Exchange (ISE). A sample of twelve (12) banks was used. The variables used by the study were board size which was measured as the number of directors that a board has and profitability which was proxied by return on assets and return on equity. Secondary data was gathered from the financial reports of the selected banks for a period of six years from 2005 to 2010. Regression and correlation analyses were applied on the data. The findings show that banks' board of directors' size negatively affects accounting-based performance indicators (return on assets and return on equity). The period covered by the study is not current even if its foreign orientation is to be ignored.

Malik, Wan, Ahmad, Naseem and Rehman (2014) examined the relationship between board size and firm performance using the Pakistani banking sector. A sample of fourteen listed commercial banks of Pakistan was studied. The study covered a period of five (5) years from 2008 to 2012. Secondary data were gathered from the sampled banks and the data were analysed using regression analysis. Based on the findings, that there is significant positive relationship between board size and bank performance, the study concluded that a large board size can enhance the bank performance in Pakistani scenario. The contribution of the study to literature cannot be overemphasized as the study is one of the few studies that have specifically examined the influence of board size on profitability of firms. The limitation suffered by this study is as

same as that of Doğa and Yildiz (2013) due its failure to cover current period and its foreign concentration.

Oyerogba, Memba and Riro (2016) found that board size positively and significantly affects firm performance. The relationship between the two variables was examined using a sample of 70 listed companies in Nigeria for a period of ten years ranging from 2004 to 2013. Multiple regression analysis was carried out on secondary data collected from the studied firms. The study used a large sample size and was domiciled in Nigeria, implying that some industrial goods firms might have been included in the sampled firms. This provides basis for application of their findings with respect to the relationship between board size and firm profitability in Nigeria.

Weterings and Swagerman (2011) examined the impact of board size on firm value with focus on property firms and real estate investment trusts (REITs) listed on the Hong Kong, Malaysia and Singapore. The study covered a period of five (5) years from 2006 to 2010. Board size was measured as the number of board of directors while firm value was measured as the market value of equity. The study used a sample of 155 firms and the study found that there is a positive relationship between board size and firm value for listed ordinary property firms. The choice of 155 firms is considered adequate for possible generalization with respect to the property and real estate investment trusts.

Bebeji, Mohammed and Tanko (2015) analyzed the effects of board size and board composition on the performance of Nigerian banks. The financial statements of five banks were used as a sample for the period of nine years and the data collected were analysed using multivariate regression analysis. The study found that board size has negative and significant impact on the performance of banks in Nigeria. It is recommended that banks should have

adequate board size to the scale and complexity of the organisation's operations and be composed in such a way as to ensure diversity of experience without compromising independence, compatibility, integrity and availability of members to attend meetings. The banks in Nigeria are strictly regulated and have peculiar attributes that are distinct from industrial goods firms hence the result of the study might not be same if the study is carried out on industrial goods firms in Nigeria.

Dogan and Topal (2014) examined the impact of the board size on the financial performance of firms. The study utilized data from 2002-2012 of 136 firms in manufacturing industry section of Borsa Istanbul. The results suggest a positive relation between the board size and return on asset. Two key issues serve as limitation to the study. These include non use of current period as four years have passed after the study's period of coverage. Furthermore, the study's concentration on foreign firms calls for a Nigerian study.

Bulan, Sanyal and Yan (2009) investigated the relationship between firm productivity and four different board characteristics, including board size, board independence, Chief Executive Officer (CEO) board leadership and board ownership. A sample of 1109 U.S. manufacturing firms between 1996 and 2005 was used. They found that the consistent negative relationship between board size and financial performance does not apply to all firms when productivity is used as the measure of performance. The period covered by the study is more than a decade ago.

Gill and Mathur (2011) examined the impact of board size, the CEO (Chief Executive Officer) duality, and corporate liquidity on the profitability of Canadian service firms. A sample of 75 Canadian service firms listed on Toronto Stock Exchange (TSX) for a period of 3 years (from 2008-2010) was selected. The study applied co-relational and non-experimental research

design. The results indicate that larger board size negatively impact on the profitability of Canadian service firms. For regression analysis, a period of 3 years might not be sufficient for generalization to produce a robust result.

2.3.5 Firm Size and Profitability

Since the size of the firm has continued to be of concern to researchers, some studies have been carried out to examine the relationship between firm size and profitability. Some of these studies are reviewed below.

Babalola (2013) evaluated the effect of firm size on firm's profitability in Nigeria. The study utilized panel data set over the period of 10 years from 2000 to 2009. Firm size was measured as the logarithm of total assets while profitability was represented as return on assets which was measured as profit after tax divided by total assets. A random sample of 80 non-financial quoted firms listed on the Nigeria Stock Exchange (NSE) was drawn. Data collected were analysed using correlation and regression analysis. According to the results of the study, firm size, both in terms of total assets and in terms of total sales, has a positive impact on the profitability of manufacturing companies in Nigeria. The sample size drawn encompassed of firms from different sectors, hence, the uniqueness of the industrial firms might not be addressed. Furthermore, the findings of this study require further validation as its period of coverage lags behind.

Kumar and Kaur (2016) noted that the empirical evidence on size and profitability is vast and showed variations in results. Based on this backdrop, their study investigated the relationship between firm size and profitability of Indian automobile industry. To analyze the relationship, a linear regression model was employed. The study covered a period of seventeen (17) years from

1998 to 2014, and measured profitability as the ratio of net profit to total sales. Firm size was represented by the ratio of total sales turnover to net assets. The study found that there is no significant relationship between firm size and profitability. A significant achievement of the study is its use of long period of coverage.

Baloch, Ihsan, Kakakhel and Sethi (2015) investigated the impact of firm size, asset tangibility and retained earnings on the financial leverage with evidence from the auto sector in Pakistan. Data pertaining to 22 selected firms were collected from the financial statement analysis document issued by the state bank of Pakistan over a period of 6 years from 2006-2011. The study used multiple regression models and the result indicates that firm size and asset tangibility significantly affect financial leverage. In the study, financial leverage was used as a surrogate for firm performance. Therefore, the study could not explicitly measure the relationship between firm size and profitability as leverage cannot be good a measure of profitability.

Asgari, Pour, Zadeh and Pahlavan (2015) investigated the relationship between firm growth opportunities and firm size on retained earnings of companies listed on Tehran Stock Exchange. The study covered a period of 6 years from 2006 to 2011. A sample of 111 companies was selected. The study used regression analysis and found that there is an inverse and significant relationship between company's growth opportunities and retained earnings of companies. Finally, results suggest that there is a direct and significant relationship between firm size and retained earnings of companies.

Dogan (2013) explored the effect of firm size on profitability with evidence from Turkish firms. Data of 200 companies which were active on Istanbul Stock Exchange (ISE) between the years 2008 and 2011 were collected and analyzed using multiple regression and correlation

analysis. The result of analysis indicates a positive relation between firm size and profitability of firms. The major breakthrough of the study is selection of many firms (200) which could be seen as being representative enough of the firms (500) listed on the Istanbul Stock Exchange. This notwithstanding, the choice of the period of coverage is a concern as it might not reflect current realities.

Niresh and Velnampy (2014) studied the effect of firm size on profitability of quoted manufacturing firms in Sri Lanka. Firm size was measured as the natural logarithm of total assets while profitability was measured as the ratio of net profit to total assets. The study selected fifteen (15) companies listed on the Colombo Stock Exchange (CSE), and covered a period of five (5) years from 2008 to 2012. Secondary data were gathered from the selected firms and analysed using correlation and regression. The finding of the study revealed that firm size has no profound impact on profitability of the listed manufacturing firms in Sri Lanka.

2.3.6 Cash Flows and Profitability

Cash flows defines the solvency of an enterprise. Its analysis has become as not every profitable firm is solvent. Hence, several studies have separately assessed the effect the cash flows on profitability of firms as the following review unveils.

Okpe, Duru and Alor (2015) studied the effect of cash flow statement on companies' profitability in Nigeria. The study sampled three banks including Fidelity Bank of Nigeria Plc, First Bank of Nigeria Plc and First City Monument Bank Plc. Information were obtained from the cash flow statements contained in the annual reports of the banks over a period of five years from 2009 to 2013. Multiple regression was used to analyse data. The results study reveal that operating and financing cash-flows have significant positive effect on firms in the banking sector

of Nigeria. However, the study found that investing cash flow has significant negative effect on the profitability of the companies under study. The major significance of the study lies in its ability to split various components of cash flows and analyse their relationships with profitability separately.

Ali, Alireza and Jalal (2013) studied the association between cash flow and earnings as a measure of firm performance, using multiple regression to analysis data for a period of nine years from 2003 to 2011. The study submits that company's performance and cash flow have a significant negative relationship. This study is similar to Okpe, Duru and Alor (2015) except that it treats cash flows as a single variable while Okpe, Duru and Alor (2015) split cash flows into operating, financing and investing cash flows.

Chikashi (2013) investigated the relationship between comprehensive income and firm performance with emphasis on the electric appliances industry of the Tokyo Stock Exchange. The researcher used secondary data for two years from 2009 to 2011 and employed the Panel data regression analysis. The study reveals that cash flows has negative relationship with firm performance. The finding of this study is similar to that of Okpe, Duru and Alor (2015). However, a wider period of study could have provided more robust results.

Adelegan (2003) earlier analysed the relationship between cash flow and dividend changes in Nigeria, using a wider scope than Chiskashi (2013). The researcher used the ordinary least square on data gathered from quoted firms in Nigeria over a wider testing period from, 1984 to 1997. The empirical results reveal that the relationship between cash flow and firm performances is positively significant. This is contrary to the findings documented by Chikashi (2013) and Okpe, Duru and Alor (2015).

Brush, Bromily and Hendrickx (2000) examined the free cash flow hypothesis for sales growth and firm performance. They used the white and Durbin- Watson tests on the data collected from six (6) listed chemical firms in Bangladesh over the period, 1988 to 1995. The results reveal that firm performance and cash flow have a significant positive relationship. This finding is consistent with the finding of Adelegan (2003).

2.3.7 Audit Committee Meeting and Profitability

Audit committee meeting is a corporate governance variable that is gaining considerable attention in the literature. This is borne out of the fact that frequency of audit committee meeting defines the degree of involvement in the monitoring role of the audit committee. Some of the empirical studies that have dwelt on the relationship between audit committee meeting and profitability are discussed below.

Beasley, Carcello, Hermanson and Lapedes (2000) examined the relationship between frequency of audit committee meeting and the likelihood of financial statement fraud. They found that the nature of fraud differs by industry. Their findings arose from data gathered through primary sources from five (5) Malaysian insurance firms using structured questionnaire. They also found that companies that have higher audit committee meetings witness lower cases of fraud and thus have better performance. The implication of this is that frequent audit committee meeting improves performance of firms. This finding is similar to the finding of Krishnan and Visvanathan (2009) who showed that the firms with higher number of audit committee meetings demand more assurances and higher quality audit from their auditors. In order to provide more assurances and higher quality of external audit, the auditors may need to perform additional audit work in terms of enlarging the audit scope and increasing the audit

testing levels, which results in both higher audit fees and higher audit quality. As a result, the performance of the firm is improved.

Saat, Karbhari, Xiao, Ashikin and Heravi (2012) examined the frequency of audit committee meetings and firm performance, using deposit money banks in Nigeria. The study covered a period of five years from 2003 to 2008. Both the primary and secondary data were used. The data collected were analysed through regression analysis and the result indicates that frequency of audit committee meeting improves firm performance. The combination of primary data and secondary data makes the findings of the study more robust than the study of Beasley, Carcello, Hermanson and Lapides (2000) as primary data alone is prone to produce bias results.

Al-Matari, Al-Swidi, Fadzil and Al-Matari (2015) examined the relationship between the internal corporate governance mechanisms such as the board of directors, audit committee characteristics and the performance of the Saudi companies listed in the Saudi stock exchange in 2010, excluding financial companies. The study found that audit committee does not mitigate agency problems leading to reduced agency cost by aligning the interests of controlling owners with those of the company. Audit committee meeting was found to be insignificantly related to firm performance. This is contrary to the findings of Saat, Karbhari, Xiao, Ashikin and Heravi (2012).

From the various empirical studies reviewed, it can be observed that most of the studies are from developed economies. Empirical studies from developing countries such as Nigeria are relatively scanty. Besides, empirical evidence on the relationship between variables such as liquidity, leverage, firm size and board size and profitability in the literature are mixed and inconclusive. While some studies document positive association, others suggest a negative association between the individual variables and profitability, thus making the present study

imperative for Nigeria. In addition, most of the study covered a period that is not current. The current studies suffer from other methodological pitfalls including failure to use better techniques of analysis such as the fixed and random effects where necessary, and use of small sample size.

2.4 Theoretical Framework

Quite a good number of theoretical constructs can be used to underpin the relationship among determinants of profitability and profitability of companies as discussed below.

2.4.1 Agency Theory

The agency theory was developed by Jensen and Meckling (1976). In its primitive form, the agency theory relates to situations in which one individual (called the agent) is engaged by another individual (called the principal) to act on his/her behalf based upon a pre-determined legal arrangement. Since both individuals are assumed to be motivated by their pecuniary and non-pecuniary interests, and their interests do not always move in same direction, there is the contention that the agent may take actions which will endanger the principal's interests.

Leverage has connection with agency theory as use of debt impacts agency cost in several ways. In the first instance, the use of debt shrinks the free cash flow available to a manager as promised interest payments to debt holders decrease free cash flow available for investment, other factors held constant. This shrinkage in free cash flow also helps in restraining overinvestment problem. In addition, use of debt can prompt increased monitoring of managers by debt holders such as bank, which exerts considerable pressure on managers to pioneer the affairs of the business profitably.

In a related analysis, Johl, Kaur and Cooper (2015) have suggested various governance mechanisms to address the agency problems. Agency theory thus provides a basis for firm governance through the use of internal and external mechanisms. The governance mechanisms are designed to mitigate agency conflict. One of such governance mechanisms used for this purpose is board of directors. Board of directors is expected to control for agency costs and enhance profitability of the firm.

The effect of liquidity and cash flows won profitability is also explained by the agency theory. This connection is captured in the Free Cash Flow (FCF) hypothesis which is a corollary of the agency theory. Free cash flow allows managers to pursue personal goals without having to go to the bond or equity markets which could have subjected them to external scrutiny. Therefore, having FCF or liquidity constitutes a necessary condition to put management's interests at odds with the interests of shareholders (Jensen, 1993).

Furthermore, in order to mitigate the agency cost arising between managers and resource holders, the agency theory provides a basis for understanding on the governance of firms through various internal and external mechanisms. Such mechanisms as the audit committee help in reduction of agency costs and consequently, achievement of desired level of performance, including profitability.

An important measure of controlling agency costs is through the use of an audit committee which is an important part of the control system for internal monitoring (Fama, 1980; Fama & Jensen, 1983). According to Abbott (2004), Chen & Zhou (2007) and Krishnan and Lee (2009), monitoring mechanisms such as audit committee enables the owners to closely monitor the activities of the managers. Weak monitoring may allow managers to engage in unethical practices, while effective audit committee will reduce such practices by managers. Based on the

agency theory, audit committee functions are expected to yield a positive impact on performance, sustain compliance with the relevant laws and enhance the confidence of the investors.

2.4.2 Resource Based Theory

Resource-based theory is a theory in strategic management and finance which emphasizes the need for organizations to articulate the relationships among firm resources, capabilities, and competitive advantage by harnessing available resources judiciously using their capabilities and competences in a way as to achieve competitive advantage and sustain profitability. The theory is credited to Penrose (1959). The theory contends that the firm's ability to establish and sustain a profitable market position, critically depends on availability of underlying resources and capabilities. The resource based view suggests that competitive advantage and firm profitability are a consequence of firm-specific resources and capabilities that are costly to copy by other competitors (Peteraf & Barney, 2003). Peteraf and Barney (2003) define firm resources as including all assets, capabilities, organizational processes, firm attributes, information, knowledge, among others, controlled by a firm that enable the firm to conceive and implement strategies.

Liquidity is an asset to the firm, and thus following the tenets of the resource-based theory, availability of liquidity and judicious use of it will lead to creation and sustainability of competitive advantage. This competitive advantage will command increased profitability for the firms against its competitors. Since resource based theory sees liquidity as an asset to the firm, it therefore means that, its proper use will avail the firm the opportunity to settle short-term obligations that might mar its chances of making profit. For instance, liquidity can be used as a resource to settle overdrafts and thus save the firm cost of interest attached to long overdue

overdrafts. Therefore, the resource based theory hypothesizes positive relationship between liquidity and firm profitability.

Similarly, the resource based theory provides a theoretical foundation for the role of board of directors as a resource to the firm. Penrose (1959) states the importance of unique bundles of resources a firm controls that are crucial for its growth and profitability. Such resources include all assets, capabilities, organizational processes, firm attributes, information, and knowledge controlled by a firm, in order to improve efficiency and effectiveness (Tanna, Pasiouras & Nnadi, 2007). From this point of view, firm governance structure and the board composition is viewed as a resource that can add value to the firm and enhance profitability of the firm.

A key argument of the resource based theory, which was later coined by Pfeffer and Salancik (1978) as resource dependence theory, is that organizations attempt to exert control over their environment by co-opting the resources needed to survive (Pfeffer & Salancik, 1978). Accordingly, boards are considered as a link between the firm and the essential resources that a firm needs from the external environment for superior performance. In the resource dependence role, board of directors are deemed to be capable of bringing resources to the firm, such as information, skills, innovation, ideas, business strategies, among others (Hillman & Dalziel, 2003).

Board of directors also function as boundary spanners, and thereby enhance the prospects of a firm's business. For example, the outside links and networks that board members exercise may positively benefit the development of business and long-term prospects. Pfeffer and Salancik (1978) observe, when an organization appoints an individual to a board, it expects the individual will come to support the organization, using his or her expertise. Pfeffer (1972) shows

that board size is essential to managing an organization's needs for improved performance. In the presence of higher environmental uncertainty, larger board size brings about more efficient and effective strategy development and execution (Pearce & Zahra, 1992; Carpenter & Westphal, 2001). Thus, boards serve as a mechanism whereby a firm links with its external environment to secure resources and, to protect itself against environmental uncertainty. Thus, the resource based theory views the board as a resource that can not only supplant its need for other resources, but also influence the environment in its favour, and thereby improve the firm's financial performance. Based on the tenets of the resource dependency theory, a positive relationship between large board size and firm profitability is expected.

2.4.3 Structural Inertia Theory

The structural inertia theory was put forward by Hannan and Freeman (1984). From the perspective of Hannan and Freeman's (1984) theory of structural inertia, as an organisation grows larger, bureaucracy increases, inflexibility sets in which may cause resistance to change and ultimately decrease the level of profitability. This means a functional relationship exists between company size and profitability. The negative relationship is due to the fact that when an organisation becomes larger, its increased bureaucracy causes stiff resistance to change which will ultimately decrease the level of profit. The study therefore proposes a negative relationship between firm size and profitability.

This study is hinged on the agency theory, resource based theory and the structural inertia theory. This is because they best capture the variables of the study. The agency theory relates board size, audit committee meeting and leverage with profitability; the resource based theory relates liquidity and cash flows to firm profitability and the structural inertia theory relates firm size to profitability.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodology that is utilized in this study. It discusses research design, population and sample size, source and method of data collection, technique of data analysis, variables and their measurement and model specification.

3.2 Research design

This study adopts correlational research design. It is a research design that seeks to explain statistical relationship between two or more variables. It is considered most appropriate research design for this study in view of the fact that it warrants testing of expected relationships between and among variables and the derivation of logical inferences regarding such relationships.

3.3 Population and Sample Size

The population of this study consists of twenty-one listed industrial goods firms in Nigeria as retrieved from the Nigerian Stock Exchange (NSE) Fact Book as at 31st December, 2015. These firms are shown in table 3.1. However, the basic criterion for inclusion of any company into this study is consistent availability of data throughout the period of study. Based on this, six (6) firms are been eliminated. These include: Adswitch Plc, African Paints (Nigeria) Plc, DnMeyer plc, IPWA, Premier Paints plc and West African Glass Industry Plc. Therefore, the adjusted population is fifteen firms (representing about 71% of the firms in the industry). These companies produce or deal in products such as cement, chemicals, protectives, industrial decorative and architectural coatings and paints and related products.

Table 3.1 List of Industrial Goods Firms Listed on the Nigerian Stock Exchange

S/N0	Name	Year of Listing
1	Adswitch Plc	1982
2	African Paints (Nigeria) Plc	1996
3	Ashaka Cement Plc	1974
4	Austin Laz & Company Plc	1982
5	Avon Crowncaps & Containers Plc	1977
6	Berger Paints Plc	1974
7	Beta Glass Company Plc	1974
8	Cap Plc	1968
9	Cement Company of Northern Nigeria1. Plc	1962
10	Cutix Plc	1982
11	Dangote Cement Plc	1992
12	DnMeyer plc	1979
13	First Aluminium Nigeria Plc	1962
14	Greif Nigeria Plc	1969
15	IPWA	1978
16	Lafarge Africa Plc	1962
17	Nigerian Ropes Plc	1982
18	Paints and Coatings Manufacturers Plc	2001
19	Portland Paints & Products Nigeria Plc	2001
20	Premier Paints plc	1995
21	West African Glass Industry Plc.	1972

Source: Nigerian Stock Exchange Fact Book as at 31st December, 2015.

The study focuses on industrial goods firms because it is one of the sectors that has contributed immensely to the development of the Nigerian economy, and yet has not received adequate attention. With the recent administration's resolve to boost industrialization in the country through establishment and sustainability of industrial firms, it has become necessary that a study of this nature be conducted.

The study thus employs census approach in sampling. Consequently, all the firms included in the adjusted population are investigated. Hence, the sample size is fifteen (15). The list of sampled firms is depicted in table 3.2.

Table 3.2: List of Sampled Industrial Goods Firms Listed on the Nigerian Stock Exchange

S/N0	Name	Symbol	Year of Listing
1	Ashaka Cement Plc	Ashakacem	1974
2	Austin Laz & Company Plc	Austinlaz	1982
3	Avon Crowncaps & Containers Plc	Avoncrown	1977
4	Berger Paints Plc	Berger	1974
5	Beta Glass Company Plc	Betaglas	1974
6	Cap Plc	Cap	1968
7	Cement Company of Northern Nig. Plc	CCNN	1962
8	Cutix Plc	Cutix	1982
9	Dangote Cement Plc	Dangcem	1992
10	First Aluminium Nigeria Plc	Firstalum	1979
11	Greif Nigeria Plc	Vanleer	1962
12	Lafarge Africa Plc	WAPCO	1962
13	Nigerian Ropes Plc	Nigropes	1982
14	Paints and Coatings Manufacturers Plc	Paintcom	2001
15	Portland Paints & Products Nigeria Plc	Prepaints	2001

Source: Nigerian Stock Exchange Fact Book as at 31st December, 2015.

3.4 Sources and Method of Data Collection

The study uses secondary data extracted from the published annual reports of the sampled firms. The annual reports are retrieved using two sources. First, the official websites of the firms are accessed and available reports downloaded. Second, other annual reports not gotten from the firm's websites are retrieved from the Nigerian Stock Exchange Fact Book.

3.5 Technique of Data Analysis

Based on the data type and previous research studies, the study uses panel data regression technique. The major tool of data analysis that is used is multiple regression analysis which is carried out using STATA statistical software, while SPSS software is used to run stepwise regression for selection of variables. The data is further analysed using various robustness tests such as multicollinearity, normality and heteroscedasticity. These are carried out in order to ensure that the independent variables are free from multicollinearity problem, the data is

normally distributed and the variability in the error term is constant. The essence of these analyses is to improve the validity of all the statistical inferences that are made. Since the data has panel attributes, Hausman specification tests are performed to ascertain whether the study should use fixed effect or random effect.

3.6 Variables Measurement and Model Specification

The variables for the study are split into dependent and independent variables. Their measurements are as shown in the table below:

Table 3.3: Variables and their Measurement

S/NO	Proxy	Type	Measurement	Source
i.	Return on assets (ROA)	Dependent	Profit before interest and tax/total assets	Burja (2011), Magaretha and Supertika (2016)
ii.	Leverage (LEV)	Independent	Total debt/total assets	Lobos and Szewcyk (2013)
iii.	Liquidity	Independent	Current assets/current liabilities	Ehiedu, and Chukwunweik (2014).
iv.	Board Size	Independent	Number of board members	Dogan and Yildiz (2013)
v.	Firm Size	Independent	Natural logarithm of total assets	Babalola (2013)
vi.	Cash Flows	Independent	Net operating cash flows/total assets	Okpe, Duru and Alor (2015)
vii.	Audit Committee meeting	Independent	No of audit committee meetings held per year	Al-Matari, Al-Swidi, Fadzil and Al-Matari (2015)

Source: Author's Compilation, 2016

The panel data methodology is adopted since the data analysed has panel attributes. Since there are various variables that have been discussed in the literature as being determinants of profitability, their careful selection becomes necessary. For this reason, stepwise regression was

carried out, using SPSS software, to arrive at the best model. Twelve (12) variables (Firm size, cash flows, liquidity, board size, leverage, audit committee meeting, stock turnover rate, firm size, board meeting, audit quality, audit size, and board diversity) that have been commonly discussed in literature were used to run the stepwise regression. Results as shown in appendix B were used to arrive at the model for this study. The model below (model six) was selected due to its higher R^2 and inclusion of more variables, comparative to other suggested models. The model is as follows:

$$ROA_{it} = \beta_0 + \beta_1 LEV_{it} + \beta_2 SIZ_{it} + \beta_3 LIQ_{it} + \beta_4 BS_{it} + \beta_5 CFO_{it} + \beta_6 AM_{it} + e_{it}$$

Where:

ROA_{it} = Return on Assets for firm i in time t.

LEV_{it} = Leverage for firm i in time t.

SIZ_{it} = Liquidity of firm i in time t.

LIQ_{it} = Board size of firm i in time t.

BS_{it} = Firm size for firm i in time t.

CFO_{it} = Cash flows for firm i in time t

AM_{it} = Audit committee meeting for firm i in time t.

β_0 = Intercept.

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ and β_6 = Model coefficients.

e_{it} = Error term.

CHAPTER FOUR
DATA PRESENTATION AND ANALYSIS

4.1 Introduction

The focus of this chapter is to present empirical results from analysis done using data collected for the sampled firms from 2009 to 2015. The overall aim is to examine whether leverage, firm size, liquidity and board size affect firm profitability. Therefore, the chapter contains analysis of descriptive statistics, correlation matrix, robustness tests, fixed and random effect tests, regression results, test of hypotheses, discussion of findings and policy implications.

4.2 Descriptive Statistics

The various descriptive statistics are displayed in Table 4.1. The intent is to provide understanding on the nature of data being used. The descriptive statistics include minimum value, maximum value, mean, standard deviation, skewness and kurtosis of all the variables used in the study.

Table 4.1: Descriptive Statistics of the Variables

Variable	Min	Max	Mean	Std Dev.	Skewness	Kurtosis	N
ROA	-0.27	0.79	0.97	0.16	1.75	9.78	105
SIZ	13.26	20.84	15.74	1.97	0.90	2.97	105
LEV	0.04	0.93	0.45	0.18	0.35	3.08	105
LIQ	0.33	0.98	0.68	0.15	-0.13	2.73	105
BS	4	18	7.85	2.76	1.41	5.42	105
CFO	-0.30	0.49	0.11	0.13	0.43	5.38	105
AM	1	4	3.24	1.00	1.41	5.42	105

Source: STATA output, 2016.

Table 4.1 reports the descriptive statistics for the dependent and independent variables. The table reveals that the minimum value of ROA for the firms is about -0.27. This is attributed

to the losses suffered by some of the firms for certain years. The maximum value of ROA is 0.79, representing the maximum rate of return realized from assets utilized by the listed industrial goods firms in Nigeria. The mean value of about 7% as can be seen in the above table suggests that on average, the studied firms realize about 0.069 from utilization of their assets. This is with a standard deviation of about 0.16 implying high rate of variability of the returns realized on assets (ROA) by the firms.

SIZ has minimum value of about 13.26, which explains minimum size of the firms under study, and maximum value of about 20.84 which indicates the largest possible size of the firms under study. SIZ has a mean of about 15.74 and standard deviation of 1.97, representing very moderate level of variations in the size of the firms under study during the period.

LEV has minimum value of about 0.04, maximum value of about 0.93 which indicates the proportion of debt owed by the firms with respect to their total assets. On average, this ratio is about 0.45 (45%) while the variability level as shown by the standard deviation is about 0.15 (0.15%), implying high variability in the debt ratio of the firms.

LIQ has minimum value of about 0.33 which implies the ratio of current assets to current liabilities of the firms under study while the highest ratio is represented by a maximum value of about 0.98, with average of about 0.68. It has standard deviation of about 0.15 which means that there is little variation in the liquidity position of the firms during the study period.

The minimum number of Board Size (BS) is 4 members which mean that out of the 105 observations, the smallest board size is 4 members. On the other hand, the maximum board size is 18 members as shown by the maximum value. On average, the firms under study have a board

size of about 8 directors as revealed by the mean value, with variability level of about 2.8 suggesting moderate variation in the sizes of the board of directors of the studied firms.

The minimum value and maximum value of CFO is -0.30 and 0.49 respectively. The minimum value of cash flows for the firms amounting to -0.30 represents instances of negative cash flows. The maximum value of 0.49 represents the highest proportion of cash flows relative to total assets maintained by the firms under study. On average, the cash flows of the firms as a proportion of their total assets is 0.11. This is with a standard deviation of 0.13 which suggests a fairly low level of variability in the cash flows of the firms.

AM has minimum value of 1 which means that the minimum number of audit committee meeting held by the firms under study is once while the maximum value is 4 implying the highest number of times audit committee meetings are held by the firms under study is 4 times per year. The mean of their audit committee meetings is 3.24 which means that on average, the firms under study hold audit committee meeting three times a year. The variability level of their meetings is explained by standard deviation of 1 which is less than the mean, implying that there is low level of variability in the number of times audit committee meetings are held by the firms under study.

Lastly, the values for skewness suggest that the explained variable and some of the explanatory variables are both positively and negatively skewed, suggesting that the data is normally distributed, however, some values of the kurtosis tend to be high although such will have insignificant effect on the conclusions reached.

4.3 Normality Test

Regression analysis assumes that data must be normal for statistical analysis on the data to be relied upon. Hence, normality test was carried out using Shapiro-Wilk normality test. The results show that the data for most of the variables is normally distributed as three of the variables have insignificant values (see appendix B)

4.4 Correlation Matrix

It is necessary to know the correlation between the dependent variable and each of the independent variables as well as among the independent variables so as to ascertain the direction of movement. Therefore, the correlation matrix of the variable is presented in table 4.2.

Table 4.2: Correlation Matrix of Dependent and Independent Variables.

```
. pwcorr roa siz lev cfo liq bs am, star (0.05) sig
```

	roa	siz	lev	cfo	liq	bs	am
roa	1.0000						
siz	0.5646* 0.0000	1.0000					
lev	-0.2394* 0.0139	-0.2320* 0.0172	1.0000				
cfo	0.5502* 0.0000	0.3449* 0.0003	-0.0053 0.9572	1.0000			
liq	-0.5196* 0.0000	-0.4487* 0.0000	0.0281 0.7763	-0.2667* 0.0060	1.0000		
bs	0.1028 0.2966	0.5486* 0.0000	-0.2082* 0.0331	0.1263 0.1990	-0.1557 0.1127	1.0000	
am	0.0211 0.8306	0.0425 0.6667	0.1354 0.1683	0.0647 0.5119	0.0036 0.9710	0.4085* 0.0000	1.0000

Source: STATA Output, 2017

Table 4.2 presents the correlation of the variables, in terms of the association between the independent variables and the dependent variable as well as the correlation among the independent variables themselves.

From the correlation matrix, it can be explained that that LEV and ROA have negative correlation with ROA. The implication of this is that the paired variables move in opposite direction, as one is increasing, the other is decreasing and *vice versa*. On the other hand, SIZ and ROA as well as BS and ROA, CFO and ROA, AM and ROA are positively correlated. This means that the paired variables move in same direction. Relatedly, the table indicates that LEV and LIQ, CFO and SIZ, SIZ and BS, AM and LEV, AM and LIQ, AM and SIZ, AM and BS, AM and CFO are positively correlated while LIQ and SIZ, BS and LEV, LIQ and BS as well as LEV and SIZ are negatively correlated. However, correlation does not measure causation, further analysis were carried out using regression analysis.

4.5 Robustness Tests

The following robustness tests are carried out to find out whether data used for analysis performed for interpretation is reliable.

4.5.1 Test for Multicollinearity

Multicollinearity is examined using tolerance and variance inflation factor (VIF) values. The result of multicollinearity test is shown in the table 4.3 (see details in Appendix B):

Table 4.3: Tolerance and VIF values

Variable	VIF	1/VIF
SIZ	2.05	0.4880
BS	1.93	0.5194
AM	1.35	0.7417
LIQ	1.30	0.7710
CFO	1.17	0.8516
LEV	1.13	0.8847

Source: STATA Output, 2017.

Table 4.3 reveals that the variables used do not pose multicollinearity problem. This is evident from their VIF values being less than 10 and tolerance values being greater than 0.10 (rule of

thumb) (Gujirati, 2005). This, therefore, goes in agreement with the assumption of classical regression model which states that there should not be multicollinearity among the regressors included in the model.

4.5.2 Test for Heteroscedasticity

Heteroscedasticity test is carried out to find out whether the disturbances appearing in the population regression function are homoscedastic (same variance). Breusch-Pagan's test for heteroscedasticity is performed. The result as presented in Appendix (C) produces the value of chi square of 44.22 while its probability is 0.0000 which is significant at 1%. This indicates the presence of heteroscedasticity. To address this, robustness test is run. The result of the test, as detailed in appendix (C) reveals that the model can be relied upon for drawing statistical inferences.

4.5.3 Hausman Test

Considering the panel attributes of the study, fixed effect and random effect regressions were carried out. The results of these are presented in appendix (B). Subsequently, Hausman specification test was conducted to give direction as to the one (fixed or random) to choose. The result reveals chi-square of 3.11 which is not significant. On this basis, the random effect model was selected. The random effect robust test was carried out and the result as detailed in appendix (B) suggests that the random effect is reliable. Furthermore, Breusch and Pagan Lagrangian Multiplier Test for random effects was carried out to ascertain whether pooled OLS or random effect should be used. The result produced a chi-square of 21.54 which is significant at 1% (see appendix B). Based on this evidence, the result for random effect test is used as presented in table 4.4.

4.6 Regression Results (Random Effect)

The result of the random effect is presented in table 4.4 below (see details in appendix C).

Table 4.4: Summary of Regression Result

VAR	COEFF	Z	P>(Z)
SIZ	0.0138635	4.08	0.000
LEV	-0.1363726	-2.66	0.008
LIQ	-0.3488432	-3.38	0.001
BS	-0.020904	-3.18	0.001
CFO	0.2492138	3.05	0.002
AM	0.0137606	1.24	0.216
C	0.3698303	3.92	0.000
R-Square:	0.5813		
Wald Chi ²	79.38		
Prob	0.0000		

Source: STATA Output, 2017

From the regression result presented in table 4.4, the R^2 which is the multiple co-efficient of determination gives the percentage or proportion of total variation in the dependent variable (ROA) which is jointly explained by the independent variables to be approximately 58%. This signifies that 58% of total variation in ROA of listed industrial goods firms in Nigeria is explained by changes in SIZ, LEV, LIQ, BS, CFO and AM while the remaining, that is about 42% is caused by other factors not captured in the model. These factors could be financial such as stock turnover rate, size, non-financial such as management competence or even macroeconomic like inflation rate, government policy, among others.

The cumulative result hold sway as the Wald Chi² has a high value of 79.38 which is significant at 1%. This means that the model can be well fitted with the variables selected. It further means that the selected variables are the major determinants of profitability of listed industrial goods firms in Nigeria. The linear relationships among the independent variables with the dependent variable are discussed hereunder.

4.6.1 Leverage and Profitability

From table 4.4, LEV has a beta value of -0.1363726. This means that LEV has a negative relationship with profitability of listed industrial goods firms in Nigeria. It further implies that for every one-point increase in leverage, the profitability of industrial goods firms listed in Nigeria will drop by about 0.14. Therefore, leverage and profitability move in opposite direction. This analysis supports the logic that use of debt attracts interest cost which reduces profitability of the firm. This is at variance with the *a priori* expectation of the study which says that leverage has positive relationship with firm profitability.

The z-value of LEV is -2.66 with a probability of 0.008 which is significant at 1%. This implies that the relationship between leverage and profitability is negative and significant. Therefore, the study rejects the first hypothesis of the study which states that leverage does not significantly affect profitability of listed industrial goods firms in Nigeria. In relation to the first objective of the study, it can be concluded that leverage significantly affects profitability of listed industrial goods firms in Nigeria. This finding corroborates the findings of Mohammad (2014), Aqsa and Ghulam (2014) and Enekwe, Agu and Eziedo (2014) that leverage significantly affects profitability, although they reported positive relationship. The negative relationship between leverage and profitability can be attributed to the negative effect of using debts such as payment of costs in form of interest payments which reduce profitability and the institution of strict debt covenants which reduce the flexibility of the firm.

4.6.2 Liquidity and Profitability

Table 4.4 shows that liquidity has a coefficient of -0.3488432 which means that it has negative relationship with profitability of listed industrial goods firms in Nigeria. This further means that a one point increase in liquidity will lead to about a 0.35 point drop in profitability.

This goes on to confirm the argument that liquidity funds are a cost to the organization as they constitute idle funds which could have been channeled to viable investment opportunities that will produce positive returns and contribute to profitability. The z-value of LIQ is -3.38 with a p-value of 0.001 which is significant at 1%. The implication is that LIQ has negative relationship with profitability of listed industrial goods firms in Nigeria.

This negative and significant relationship corresponds with the *a priori* expectation of the study and justifies why new techniques such as just-in-time have been invented to reduce amount of liquid assets held. On this basis, the study rejects the second hypothesis of the study which states that liquidity does not significantly affect profitability of listed industrial goods firms in Nigeria. Hence, with respect to the second objective of the study, it can be stated that liquidity significantly affects profitability of listed industrial goods firms in Nigeria. The finding of the study is in support to that of Kidtmat and Rehman (2014), Saleem and Rehman (2011) and Ibe (2013) but contradicts the finding of Marzova (2005). This finding lends support to the agency theory. The theory proposes negative relationship between liquidity and firm profitability on the basis that liquid funds increase agency costs which reduce firm profitability. However, the finding is in contrast to the submission of the resource based theory that liquidity is positively related to firm profitability.

4.6.3 Board Size and Profitability

Contrary to the *a priori* expectation of the study which says that board size has positive relationship with firm profitability, the result for board size shows a coefficient value of -0.0209049 which implies that there is negative relationship between board size and profitability of listed industrial goods firms in Nigeria. In relation to the z-value of -3.18 and the probability of 0.001 which is significant at 1%, a significant negative relationship between board size and

profitability of listed industrial goods firms in Nigeria is revealed. This negative relationship is against the *a priori* expectation of the study, which predicted that board size would have positive relationship with profitability, since board of directors with larger number of members will have versatile experiences which will translate into profitable initiatives.

Based on the above results, the study failed to accept the third null hypothesis of the study which says that board size does not significantly affect profitability of listed industrial goods firms in Nigeria. Therefore, with respect to the third objective of the study, it can be submitted that board size significantly affects profitability of listed industrial goods firms in Nigeria. This finding is in tandem with the finding of Johl, Kaur and Cooper (2015), Doğa and Yildiz (2013), Malik, Wan, Ahmad, Naseem and Rehman (2014), Oyerogba, Memba and Riro (2016), Topal and Dogan (2014), Bulan, Sanyal and Yan (2009) although Doğa and Yildiz (2013) and Bulan, Sanyal and Yan (2009) found the relationship to be negative. The finding however opposes the resource based theory which states that large board size enhances firm profitability. It is also contrary to the submission of the agency theory that board size has positive relationship with firm profitability.

4.6.4 Firm Size and Profitability

The regression result shows that SIZ has a positive coefficient of 0.0138635 and a Z-value of 4.08 with a p-value of 0.000. Hence, as firm size of the studied firms increases, their profitability also increases. This is to the extent that a one point increase in assets of the firm will lead to 0.14 point increase in profitability of the firms. Thus, the p-value of 0.000 which is significant at 1% signifies that SIZ strongly drives profitability of listed industrial goods firms in Nigeria. This finding corroborates with the *a priori* expectation of the study which states that there is positive relationship between firm size and profitability of firms. Consequently, the fourth hypothesis which states that firm size does not significantly affect the profitability of listed

industrial goods firms in Nigeria is rejected. Hence, in relation to the fourth objective of the study, it can be submitted that firm size significantly affects profitability of listed industrial goods firms in Nigeria. The finding is consistent with that of Babalola (2013), Baloch, Ihsan, Kakakhel and Sethi (2015), Asgari, Pour, Zadeh and Pahlavan (2015) and Dogan (2013). It however, contradicts the findings of Kumar and Kaur (2016), Niresh & Velnampy (2014). The finding goes contrary to the hypothesis of the structural inertia theory that there is negative relationship between profitability and size.

4.6.5 Cash Flows and Profitability

Quantitative analysis reveals that CFO has a positive coefficient of 0.2492138 and a Z-value of 3.05 with a p-value of 0.002. This implies that, as cash flows of the studied firms increase, their profitability also increases. This is to the extent that a one point increase in assets of the firm will lead to 0.25 point increase in profitability of the firms. The p-value of CFO is 0.002 which is significant at 1% , implying that CFO strongly influences profitability of listed industrial goods firms in Nigeria. This finding contradicts the *a priori* expectation of the study which anticipates negative relationship between cash flows and profitability of firms. Based on the above evidence, the study rejects the fifth hypothesis which states that cash flows does not significantly affect the profitability of listed industrial goods firms in Nigeria. Hence, in relation to the fifth objective of the study, it can be concluded that cash flows significantly affects profitability of listed industrial goods firms in Nigeria. This finding is in tandem with the findings of Okpe, Duru and Alor (2015). However, the finding is contrary to the proposition of the agency theory that cash flows increases agency costs and thereby reduces profitability.

4.6.6 Audit Committee Meeting and Profitability

Empirical analysis shows that audit committee meeting has positive relationship with profitability of listed industrial goods firms in Nigeria. This is evidenced by its positive coefficient of 0.0137606 which implies that a one point increase in audit committee meeting leads to a corresponding 0.14 increase in profitability of listed industrial goods firms in Nigeria. The Z-value of AM is 1.24 with probability of 0.216 which is not significant at 10%,

Hence, the study fails to reject the null hypothesis which states that audit committee meeting has no significant relationship with profitability of listed industrial goods firms in Nigeria. Therefore, with respect to the sixth objective of the study, it can be stated audit committee meeting has no significant effect on profitability of listed industrial goods firms in Nigeria. This finding is inconsistent with the findings of Beasley, Carcello, Hermanson and Lapedes (2000). Similarly, the finding contradicts the submission of the agency theory which sees audit committee meeting as a strong internal control mechanism for mitigating agency costs and improving profitability.

4.7 Policy Implications of the Findings

Based on the regression result, the study found that leverage has negative and significant relationship with profitability of listed industrial goods firms in Nigeria. This implies that leverage plays a prominent role in the determination of the profitability of the firms.

The study found that firm size positively affects profitability of listed industrial goods firms in Nigeria. The implication of this is that firm size has a significant level of influence in the determination of profitability of listed industrial goods firms in Nigeria.

The study also found that liquidity has negative relationship with profitability. This implies that liquidity has prominent influence in the determination of profitability of listed industrial goods firms in Nigeria. Furthermore, the implication of the finding is that the higher the level of liquid funds kept by the organization, the lower the level of profitability reported by the organization

Based on the findings of the study, board size has negative relationship with profitability. This implies that size of the board has a significant role to play in the determination of the profitability of listed industrial goods firms in Nigeria.

The significant positive relationship between cash flows and profitability implies that cash flows has prominent role in the ascertainment of profitability of listed industrial goods firms in Nigeria. For policy purposes, industrial goods firms in Nigeria can maintain high level of cash flows for uninterrupted operations and improvement in profitability.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study examined the determinants of profitability with focus on industrial goods firms listed in Nigeria. The determinants of profitability were selected from literature. Stepwise regression was run to select the variables that significantly affect profitability. Hence, leverage (LEV), liquidity (LIQ), board size (BS), firm size (SIZ), cash flows (CFO) and audit committee meeting (AM) were used to represent determinants of profitability, while return on assets (ROA) was used to represent profitability, as the dependent variable.

Literature on the relationship between the above variables and profitability were reviewed. The concepts of profitability, leverage, liquidity, board size and firm size were explained. The conceptualization was done using definitions of scholars. Empirical studies were reviewed for all the predictor variables in terms of their relationship with profitability. The reviewed works produced conflicting and inconsistent findings. Two theories, the agency theory and the resource based theory, which underpin the study, were explained.

The research design was correlational research design. The population of twenty-one (21) listed industrial goods firms in Nigeria was filtered on the basis of availability of data, giving rise to an adjusted population of fifteen (15) listed industrial goods firms. Census approach was employed to select all the companies in the adjusted population. Hence, the sample size was also the fifteen (15) listed industrial goods firms in Nigeria. Secondary data were obtained from the websites of the studied firms and the Nigerian Stock Exchange fact book over the period of seven (7) years from 2009 to 2015. Multiple linear regression analysis was employed. Fixed and

random effects tests were carried out. The Hausman specification test suggested random effect which was eventually used for data analysis. The results indicated that:

- i. Firm size has positive and significant relationship with profitability of listed industrial goods firms in Nigeria.
- ii. Leverage has negative and significant relationship with profitability of listed industrial goods firms in Nigeria.
- iii. Liquidity has negative and significant relationship with profitability of listed industrial goods firms in Nigeria.
- iv. Board size has negative and significant relationship with profitability of listed industrial goods firms in Nigeria.
- v. Cash flows has positive and significant relationship with profitability of listed industrial goods firms in Nigeria.

The F statistics (significant at 1%) revealed that the model was well fitted while the R^2 showed that about 58% of variation in profitability is jointly explained by the predictor variables (firm size, liquidity, leverage, board size, audit committee meeting and cash flows).

5.2 Conclusion

On the basis of the findings of the study, the following conclusions were made:

Findings revealed that leverage has negative and significant relationship with profitability of listed industrial goods firms in Nigeria. Therefore, it can be concluded that reduction in level of leverage by listed industrial goods firms in Nigeria will lead to increase in profitability.

Firm size was found to be a positive and significant determinant of profitability. This is as a result of the fact that the two variables have positive and significant relationship with firm

size having the potential to predict profitability. For this reason, it can be concluded that bigger industrial goods firms have the tendency to make higher profits than smaller industrial goods firms.

The study found that a negative relationship between liquidity and profitability of industrial goods firms listed in Nigeria. The study concludes that high volume of liquidity reduces profitability of industrial goods firms listed in Nigeria.

The study found that board size has negative and significant relationship with profitability of listed industrial goods firms in Nigeria. Based on this, the study concludes that a large board size reduces profitability. This is because of the extra cost required in running the board's activities as well as remuneration packages.

The study also concludes that increase in level of cash flows can help increase profitability of industrial goods firms in Nigeria. Cash flows define the solvency, flexibility, and financial stability of industrial goods firms in Nigeria..

5.3 Recommendations

Based on the findings of the study, the following recommendations are made:

- i. Industrial goods firms in Nigeria should weigh the potential economic benefits of debt capital against its cost before making decision as to the choice debt capital. Where it is evident that additional level of debt will reduce profitability, other alternative sources of capital such as equity capital should be chosen. Although debt capital is needful for the sustainable operations of the industrial goods firms, there should be caution in keeping

high level of leverage as leverage has negative relationship with profitability. Leverage level of up to 50% per cent of total assets is considered high.

- ii. The study recommends that minimum amount of liquidity should be maintained by industrial goods firms to reduce the extra cost attached to holding unnecessary liquid assets. This can be done by promoting the virtues of just-in-time, a concept which advocates minimum holding of inventory. Relatedly, surplus cash should always be channeled for short-term investments instead of keeping them idle.
- iii. It is recommended that industrial goods firms should avoid having large board sizes. This is crucial as large board sizes add more cost to the organization. Depending on the circumstances of the firm, and in line with the Nigerian Code of Corporate Governance, a board size of five (5) board members is considered optimal. However, a board size of up to 12, unless circumstances dictate, is considered inappropriate.
- iv. Government should invest heavily in the assets of large industrial goods firms as bigger industrial goods firms have the tendency to make higher level of profit. Such firms can easily explore advantages of economies of scale to minimize cost and ultimately make profit.
- v. Industrial goods firms in Nigeria need to develop suitable cash flow mix and apply to maximize profitability. For cash flows to be well structured and effectively utilized, industrial goods firms in Nigeria need to devise various ways of selecting the best components of its cash flows which would be used in their operations to improve their profitability.

5.4 Limitations of the Study

The study investigated determinants of profitability of listed industrial goods firms in Nigeria. The study intended to use all the twenty-one listed industrial goods firms in Nigeria. To do this, the annual report from 2009-2015 of all the firms were needed so as to elicit secondary data for analysis. However, the annual reports of six firms could not be accessed as they were not available. Hence, the study utilized the available data of fifteen (15) firms.

In spite of the above limitation, the major objective of the study was not defeated as the sampled firms constitute more than 70% of the firms in the sector. This creates room for possible generalization

5.5 Areas for Further Research

Although the findings of this study provide sufficient basis for good policy formulation with respect to development of the industrial goods sector in Nigeria, there is need for further studies. Therefore, the following areas are suggested for further research.

A study on the determinants of profitability with more external variables which could include such variables as industry type, external audit attributes, institutional ownership, competition, government policy and customer demand, among others, should be carried out. This will provide basis for ascertaining any other significant variables not captured in this study.

A similar research on determinants of profitability should be carried out across other sectors of the economy. Since some variables are industry specific, sectoral comparisons should be made to ascertain the determinants of profitability across the key sectors of the economy.

5.6 Contributions to Knowledge

Previous studies that have examined determinants of profitability selected variables abruptly. There is the tendency that such variables might not be the significant ones. This study took a different dimension, by using stepwise regression to filter the variables that yield much influence on profitability of listed industrial goods firms in Nigeria.

The basic contribution of this study is the ascertainment of key determinants of profitability and their relationship with profitability using current data. With this strength, the findings of the study can be relied upon for policy formulation, and in carrying out further studies. The recommendation offered can also be applied and such application will yield significant impact to the resuscitation of the industrial goods sector in Nigeria.

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Appendix A

Result of Stepwise Regression for Selection of Variables through SPSS

```

REGRESSION
  /MISSING LISTWISE
  /STATISTICS COEFF OUTS R ANOVA CHANGE
  /CRITERIA=PIN(.05) POUT(.10)
  /NOORIGIN
  /DEPENDENT ROA
  /METHOD=STEPWISE SIZ LEV CFO LIQ BS AM STR DIV BM AQ AS BD
  /RESIDUALS DURBIN.
  
```

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	SIZ		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
2	CFO		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
3	LIQ		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
4	BS		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
5	LEV		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).
6	AM		Stepwise (Criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100).

a. Dependent Variable: ROA

Model Summary^g

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.565 ^a	.319	.312	.13485	.319	48.205	1	103	.000	
2	.680 ^b	.462	.452	.12040	.143	27.207	1	102	.000	
3	.724 ^c	.525	.510	.11376	.062	13.238	1	101	.000	
4	.749 ^d	.561	.544	.10985	.037	8.326	1	100	.005	
5	.770 ^e	.593	.573	.10626	.032	7.869	1	99	.006	
6	.781 ^f	.609	.585	.10471	.016	3.953	1	98	.050	1.214

- a. Predictors: (Constant), SIZ
- b. Predictors: (Constant), SIZ, CFO
- c. Predictors: (Constant), SIZ, CFO, LIQ
- d. Predictors: (Constant), SIZ, CFO, LIQ, BS
- e. Predictors: (Constant), SIZ, CFO, LIQ, BS, LEV
- f. Predictors: (Constant), SIZ, CFO, LIQ, BS, LEV, AM
- g. Dependent Variable: ROA

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.877	1	.877	48.205	.000 ^b
	Residual	1.873	103	.018		
	Total	2.749	104			
2	Regression	1.271	2	.635	43.839	.000 ^c
	Residual	1.478	102	.014		
	Total	2.749	104			
3	Regression	1.442	3	.481	37.145	.000 ^d
	Residual	1.307	101	.013		
	Total	2.749	104			
4	Regression	1.543	4	.386	31.961	.000 ^e
	Residual	1.207	100	.012		
	Total	2.749	104			
5	Regression	1.632	5	.326	28.899	.000 ^f
	Residual	1.118	99	.011		
	Total	2.749	104			
6	Regression	1.675	6	.279	25.460	.000 ^g
	Residual	1.075	98	.011		
	Total	2.749	104			

- a. Dependent Variable: ROA
- b. Predictors: (Constant), SIZ
- c. Predictors: (Constant), SIZ, CFO
- d. Predictors: (Constant), SIZ, CFO, LIQ
- e. Predictors: (Constant), SIZ, CFO, LIQ, BS
- f. Predictors: (Constant), SIZ, CFO, LIQ, BS, LEV
- g. Predictors: (Constant), SIZ, CFO, LIQ, BS, LEV, AM

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.044	.024		-1.812	.073
	SIZ	.015	.002	.565	6.943	.000
2	(Constant)	-.064	.022		-2.924	.004
	SIZ	.012	.002	.425	5.500	.000
	CFO	.511	.098	.403	5.216	.000
3	(Constant)	.184	.071		2.581	.011
	SIZ	.008	.002	.311	3.914	.000
	CFO	.466	.093	.368	4.985	.000
	LIQ	-.313	.086	-.282	-3.638	.000
4	(Constant)	.238	.071		3.342	.001
	SIZ	.012	.002	.453	4.970	.000
	CFO	.449	.090	.354	4.964	.000
	LIQ	-.286	.084	-.258	-3.422	.001
	BS	-.014	.005	-.231	-2.886	.005
5	(Constant)	.328	.076		4.313	.000
	SIZ	.011	.002	.410	4.572	.000
	CFO	.465	.088	.367	5.305	.000
	LIQ	-.302	.081	-.271	-3.720	.000
	BS	-.015	.005	-.249	-3.212	.002
	LEV	-.122	.043	-.187	-2.805	.006
6	(Constant)	.290	.077		3.761	.000
	SIZ	.012	.002	.448	4.956	.000
	CFO	.450	.087	.355	5.192	.000
	LIQ	-.301	.080	-.270	-3.759	.000
	BS	-.020	.005	-.334	-3.815	.000
	LEV	-.140	.044	-.215	-3.207	.002
	AM	.024	.012	.146	1.988	.050

a. Dependent Variable: ROA

Excluded Variables^a

Model	Beta In	T	Sig.	Partial Correlation	Collinearity Statistics	
					Tolerance	
1	LEV	-.115 ^b	-1.376	.172	-.135	.946
	CFO	.403 ^b	5.216	.000	.459	.881
	LIQ	-.333 ^b	-3.909	.000	-.361	.799
	BS	-.296 ^b	-3.175	.002	-.300	.699
	AM	-.003 ^b	-.035	.972	-.003	.998
	STR	.008 ^b	.100	.921	.010	.959
	DIV	-.172 ^b	-1.748	.083	-.171	.669
	BM	.010 ^b	.122	.903	.012	.921
	AQ	.214 ^b	2.392	.019	.230	.793
	AS	.230 ^b	2.602	.011	.250	.803
2	BD	-.275 ^b	-3.234	.002	-.305	.839
	LEV	-.147 ^c	-1.996	.049	-.195	.940
	LIQ	-.282 ^c	-3.638	.000	-.340	.784
	BS	-.261 ^c	-3.127	.002	-.297	.695
	AM	-.023 ^c	-.317	.752	-.032	.995
	STR	.024 ^c	.320	.750	.032	.957
	DIV	-.168 ^c	-1.916	.058	-.187	.669
	BM	.002 ^c	.025	.980	.002	.920
	AQ	.139 ^c	1.696	.093	.166	.765
	AS	.167 ^c	2.061	.042	.201	.782
3	BD	-.262 ^c	-3.482	.001	-.327	.838
	LEV	-.168 ^d	-2.429	.017	-.236	.934
	BS	-.231 ^d	-2.886	.005	-.277	.686
	AM	-.015 ^d	-.217	.829	-.022	.994
	STR	.053 ^d	.753	.453	.075	.945
	DIV	-.195 ^d	-2.368	.020	-.230	.664
	BM	-.002 ^d	-.030	.976	-.003	.920
	AQ	.033 ^d	.386	.701	.039	.648
	AS	.103 ^d	1.285	.202	.127	.733
	BD	-.184 ^d	-2.316	.023	-.226	.713
4	LEV	-.187 ^e	-2.805	.006	-.271	.927
	AM	.095 ^e	1.273	.206	.127	.777
	STR	.043 ^e	.635	.527	.064	.943
	DIV	-.074 ^e	-.689	.492	-.069	.384
	BM	.160 ^e	1.948	.054	.192	.630
	AQ	.088 ^e	1.049	.297	.105	.618
	AS	.166 ^e	2.124	.036	.209	.690
	BD	-.068 ^e	-.668	.506	-.067	.426
	AM	.146 ^f	1.988	.050	.197	.742
	STR	-.031 ^f	-.436	.664	-.044	.807
5	DIV	-.154 ^f	-1.452	.150	-.145	.361
	BM	.108 ^f	1.299	.197	.130	.586
	AQ	.066 ^f	.799	.426	.080	.612
	AS	.139 ^f	1.812	.073	.180	.677
	BD	-.023 ^f	-.230	.818	-.023	.414
	STR	-.067 ^g	-.932	.353	-.094	.763
	DIV	-.116 ^g	-1.078	.284	-.109	.346
	BM	.021 ^g	.206	.837	.021	.392
	AQ	.064 ^g	.790	.431	.080	.612
	AS	.095 ^g	1.154	.252	.116	.581
6	BD	.040 ^g	.389	.698	.039	.376

a. Dependent Variable: ROA

b. Predictors in the Model: (Constant), SIZ

c. Predictors in the Model: (Constant), SIZ, CFO

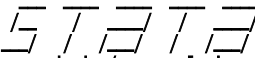
d. Predictors in the Model: (Constant), SIZ, CFO, LIQ

e. Predictors in the Model: (Constant), SIZ, CFO, LIQ, BS

f. Predictors in the Model: (Constant), SIZ, CFO, LIQ, BS, LEV

g. Predictors in the Model: (Constant), SIZ, CFO, LIQ, BS, LEV, AM

Appendix 11: Regression Result through Stata

 (R)
 11.0
 Statistics/Data Analysis
Special Edition

Copyright 1984-2009
 StataCorp
 4905 Lakeway Drive
 College Station, Texas 77845 USA
 800-STATA-PC <http://www.stata.com>
 979-696-4600 stata@stata.com
 979-696-4601 (fax)

Single-user Stata license expires 31 Dec 9999:
 Serial number: 71606281563
 Licensed to: STATAForAll
 STATA

Notes:

1. (/m# option or -set memory-) 50.00 MB allocated to data
2. (/v# option or -set maxvar-) 5000 maximum variables

. edit

. *(15 variables, 105 observations pasted into data editor)

. xtset id year, yearly
 panel variable: id (strongly balanced)
 time variable: year, 2009 to 2015
 delta: 1 year

. su roa siz lev liq bs cfo am, detail

ROA				
	Percentiles	Smallest		
1%	-.269844	-.272393		
5%	-.120117	-.269844		
10%	-.00748	-.268879	Obs	105
25%	.026659	-.225441	Sum of wgt.	105
50%	.076887		Mean	.0969187
		Largest	Std. Dev.	.162593
75%	.130853	.577641		
90%	.217118	.687639	Variance	.0264365
95%	.29693	.753827	Skewness	1.745558
99%	.753827	.792676	Kurtosis	9.577993

SIZ				
	Percentiles	Smallest		
1%	13.29607	13.26149		
5%	13.33619	13.29607		
10%	13.47164	13.30863	Obs	105
25%	14.49294	13.32526	Sum of wgt.	105
50%	15.07869		Mean	15.74217
		Largest	Std. Dev.	1.972843
75%	16.65733	20.27614		
90%	18.84212	20.59049	Variance	3.892108
95%	19.79764	20.68602	Skewness	.8977086
99%	20.68602	20.84058	Kurtosis	2.974863

LEV

Percentiles	Smallest		
1%	.073447	.054376	
5%	.17329	.073447	
10%	.21103	.123161	Obs
25%	.34016	.133536	Sum of Wgt.
			105
50%	.442793		Mean
			Std. Dev.
75%	.554122	.828659	
90%	.691326	.847025	Variance
95%	.797391	.890731	Skewness
99%	.890731	.927394	Kurtosis

LIQ

Percentiles	Smallest		
1%	.344332	.33508	
5%	.419209	.344332	
10%	.497548	.346089	Obs
25%	.587838	.372244	Sum of Wgt.
			105
50%	.682348		Mean
			Std. Dev.
75%	.779727	.934777	
90%	.877096	.961046	Variance
95%	.916807	.98275	Skewness
99%	.98275	.984251	Kurtosis

BS

Percentiles	Smallest		
1%	4	4	
5%	5	4	
10%	5	4	Obs
25%	6	4	Sum of Wgt.
			105
50%	8		Mean
			Std. Dev.
75%	9	15	
90%	12	16	Variance
95%	14	17	Skewness
99%	17	18	Kurtosis

CFO

Percentiles	Smallest		
1%	-.2430643	-.3015932	
5%	-.0382572	-.2430643	
10%	.0002563	-.2213654	Obs
25%	.0411646	-.1270103	Sum of Wgt.
			105
50%	.0881619		Mean
			Std. Dev.
75%	.1506543	.435403	
90%	.2229405	.458499	Variance
95%	.3718173	.4773134	Skewness
99%	.4773134	.4874021	Kurtosis

am

Percentiles	Smallest		
1%	1	1	
5%	2	1	
10%	2	1	Obs
25%	3	1	Sum of Wgt.
			105
50%	3		Mean
			Std. Dev.
75%	4	5	
90%	4	5	Variance
95%	4	6	Skewness
99%	6	6	Kurtosis

. swilk roa siz lev liq bs cfo am

Shapiro-wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
roa	105	0.79769	17.399	6.353	0.00000
siz	105	0.90796	7.916	4.602	0.00000
lev	105	0.98382	1.392	0.735	0.23110
liq	105	0.98702	1.116	0.245	0.40324
bs	105	0.89071	9.399	4.984	0.00000
cfo	105	0.90861	7.859	4.586	0.00000
am	105	0.99200	0.688	-0.831	0.79690

. reg roa siz lev cfo liq bs am

Source	SS	df	MS	
Model	1.6748915	6	.279148583	Number of obs = 105
Residual	1.07450345	98	.010964321	F(6, 98) = 25.46
Total	2.74939495	104	.02643649	Prob > F = 0.0000

R-squared = 0.6092
Adj R-squared = 0.5853
Root MSE = .10471

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
siz	.0122081	.0024631	4.96	0.000	.0073202 .017096
lev	-.1404926	.0438107	-3.21	0.002	-.2274335 -.0535517
cfo	.4498028	.0866404	5.19	0.000	.2778677 .6217379
liq	-.3006927	.0799861	-3.76	0.000	-.4594224 -.1419629
bs	-.0196789	.0051577	-3.82	0.000	-.0299141 -.0094436
am	.0238135	.0119776	1.99	0.050	.0000444 .0475826
_cons	.2903087	.0771824	3.76	0.000	.1371426 .4434747

. vif

Variable	VIF	1/VIF
siz	2.05	0.488083
bs	1.93	0.519387
am	1.35	0.741662
liq	1.30	0.771003
cfo	1.17	0.851569
lev	1.13	0.884672
Mean VIF	1.49	

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

H0: Constant variance

Variables: fitted values of roa

chi2(1) = 44.22

Prob > chi2 = 0.0000

```
. reg roa siz lev cfo liq bs am, robust
```

Linear regression

```
Number of obs = 105
F( 6, 98) = 17.30
Prob > F = 0.0000
R-squared = 0.6092
Root MSE = .10471
```

roa	Robust		t	P> t	[95% Conf. Interval]	
	Coef.	Std. Err.				
siz	.0122081	.0022266	5.48	0.000	.0077894	.0166268
lev	-.1404926	.0480456	-2.92	0.004	-.2358375	-.0451478
cfo	.4498028	.148315	3.03	0.003	.1554765	.7441291
liq	-.3006927	.0708716	-4.24	0.000	-.441335	-.1600503
bs	-.0196789	.0059193	-3.32	0.001	-.0314256	-.0079321
am	.0238135	.0134355	1.77	0.079	-.0028487	.0504757
_cons	.2903087	.0641535	4.53	0.000	.1629982	.4176192

.

```
. pwcorr roa siz lev cfo liq bs am, star (0.05) sig
```

	roa	siz	lev	cfo	liq	bs	am
roa	1.0000						
siz	0.5646*	1.0000					
lev	-0.2394*	-0.2320*	1.0000				
cfo	0.5502*	0.3449*	-0.0053	1.0000			
liq	-0.5196*	-0.4487*	0.0281	-0.2667*	1.0000		
bs	0.1028	0.5486*	-0.2082*	0.1263	-0.1557	1.0000	
am	0.0211	0.0425	0.1354	0.0647	0.0036	0.4085*	1.0000

. xtreg roa siz lev cfo liq bs am, fe

```

Fixed-effects (within) regression          Number of obs   =   105
Group variable: id                       Number of groups =   15

R-sq:  within = 0.3006                    Obs per group:  min =    7
        between = 0.5883                  avg             =   7.0
        overall = 0.4882                  max             =    7

corr(u_i, Xb) = -0.7453                    F(6,84)         =    6.02
                                                Prob > F        =    0.0000

```

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
siz	.0322807	.0136108	2.37	0.020	.0052141	.0593474
lev	-.1035466	.0630067	-1.64	0.104	-.2288423	.0217492
cfo	.0912613	.0828562	1.10	0.274	-.0735073	.25603
liq	-.485886	.1505831	-3.23	0.002	-.7853371	-.1864349
bs	-.0267156	.0094685	-2.82	0.006	-.0455448	-.0078863
am	.0057628	.0115792	0.50	0.620	-.0172637	.0287894
_cons	.3672682	.1630995	2.25	0.027	.042927	.6916095
sigma_u	.14133671					
sigma_e	.07994901					
rho	.75759003	(fraction of variance due to u_i)				

F test that all u_i=0: F(14, 84) = 6.01 Prob > F = 0.0000

. est store fixed

. xtreg roa siz lev cfo liq bs am, re

```

Random-effects GLS regression          Number of obs   =   105
Group variable: id                       Number of groups =   15

R-sq:  within = 0.2543                    Obs per group:  min =    7
        between = 0.7084                  avg             =   7.0
        overall = 0.5813                  max             =    7

Random effects u_i ~ Gaussian           Wald chi2(6)    =   79.38
corr(u_i, X) = 0 (assumed)              Prob > chi2     =   0.0000

```

roa	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
siz	.0138635	.0033992	4.08	0.000	.0072011	.0205259
lev	-.1363726	.0511829	-2.66	0.008	-.2366891	-.036056
cfo	.2492138	.0818024	3.05	0.002	.0888839	.4095436
liq	-.3488432	.1031792	-3.38	0.001	-.5510706	-.1466158
bs	-.0209049	.0065681	-3.18	0.001	-.0337782	-.0080316
am	.0137606	.0111316	1.24	0.216	-.0080569	.0355781
_cons	.3698303	.0944392	3.92	0.000	.1847329	.5549276
sigma_u	.04752804					
sigma_e	.07994901					
rho	.26112325	(fraction of variance due to u_i)				

. est store random

. hausman fixed random

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) fixed	(B) random		
siz	.0322807	.0138635	.0184173	.0131795
lev	-.1035466	-.1363726	.032826	.0367445
cfo	.0912613	.2492138	-.1579524	.0131725
liq	-.485886	-.3488432	-.1370428	.1096784
bs	-.0267156	-.0209049	-.0058107	.00682
am	.0057628	.0137606	-.0079978	.0031885

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

Test: Ho: difference in coefficients not systematic


```

chi2(4) = (b-B)'[(v_b-v_B)^(-1)](b-B)
        = 3.11
Prob>chi2 = 0.5389

```

```
. xtreg roa siz lev cfo liq bs am, re vce (robust)
```

```

Random-effects GLS regression           Number of obs   =    105
Group variable: id                     Number of groups =     15

R-sq:  within = 0.2543                 Obs per group:  min =     7
        between = 0.7084                                     avg  =    7.0
        overall = 0.5813                                     max  =     7

Random effects u_i ~ Gaussian           Wald chi2(6)     =    28.28
corr(u_i, X) = 0 (assumed)             Prob > chi2      =    0.0001

```

(Std. Err. adjusted for 15 clusters in id)

roa	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
siz	.0138635	.0044018	3.15	0.002	.0052361	.0224908
lev	-.1363726	.069152	-1.97	0.049	-.271908	-.0008371
cfo	.2492138	.1778668	1.40	0.161	-.0993987	.5978262
liq	-.3488432	.0734092	-4.75	0.000	-.4927226	-.2049638
bs	-.0209049	.0122412	-1.71	0.088	-.0448971	.0030873
am	.0137606	.0158712	0.87	0.386	-.0173463	.0448675
_cons	.3698303	.0818228	4.52	0.000	.2094605	.5302001
sigma_u	.04752804					
sigma_e	.07994901					
rho	.26112325	(fraction of variance due to u_i)				

```
. xttest0
```

Breusch and Pagan Lagrangian multiplier test for random effects

```
roa[id,t] = xb + u[id] + e[id,t]
```

Estimated results:

	Var	sd = sqrt(Var)
roa	.0264365	.162593
e	.0063918	.079949
u	.0022589	.047528

Test: Var(u) = 0

```

        chi2(1) = 21.54
        Prob > chi2 = 0.0000

```