The Effect of Firms Characteristics on Real Earnings Management in the Listed Industrial Goods Firms in Nigeria

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Declaration

I hereby declare that this dissertation titled "The Effect of Firms Characteristics on Real Earnings Management in the Listed Industrial Goods Firms in Nigeria" is a product of my own independent research effort, undertaken under the supervision of Dr. S. Abubakar (Chairman, Supervisory Committee) and Dr. K. J. Ringim (Member, Supervisory Committee). Acknowledgements were duly observed in respect of all sources from which information were sourced. In addition, this research work has not been presented anywhere for the award of any educational certificate.

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Certification

This Dissertation titled "The Effect of Firms Characteristics on Real Earnings Management in the Listed Industrial Goods Firms in Nigeria" by Nafiu Shehu, meets the regulation governing the award of the degree of Masters in Accounting and Finance of Ahmadu Bello University, and is approved for its contribution to knowledge and Literary Presentation.

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Dedication

This dissertation is dedicated to my Late Father, Alh. Shehu Halilu and my Late Sister, Jamila Shehu Halilu.

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All praises are due to Allah, we praise Him, and we thank Him and seek His forgiveness. We seek refuge in ALLAH from the evils of our souls and that of our actions. Whomever Allah guides, none can misguide him and whoever misguides, there is none to guide him. I bear witness that there is no worthy of worship but Allah, and I bear witness that Muhammad (S.A.W) is His servant and Messenger.

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Abstract

Earnings management has been a debatable topic to researchers, regulators, standard setters, and investors in the 21st century. It raised a great concern among the stakeholders because of some accounting practices that threaten the quality of corporate financial reporting and erode public confidence in the reported earnings. Managers have a tendency to avoid the release of bad earnings news at times of earnings announcements and as such managers can manipulate earnings through discretionary accounting choices (accrual-based earnings management) or by structuring real transactions and/or changing their timing (real earnings management). A vast financial reporting literature examined accrual-based earnings management with little attention to real earnings management. This study examined the determinants of real earnings management through real activities in the listed industrial goods firms in Nigeria. The study covers a sample of 10 industrial goods firms for a period of 7 years (2009-2015). The study employed correlational research design and panel regression technique of data analysis. The study found after controlling for firm size that firm leverage, ROA, board size and board composition have significant statistical negative effect on real earnings management in the sample industrial goods firms. The findings also revealed that institutional ownership have an insignificant positive effect on real earnings management during the period covered by the study. The study also found that audit quality (proxy by auditor-type, Big4 and Non-Big4) has an insignificant positive effect on real earnings management of the listed industrial goods firms in Nigeria. The study recommends that the regulators and policy makers in Nigeria should consider real earnings management when making policy to minimize managerial opportunistic practices in corporate reporting. The study also recommends that the Securities and Exchange Commission and NSE should review the code of corporate governance by increasing the composition of the board of directors of listed companies. This could improve the corporate governance quality and its ability to constrain earnings management in all its forms.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Accounting information has been the major input in capital allocation decisions of investors and lenders in the capital markets. Specifically, accounting earnings remain the strategic financial statement variable for assessing firm's viability and future prospects. For accounting earnings to be useful and relevance to investors and lenders it has to be of higher quality, that is, free from errors and material misstatements. Accounting information particularly the "earnings" indicate firm's direction, reduces information asymmetry and ensures efficient capital allocation. This is achievable only if the managers did not interfere with the financial reporting process. The incidences of corporate failures that are related to creative accounting practices has raised concerns and remain a topical to researchers, regulators, standard setters, and investors in the 21st century and during the last two decades in particular. This rising concern among the stakeholders is not unrelated to some accounting practices that threaten the quality of corporate financial reporting and erode public confidence in the accounting profession. It also raised concerns about the reliability and credibility of financial reporting globally (Ge & Kim, 2013).

Corporate financial reporting is the management's responsibility, through which the managers communicate their stewardship performance to the owners and other stakeholders. Several researches on Capital Market are of the view that stock market responds favorably to earnings news when reported earnings meet or beat earnings expectations, while it reacts unfavorably when reported earnings fall short of earnings benchmarks. To avoid unfavorable reactions, managers have a tendency to avoid the release of bad earnings news at times of

earnings announcements (Ge & Kim, 2013). As such managers can manipulate earnings through discretionary accounting choices (accrual-based earnings management) or by structuring real transactions and/or changing their timing (real earnings management). Earnings management is known in increasing information asymmetry between managers and outsiders and hide firm's unmanaged economic performance, thereby eroding financial reporting reliability and credibility. Bello (2011) argues that earnings management in whatever form is misrepresentation of true fact and figures of accounts which lead to a number of recent corporate collapses that erode shareholders confidence on the reported companies' financials. Moreover, Yero (2012) posits that, management report managed earnings to manipulate information asymmetry and misguide ill-equipped users.

There are many advantages attached for managing accounting earnings by corporate managers; for instance, managers might concentrate their efforts in tax planning to manage earnings and attempt to minimize the tax effects over time. Essentially, the conflict of interest between shareholders' and managers could encourage managers to use a certain degree of flexibility provided by accounting standards to manage earnings, and create distortions in the earning figures reported in the financial statements. This is in the corporate managers' efforts to influence short-term share price performance; or minimize earnings fluctuations in order to show better or more stable financial results.

The prevalence of corporate accounting scandals has changed the public perception of earnings management, as well as, the objective of corporate governance, which stop corporate managers from engaging in improper accounting activities for their own benefits. Financial reporting quality literature have documented a variety of accounting activities that manager's use whenever they engage in activities to manipulate earnings.

According to Gunny (2010) these activities include actions that managers may undertake to change the timing or structuring of an operation, investment and financial transactions. Specifically, Roychowdhury (2006) with regards real earnings management enumerated the management of sales, reduction of discretionary expenses, overproduction and reduction of R&D expenses. Though researchers especially in Nigeria ignored real earnings management, Kim and Sohn (2012) reveals that real-based earnings management has more damage than accrual-based earnings management, furthermore, it has both direct and indirect consequences on current and future cash flows of the business. They added that real earnings management activities are more difficult to be detected than accruals-based earnings management and are normally less subject to external monitoring and scrutiny. They also argue that real earnings management are more difficult for average investors to understand that make them into believing that business has achieved the targeted normal business goals.

Majority of the earnings management literature investigated how management used discretionary accruals to achieved desire earnings in a desired period. Therefore, the present study is motivated by the present research trend which less attention is giving toward investigating real earnings management. And also recent stakeholders concern about earnings management which is accepted by standard setters, practitioners and regulators, that earnings management can be detriment to corporate entities. As such, regulators and standard setters around the world have considered the extensiveness of earnings management to be a major concern for the reliability of published financial statements (Jiraporn, Young & Mathur 2008).

This prompted standard setters, regulators and the academia to embark on the factors that determine earnings management in different sectors and industries. Some of the empirical studies considered corporate governance in terms of board of directors monitoring mechanisms as major

determinant of earnings management, while others pointed institutional ownership, performance, audit quality and financial structure of a firm.

For instance, with regards to the financial report quality, Watts and Zimmerman (1986) opine that audit of reported financial accounting numbers serve as monitoring mechanism which protect and minimize information asymmetry between general stakeholder and the managers, and assure the general stakeholders that reported accounting numbers are free from material error and misstatements. Furthermore, audit is one of the critical determinants of earnings management which improve the quality of accounting numbers and increase the confidence level of the financial statements user. However, Heirany, Sadrabadi and Mehrjordi (2016) indicate that attention given the corporate governance issues is assumed to control managers' irregularities manipulation of accounting information and this consequently increases the quality and reliability of their financial reporting. Nadia (2015) argues that institutional investors have the opportunity, resources and capacity to monitor and influence the decisions of managers, these investors can control the process of preparing financial statement and prevent managers from behaving in an opportunistic manner, through an aggressive management of earnings, thus ensuring a better quality of account information.

Similarly, a review of studies on earnings management highlights that corporate financial structure is also among the determinants of earnings management. For example, Jelinek (2007) and Wasimullah, Toor and Abbas (2010) provide evidence that leverage limit earnings management; according to Jelinek (2007), increase in debt in firm's capital structure reduce opportunistic earnings management for two reasons. First, leverage required debt repayment, thus reduces cash available to management for non-optimal spending; secondly, when a firm employs debt financing, it undergoes the scrutiny of lenders and is often subject to lender-

induced spending restriction (Jensen, 1986). Lastly, firm's financial performance is usually seen as one of the main determinants of real earnings management; for instance, Roychowdhury (2006) argues that managers exercises real earnings management such as sales manipulation and overproduction in order to avoid reporting losses, or reporting good performance.

In addition, a survey and interviews of 400 executives of U.S. firms by Graham, Harvey and Rajgopal (2005) found that executives' managers would rather take economic actions (real earnings management) that could have long-term consequences than make accounting adjustments (accrual-based earnings management) to hit earnings targets. Out of the total survey participants, a total of 80% of surveyed executives stated that, in order to deliver earnings, they would decrease research and development, advertising, and maintenance expenditures, even though these actions damage firm value in the long run.

However, it is the debate in the earnings management literature and its determinants that this study intends to critically evaluate determinants of real earnings management in the listed industrial goods firms in Nigeria. Moreover, previous researches on earnings management have concentrated on other sectors, leaving industrial goods sector receiving little attention.

The industrial goods sector of the Nigerian economy, where previous studies have not sufficiently emphasized on. The listed industrial goods sector is of interest, since it has been argued that industrial goods manufacturing firms are more prone to earnings manipulation and more precisely through real activities manipulations and structuring; due to two main reasons. One industrial goods firms have the largest volume of production and operating activities due to the nature of their products, which is more susceptible to manipulations than firms in other industries; two, there is wider rooms for subjective judgments managers must undertake concerning expected production costs and discretionary expenses.

From the structuring and manipulation of operating activities perspective within the listed industrial goods firms, the analysis of sales manipulation, overproduction and manipulation of discretionary expenses is critical, as they impacts on the timing and amount of reported earnings. Therefore, this presents an interesting case for examining the determinants of real earnings management in the listed industrial goods firms.

It is against this background that the present study examines real earnings management in relation to corporate financial structure, board monitoring, institutional shareholding, performance and audit quality as determinants.

1.2 Statement of the Research Problem

Corporate managers do earnings management practice either good or bad as reported in the literature. Earnings management practices according to Yero (2012) is prevalence in both developing and developed countries, and as such corporate managers as agents should be monitored and control to ensure that they do not manipulate accounting earnings at the expenses of owners.

Previous researches on earnings management in Nigeria have concentrated on other sectors, prompting a research question of whether industrial goods sector is protected to the real-based manipulation activities. Except an empirical study in Nigeria by Yero (2012) which investigate the effect of leverage on real earnings management. Hence, the present study examine real earnings management proxy by (sales manipulation, production cost manipulation and discretionary expenses manipulation) in relation to some specific determinants (financial structure, board monitoring, audit quality, institutional ownership and firm performance). This constitutes one of the gaps in the literature that this study attempt to fill. This study highlights the

methodological gap that the study intends to address. To the best knowledge of this study, only a few studies have examined the determinants of real earnings management in terms of the audit quality, financial structure, firm performance, institutional ownership and board monitoring.

Furthermore, most of the studies focus one dimension the determinants of real earnings management and provide mixed evidence. Chi et al., (2011) and Cohen and Zarowin (2010) considered only audit quality in their studies and found significant association between audit quality and accrual-based earnings management. Additionally, Chi et al. (2011) report that companies that highly encourage managing earnings engage in higher level real earnings manipulations to avoid the monitoring of accrual earnings management by big-N audit firms. On the other hand, Norhayati, Rahayu, and Noor (2013) examine the relationship between leverage and real-based earnings manipulations activities. The study discovered a negative and significant relationship between leverage and real-based manipulation. The finding reveals that companies with lower leverage have manipulate real-based earnings lower. Ge and Kim (2013) studied the effect of board monitoring on real earnings management. They found that real-based earnings management "(proxy by sales manipulation, abnormal declines in R&D expenses, and other discretionary expenses)"is better with good board governance and reduce with higher takeover protection. The overall findings of their study show that real-based earnings management is at higher level when board monitor firm strongly and takeover protection may decrease motivational factors for real-based earnings management. Moreover, Visvanathan (2008) found that majority of the corporate governance proxies are not playing greater role in decreasing real earnings management with exception of board independent; while Osma (2008) and Zhao et al. (2012), in the United Kingdom disclosed that board independent is effectively reducing real-earnings management.

One dimension of the determinants alone cannot reveal much about the strength of the determinants in relation to real earnings management. To overcome this limitation, our study constructs a comprehensive measure of the determinants from different dimensions (audit quality, financial structure, corporate governance and performance. This study also considers three divisions of real-based earnings management which are: overproduction, sales manipulation and abnormal cut of other discretionary expenses. Therefore, the scope of this study and the research design allows the research to consider how the major determinants affect real earnings management in the Nigerian industrial goods firms. To test the relation between the determinants and real earnings management, the study focuses on five mechanisms: the board monitoring, financial structure, audit quality, institutional ownership and corporate performance. The study intends to investigate how the selected firm characteristics will affect real-based earnings management.

1.3 Research Questions

The following research questions are raised to guide the study.

i. How does financial leverage affect real earnings management in the listed industrial goods firms in Nigeria?
ii. What is the effect of audit quality on real earnings management in the listed industrial goods firms in Nigeria?
iii. What is the effect of financial performance on real earnings management in the listed industrial goods firms in Nigeria?
iv. To what extent does institutional ownership affect real earnings management in the listed industrial goods firms in Nigeria?

v. To what extent does board attributes (in terms of board size and board composition) affect real earnings management in the listed industrial goods firms in Nigeria?

1.4 Objectives of the Study

The main objective of the study is to examine the effects of firms Characteristics on real earnings management in the listed industrial goods firms in Nigeria. The specific objectives of the study are to:

i. evaluate the effect of financial leverage on real earnings management in the listed industrial goods firms in Nigeria.

ii. examine the effect of audit quality on real earnings management in the listed industrial goods firms in Nigeria.

iii. examine the effect of financial performance on real earnings management in the listed industrial goods firms in Nigeria.

iv. determine the effect of institutional ownership on real earnings management in the listed industrial goods firms in Nigeria; and

v. assess the effect of board attributes on real earnings management in the listed industrial goods firms in Nigeria.

1.5 Research Hypotheses

The following null hypotheses are raised to guide the study:

H_{01}: Financial leverage has no significant effect on real earnings management in the listed industrial goods firms in Nigeria.

H_{02}: Audit quality has no significant effect on real earnings management in the listed industrial goods firms in Nigeria.

H_{03}: Financial performance has no significant effect on real earnings management in the listed industrial goods firms in Nigeria.

H_{04}: Institutional Ownership has no significant effect on real earnings management in the listed industrial goods firms in Nigeria.

H_{05}: Board attributes has no significant effect on real earnings management in the listed industrial goods firms in Nigeria.

1.6 Significance of the Study

The study contributes to the literature on earnings management by presenting evidence on the management of real activities, which has received little attention in Nigeria. Furthermore, empirical evidence shows that some determinants are related to less accrual-based earnings management and a lower likelihood of expectation management, it is important to understand whether and how the determinants affects real earnings management.

One of the major significance of conducting the study on the determinants of real earnings management in the listed industrial goods firms in Nigeria is that, several studies (like Cohen & Zarowin 2010; Zang 2012) find that real earnings management has negative consequences, such as lower future abnormal returns on assets, abnormal operating cash flows, and Tobin's Q, and higher costs of equity capital. Wang and D'Souza (2006) and Zang (2012) further lamented that real earnings management deviates from optimal business operations, hides a firm's unbiased earnings, and jeopardizes its competitive advantage in the long run.

Some of these empirical studies include examined corporate financial structure in relation to real earnings management in the world. However, there is limited and mixed evidence on the effect of certain determinants of real earnings management among these studies. By using more comprehensive measures of the strength of board governance, this study adds a lot to the

growing literature that examines the determinants of real earnings management. Moreover, this study differentiates from the above-mentioned studies in several ways. For instance, Osam (2008) focuses on U.K. firms, whereas this study focuses on listed industrial firms in Nigeria. The significant differences in accounting and institutional environments between these two countries suggest that the U.K. results do not necessarily hold for Nigerian firms.

The findings from this research have policy implications for regulators, standard setters, auditors, managers, investors, shareholders, students and researchers. For instance, recently, regulators have attempted to improve financial reporting quality by strengthening corporate governance, audit and corporate financial structures. On the other hand, investors and shareholder activists also call for reducing fraudulent reporting in order to enhance firm value. Hence, the findings from this study are an effort towards factors affecting fraudulent financial reporting in terms of real earnings management.

Management groups are strongly against reducing fraudulent and opportunistic practices, which is usually is in their favor. Thus, argue that these reforms may distract and disrupt management; therefore, findings from this research will provide evidence that may suggest that strengthening the determinants may have unintended adverse consequences such as opportunistic real earnings management or otherwise. Lastly, students may find this research as a source of knowledge and reference point; while researchers will find this study as a valuable source of further research and a guide for conducting empirical studies in the field of earnings management.

1.7 Scope of the Study

The following three real earnings management measures are considered: abnormal cash flow from operations (proxy for sales manipulation), abnormal production cost (proxy for overproduction), and the abnormal reduction of discretionary expenses (R&D is outside the scope of discretionary expenses in this study). On the other hand, five major determinants of real earnings management are considered in this research; BIG4 auditor type (proxy for audit quality), Board of directors' composition/independence and insider ownership (proxy for board monitoring), institutional ownership, financial leverage and returns on assets (proxy for corporate financial performance). These five factors are considered because they are most frequently pronounced in the industrial goods companies in Nigeria. Similarly, there was a series of reform and regulatory intervention with respect to board monitoring and audit recently in the listed companies in Nigeria, which prompted the need to examine its effect on the real earnings management. Moreover, industrial goods firms are characterized by huge capital needs due to their large nature of operations, which make them use debts; hence the need for the study of financial structure and real activities manipulations.

The study period covers seven years (2009-2015). Furthermore, the present study is limited to the listed industrial goods on the floor of the Nigerian Stock Exchange (NSE) as at 31st December, 2015. This period is chosen because it is a period immediately after the reform in the 2011 code of best practices on corporate governance in Nigeria. This has affected the monitoring of boards and the structure of corporations in Nigeria.

CHAPTERTWO
LITERATURE REVIEW

2.1 Introduction

The present chapter presents a related literature review on the determinants of real earnings management and the real earnings management activities. The chapter covers the conceptual literature, the empirical literature and the theoretical underpinning of the study. Thus, the concept of real earnings management, board monitoring, financial structure, audit quality and corporate performance are reviewed and presented in the chapter. Empirical studies on the determinants of real earnings management are also reviewed and presented as well as the theoretical framework of real earnings management and its determinants.

2.2 The Concept of Earnings Management

There is no consensus on the concept of earnings management. This is because different scholars define earnings management in different perspectives. To begin with, Schipper (1989:.2) defined earnings management as "a purposeful intervention in the external financial reporting process with extent of obtaining some private gain". Roman (2009) opined that "earnings management occurs when management has the opportunity to make accounting decisions that change reported income and exploit those opportunities". Additionally, Healy and Wahlen (1999) indicated that "earnings management occurs when managers use judgment in financial reporting and in structuring transaction to alter financial report either to mislead some stakeholders about the underlying economic performance of the company or influence contractual outcomes that depend on reported accounting numbers". On the other hand, Certified Fraud Examiners (1993) described earnings management as "the deliberate misrepresentation of the financial condition of an enterprise accomplished through intentional misstatement or

omission of amounts or disclosure in the financial statement to deceive financial statement users". In another perspective, Levitt (1998) defined earnings management as ‘a gray area where the accounting is being perverted; where managers are cutting corners; and, where earnings reports reflect the desires of management rather than the underlying financial performance of the company.

More recently, Rahman *et al.* (2013) defined earnings management as "reasonable and legal management decision making and reporting intended to achieve stable and predictable financial results". This definition may be proved wrong when considering ethical practices or conventions in accounting. Looking at the materiality, it states that an item will be considered material if its omission or misstatement could distort the financial statement thereby influencing the economic decisions of users which was taken on the basis of such information. X-raying the global accounting setters, the Financial Accounting Standard Board (FASB) defined materiality in financial accounting concepts statement no 2, as ‘the magnitude of an omission or misstatement of accounting information that, in the light of surrounding circumstances, makes it possible that the judgment of a reasonable person relying on the information would have been changed or influenced by the omission or misstatement’. As such earnings management, creative accounting, financial engineering or aggressive accounting as they are being called are considered to be a deliberate attempts make by the management to arrive at a desired level of earnings, through whatever means, is an unethical practice (Bello 2011).

It is also believed that information asymmetry between management and external users of accounting information allow managers to use their discretion in preparing financial statements for their own advantage (Spohr 2005). Information asymmetry occurs when some parties in business transaction have information advantage over others (Scott 1997), and thus, management

has the ability to deceive which is likely going to be difficult to detect. Sun *et al.* (2008) highlighted that the two principles of financial reporting- relevance and reliability directly reflect the role of accounting information which are aimed at resolving the fundamental problem of information asymmetry. They further stated that, the release information is relevant with respect to Firms' future prospect, and is reliable information free of material manipulation. As such, financial disclosure and judgments initially are aimed at reducing this information asymmetry between managers and outside users of financial information. This is supported by Trueman and Titman (1988) who reported that the existence of information asymmetry between managers and shareholders is a necessary condition for earnings management. For that earning management is persistence of information asymmetry and that the blocked communication can be eliminated through the enforcement of contractual arrangement (Schipper 1989). This means that information asymmetry increases earnings management. Thus, firms that disclose more information are likely to have less earnings management. This can be proved by the finding of Richardson (1998) who disclosed that earning management is positively associated with the level of information asymmetry.

Several presentations on earnings management also use the term in connection with managerial discretion that has the aim to communicate information to investors that is supposedly not opportunistic (Dechow & Skinner, 2000), and further stated that the clear definition of earnings management is difficult to discern from pronouncement and/or statements and speeches by the regulators. This means that it requires the use of more sophisticated means of identifying earnings management before given a clear definition. In contrast, Subramanyam (1996) said earnings management exists only in relation to opportunistic behavior but not when managerial discretion is used to improve earnings persistence and predictability. An

opportunistic behavior occurs when managers use information asymmetry between the outside users of accounting information and the inside users in order to maximize their satisfaction in dealing with compensation contract, debt contract and regulation, investors therefore are misled by such unreliable information reported (Sun & Rath, 2008). This indicates that even the concept of earnings management is controversial not to even talk of its likely effects on the components of corporate governance like the audit committee among others. Therefore, for the purpose of this research, this study adopts the definition forwarded by Healy and Wahlen (1999) as operational definition of the study.

Despite the significant attention given by regulators on earnings management and audit committee, academic research has shown limited evidence of earnings management, and still there are limited empirical evidences on the nature of their relationship most especially in developing countries like Nigeria. This creates a gap in literature which this study empirically addresses.

2.2.1 Concept of Real Earnings Management

In the financial literature, earnings management is one of concerned topic which attracts a lot of debate. Earnings management concept is define as "*a purposeful intervention in the external financial reporting process, with the objective of obtaining some private gains"* (Schipper, 1989). Healy and Wahlen (1999) seen earnings management as "*a situation that occurs when managers use judgment in financial reporting and in structuring transaction to alter financial reports to either mislead some stakeholders about the underlying economic performance of a company, or to influence outcomes that depends on reported earnings*". Dechow and Skinner (2000) argued that earnings management is further divided into: real-based earnings management, accrual-based earnings management. Accounting information fraud

include choice of accounting method that violate provision of GAAP and management of accrual within the GAAP provisions by choosing a method that will mask the original firm performance are form part of accrual-based earnings management. Similarly, real-based earnings management happens when managers act different from the previous best practice in order to enhance the reported earnings. Commerford et al. (2013) express their ideas which show that managers of firms use of accruals, estimates and accounting guidelines (earnings management) to manipulate earnings to their own target. Managers also manage earnings using strategic timing of investing, financing and operating decisions (i.e. real-based earnings management).

Roychowdhury (2006) make a comprehensive summary of real-based earnings management of operational activities, where he considered real-based earnings management as the activities of management that far away from the conventional business practice that leads to misleading of shareholders purposely, to achieve their desire level of performance. The Roychowdhury (2006) study, modify the method of detecting real earnings management which centered on sales manipulations, poor-quality, decreasing discretionary expenses and overproduction as the common method of embarking in real-based earnings management. Essentially, Roychowdhury (2006) uses the term real earnings management to refer to firms' deviations in real operating activities from normal practices, undertaken to achieve earnings targets. The concept refers to the management actions using real activities, such as R&D spending and sales of assets, to manipulate earnings information (Bartov 1993; Bens et al. 2002; Bushee 1998; Dechow and Sloan 1991; Murphy and Zimmerman 1993).

Zhang (2015) defined the term Real Earnings Management that involved management actions to Change the timing or structuring of operations, investments, and/or financing transactions. Unlike accruals-based earnings management, he characterized real earnings

management as; it has nothing to do with accounting statement manipulation; it has cash flow consequences; it is more difficult to detect and sue; use of abnormal production to affect costs of goods sold expenses; timing sales, R&D and advertising spending, and gains and losses on asset sales.

Moreover, Roychowdhury (2006) demonstrates that managers inflate earnings by overproduction and liberal credit policies and reducing discretionary expenditures in order to avoid reporting losses or meet analyst forecasts. Ewert and Wagenhofer (2005) and Tan and Jamal (2006) suggest that companies manipulate operating activities to adjust the underlying earnings to reach special aims when more perfect accounting standards and more stringent supervisory regulations reduce accounting flexibility. Zang (2012) and Graham et al., (2005) added that real earnings management is not in violation of Generally Accepted Accounting Principles, and the possibility of detection by regulators and auditors is lower because of high concealment and low risk characteristics. Cohen et al. (2008) argue that real earnings management significantly increases while accrual-based earnings management goes opposite after enactment of SOX. Cohen and Zarowin (2010) demonstrate that firms exist not only accrual-based earnings management but also real earnings management in the course of Seasoned Equity Offerings (SEO).

Existing literature provide evidences that managers manage performance via real earnings management. Ewert and Wagenhofer (2005) show that in the face of tightening accounting standards, managers substitute into using real earnings management which is costly and reduces firm value. While Zang (2003) predicts and finds that firms with higher levels of previous earnings management are more likely to use real earnings management relative to accruals management.

2.2.2 Modelling Real Earnings Management

Roychowdhury (2006) established three real-based measures of earnings management which are: "*abnormal cash flow from operations (proxy for sales manipulation), abnormal production cost (proxy for overproduction), the abnormal reduction discretionary expenses (other than R&D)"*. David et al. (2001) also developed another real-based earnings management detecting model which cuts large discretionary accruals. Some of the discretionary expense such as research and development, employee training and advertising expenditure incurred in the present time but realized in long future time. While, improper cut of discretionary expense increases earnings instantly at the expense of future payoff. That is, an abnormal reduction of advertising expenses may result in lower future sales revenues and therefore lower future cash flows and an abnormal reduction in employee training expenses may hurt a firm's competitive edge in the long run (Gunny 2005).

Based on the framework of Roychowdhury (2003), abnormally high production costs, for a given sales level, is indicative of both; sales manipulation due to abnormal price discounts, and costs of goods sold expense manipulation by overproduction. Sales manipulation refers to the behavior of managers that try to increase sales during the current year in an effort to increase reported earnings. By cutting prices (or extending more lenient credit terms) towards the end of the year in an effort to accelerate sales from the next fiscal year into the current year, the firm is willing to sacrifice future profits to book additional sales this period. The potential costs of sales manipulation include loss in future profitability once the firm re-establishes old prices. In other words, Graham et al., (2005) state that managers can increase sales by offering more lenient credit terms (sales manipulation), while offering more lenient credit terms, such as a longer

payment period, increases a firm's risk of exposure to uncollectible accounts. Similarly, managers can also produce excessive amounts of goods to inflate earnings.

Hence, managers can manipulate cost of goods sold expense in any period by overproducing to spread fixed overhead costs over a larger number of units as long as the reduction in per-unit cost is not offset by inventory holding costs or any increase in marginal cost in the current period. Moreover, it is a means of overproduction, which results in an inventory level higher than necessary to meet sales. The excessive inventory may turn out to be obsolete so that a loss may occur in the future. This makes abnormal production costs a suitable proxy for sales manipulation and production costs manipulation. Thomas and Zhang (2002) use this model and provide evidence consistent with managers overproducing to decrease reported cost of goods sold. Similarly, Roychowdhury (2003) applied it as measures for real earnings management of discretionary expense and overproduction and finds that managers trying to avoid reporting losses undertake real earnings management. He added that firms suspected of real earnings management exhibit unusually low cash flow from operations, low discretionary expense and high production costs. The findings are consistent with managers offering price discounts to boost sales, myopically investing and overproducing to decrease production costs expense.

Specifically, Graham et al. (2005) lend credence to operating cash flows as a proxy for sales manipulation, because there is a constant tension between the short- and long-term objectives of a firm. In which managers appear to be willing to take value reducing-actions and burn "real" cash flow in order to report plan accounting information. For example, managers can manipulate sales by given additional more lenient credits to customers. Giving out more lenient credit to customers will increase company's risk of having more default customers and also managers can produce large quantity of goods in order to manipulate up earnings.

2.3 Determinants of Real-based Earnings Management

This section, conceptualize the determinants of real earnings management. The determinant used in this stud are; audit quality, board attributes and financial.

2.3.1 Concept of Audit Quality

The Institute of Chartered Accountants' of Nigeria (ICAN 2010) see "*audit as a systematic process of objectively obtaining and evaluating evidence in respect of certain assertion about economic actions and events to ascertain the degree of correspondence between those assertions and established criteria and reporting the results to interested parties over a particular period of time*". ICAN considered external auditor as auditor who is independent and not to be controlled by the management, which refers to the providing sound assurance that published audited financial statements are free from material error and are in accordance with legislation and relevant accounting standards. Furthermore, Angus (2004) indicates that the recent high-profile corporate failures such as Enron and many more, created a crises of stakeholder confidence regarding the auditing policies and guidelines, and corporate governance of the listed companies. This pushed the stakeholder to show interest and demand for more audit quality in the listed public firms.

Many authors make efforts to conceptualize the term "audit quality". Wallace (1980) considered audit quality as ability of auditors to put control in order to decrease level of irregularities and improve the quality of accounting information. While DeAngo (1981) defined audit quality from the angle of market perspective, which refers to the market-based joint probably encourage auditors to identify material misstatement in the client financial reports and report the financial misstatements. She reiterated the role of the capital markets in assessing audit quality through financial reporting. This definition has two dimensions; one, it regarded the

auditor's ability to detect material misstatements as auditor competence, while the willingness to report discovered material misstatements is regarded as auditor independence. In other words, audit quality is seen by Titman and Trueman (1986) as the quality and accuracy of the financial information communicated by the auditors. Lee, Leu and Wang (1999) defined the concept of audit quality as tendency of an auditor to present an unqualified report for information containing misstatement and errors of financial information detected.

Recently, stakeholders have more concern about the audit quality, receiving high level of attention by the audit quality is due to the misrepresentation of financial information by the managers. According to Angus (2004) one out of other models of audit quality shows that audit quality is the mixed of technical quality and service quality. The mechanisms for technical quality comprises status (i.e reputation and capability), knowledge and independent (i.e experience and expertise), similarly the service quality is the responsiveness, Non-audit service and understanding (i.e client service and empathy). Consequently, audit job with technical and service quality is competent to detect and communicate manipulations of real activities and fraud in the financial statement.

Commerford et al., (2013) conducted a study using an in-depth interview with 20 experienced auditors to find information on auditors' perceptions with respect to the real earnings management. The study indicates that auditors are alert of various real-based earnings management. Furthermore, majority of the interviewees concerned about real-based earnings manipulations method because, it is a signal of using other bad manipulations method by the managers to achieve their desire objectives. Specifically, managers are using real-based earnings management manipulation method using inventory, overproduction and sales manipulation which are the main areas concerned by the auditor in other to detect and report true financial

status of a client. Previous empirical studies acknowledge the relationship existence between earnings management and audit quality. For instance, DeAngo (1981) indicated that auditor size or type relationship positive and significant with the audit quality because, big audit firm has higher tendency of lost due to failure to report a material misstatement in the records of a client.

Past studies reveal many proxies for measuring audit quality which comprise of audit firm size (DeAngelo, 1981), tenure of auditors (Johnson, Khurana, & Reynolds, 2002), and industy-specific auditor presence. However, there is sufficient evidence that the size of the auditing firm is a good proxy for audit quality (see Francis, Maydew, & Sparks, 1999; Becker, DeFond, Jiambalvo, & Subramanyam, 1998; Chia, Lapsley, & Lee, 2007).

2.3.2 Concept of Board Attributes

Board attributes connotes the overall features of corporate board which are saddled with the functions and responsibilities in relation to financial reporting. Some of the sequence of companies collapse that are associated to the government in many parts of the world has prompted governments, accounting bodies and other concerned stakeholders to take measures in the governance of corporations. The Organization for Economic Corporation and Development (OECD) headed most part of the action towards sound corporate governance. The OECD carried out a task project of developing new modern corporate governance code for public companies best practice. The OECD Ministers' council meeting of April 1998 and May 1999 have approve the corporate governance principles, standards and guidelines for companies (OECD, 1999) to handle problems that are believed to be the causes of the companies collapses.

Corporate governance according to La Porta, López-de-Silanes, Shleifer, and Vishny, (2000) refers to the set of mechanisms through which outside investors protect themselves against expropriation by the insiders, where "insiders" include the controlling shareholders and management. They explain that the main objective of corporate governance is to protect the

rights of stockholders and creditors and to ensure that the interests of insiders and outsiders converge. Thus, good corporate governance can contribute to a country's social and economic development by enabling corporations to perform better.

Corporate governance is defined by OECD (1999) as a set of relationship between company directors, its shareholders and other stakeholders; It also provide the structure through which the company's objectives are set and the means of attaining those objectives and monitoring performance. Sanda, Mikailu and Garba (2005) considered corporate governance as "set of principles, guidelines and mechanisms adopted in order to ensure that directors and managers make decisions and act in the best interest of all the stakeholders". Similarly, Securities and Exchange Commission (SEC, 2003) considered corporate governance as "a system by which corporations are governed and controlled with a view to increasing shareholder value and meeting the expectation of the other stakeholders". The primary objective of SEC Code is to ensure that all corporate governance compliance issues and general administration are lies on the board of directors and the principal responsibilities of the board of directors to corporate firms are to manage properly and efficiently in order to achieve the target performance, and protect the interest of the shareholders.

According to the Code of Corporate Governance, the board of directors should be adequate size which is relative to the complexity and scale of the company's activities and also the board should be mixed of individuals that have different and "diversify experience without compromising independence, compatibility, and integrity in carrying out their role". Furthermore, the board is mixed of executive and non-executives directors, and the non-executive directors should outnumber the executive directors in the board. The size should not be more than 20 directors in the board and with at least two independent non-executive directors in

the board. Purposely, the SEC Code 2011 outlines at least three main board committees which are: committee of risk management, committee of audit and credit committee.

The committees are purposely intended to ensure reliability, efficiency and effectiveness of the board of directors in controlling and managing the activities of the corporation in order to achieve the target level of performance which serve as board monitoring. In addition, the audit committee functions comprise of the evaluation of the system, procedure, processes and governing the activities, and report the state of activities to the shareholders. Furthermore, the corporate governance code required and mandate efficient and effective audit committee in every board of the company. The code also required that majority of the audit committee members should be non-executive directors with the mixed of the appointed shareholder in the annual general meeting. Similarly, the code also mandates some of the members must have knowledge of internal control process and financial affair. Moreover, audit committee has the responsibility to review the financial reporting and oversees the objectivity and independence of the external auditors.

Researchers have examined the relationship between corporate governance variables and earnings management in different jurisdiction using different methodologies. For instance, according to Viénot (1995) an independent director is a person who has no direct or indirect relationship with the company or its affiliates and may thus be deemed to participate objectively in the work of the board. According to him, independent directors sit on the board of directors to ratify the decisions that evoke serious agency problems such as manipulation of results and the violation of accounting standards. Hence, the presence of independent directors in sufficient numbers on the board of directors is an essential part of ensuring the inclusion of interests all shareholders in the company decisions.

However, recent regulations have required boards to play a more prominent role in firm governance. Many studies provide empirical evidence on the monitoring role of boards and support the proposition that boards protect shareholder interests. However, executives are reluctant to share information with a tougher monitor (Holmstrom 2005; Adams and Ferreira 2007; Adams 2009), which in turn weakens the advisory and monitoring roles of boards. Finally, for the purpose of this study Board size and Board composition will be use as proxies of Board monitoring.

2.3.3 Concept of Financial Leverage

Dictionary of business and finance (2007), define leverage as "the use of debt financing". It also define leverage ratio as a "measure of the relative contribution of stockholders and creditors, and of the firm's ability to pay financing charges". This definition restricts leverage to debt financing only (otherwise known as financial leverage). However, According to Nissim and Penman (2004), leverage is of two kinds- the financial leverage (resulting from financing activities) and the operating leverage (resulting from operating activities), and both have impact on a firm's profitability. From another dimension, Welch (2010) defines the term leverage as, "the degree of sensitivity of value of equity ownership with respect to changes in the value of the firm". It is thus observable that firms with debts and or any non-debt long term liability in their financial structure are levered.

As firms grow, investment opportunities grow and share-holders' fund becomes insufficient to solely finance the available juicy investment. The need for more funds arises. Thus firms borrow from outside (financial leverage), or from inside - their employee, retirees, government, and so on (operating leverage). Regarding why and how leverage factors into a

firm's financial structure, two competing models are available from the literature- The pecking order model and the trade-off model.

As pecking order model of Myers (1984) implies, it is in the nature of man to generally hold on to control of wealth for himself alone. Thus the firm would not want to dilute control by issuing more ordinary shares unless all available options seem costlier. The pecking order model suggests that, since the cost of issuing equity (transaction cost and asymmetric information costs) are high, equity issues are rare and thus, "firms finance new investment first with retained earnings, then with safe debts, then risky debt and finally, but only under duress, with outside equity" (Myers 1984 as cited in Fama & French, 2004). Here, the pecking order sequence implies that the decisions of firms leverage level is determined by the firm's financing deficit- the balance of fund required to finance available investments after exhausting the retained earnings. However, the result of Fama and French (2004) contradicts this presumption. They found that firms with no financing deficits still issue shares and bond, repurchase bonds and issue shares, and so on. This left us with the second compelling proposition in the theory of modern finance- the trade-off model (of weighting cost and benefit).

The trade-off model explained that, debt has certain costs and benefits and that firms weight these two and decide whether to go for it and at what level, or not (Fama & French, 2004). Although the work of Miller and Modigliani (1958 and 1963) is believed to have formed the basis of capital structure studies, literature shows that their theory of capital structure irrelevance has suffered serious criticisms. Modern capital structure theory built on the trade-off model, implies that "a firm can build an optimal debt/equity mix by focusing on the potential tax benefits of debts and the potential cost of financial distress" (Harris & Chaplinsky, 2006). In that, the majority view among scholars of finance is that capital structure has a direct relationship with

the value of a firm (Binsbergen, Graham & Yang, 2010). Binsbergen, et al., (2010) noted that as there are benefits in introducing debt into a firm's capital structure, there are also cost, and as such, firms' decisions for optimal capital structure level tends to follow weighting the benefits against the costs. Among the benefits they observed is tax savings. Due to the tax deductibility of interest, firms consider financing their operations with debt.

Another benefit as observed in Jensen (1986) is that of committing managers to operate more efficiently. By including debt in the financing options, a firm has to service and repay back to the lenders and this requires extra cash flow. The manager has to go extra miles bearing this in mind and that he also need to generate additional income to show for the share holder, as compensation for risking debt into their venture. This means that any suboptimal activity that may generate lesser cash flow will be avoided. Thus debt reduces the agency cost of free cash flow (Fama & French, 2004; Jensen 1986). In addition, Jensen and Mecklings (1976) explained that debt is beneficial to the share holders' interest as it encourage lenders to monitor the activities of the managers, to ensure the safety of their investment in a given firm. This view is shared by Diamond (1991) where he observed that in situation of information asymmetry, the presence of debt in itself will signal reassurance to the worried stake holders by the presumption that the debt holders are closer in the chain of information and thus, have superior knowledge of the firm's financial health. Hence, loaning out to them means that the firms are healthy. With this, Diamond inferred that, the managers will have no need to manage earnings in order to reassure anybody.

Jensen (1986) suggests that debt creation reduces managers' opportunistic behaviours. This is due to the 'control hypotheses' for debt creation, in which managers use their own discretion to control the firm's cash flow; however the debt control role begins when managers

have an obligation making interest and a principal payment. This implies that high leverage may restrict managers' ability to manipulate income-increasing accruals.

2.3.4 Concept of Corporate Performance

Although corporate performance covers both the financial and non-financial performance, financial performance dominate the literature for two major reasons. Corporate financial performance is used to compensate employees, the management, lenders, pay tax and pay interest to lenders and dividends to investors. Khan, Shah, and Atta, (2009) argue that the corporate present and future performance can be seen from many variables, such as stock price performance, reported earnings, or market share of a firm. According to them, investors are keen in the stock return and an upward trend in stock return, which attracts investors toward investment in stock that will further raise the demand in the stock market and will lead to increasing stock prices and performance of the stock market. It is therefore one of the reasons for managing firm's performance to beat the desired level of performance.

Farrell and Whidbee (2003) state that corporate boards use both performance and deviation from expected performance to make chief executive officer's turnover decisions. It is also argued that the attributes of corporate governance are related to the likelihood of consistently meeting or exceeding analysts' forecasts (profitability) and compensation committees reward managers for doing so Adut et al. (2011). Corporate financial performance is therefore a major factor in both accrual-based earnings management (Payne & Robb 2000; Burgstahler & Eames 2006) and real earnings management (Roychowdhury 2006). According to them, achieving earnings targets depends on underlying economic performance.

Gunny et al (2005) explained the role and consequences of corporate financial performance with respect to real earnings management. That is, a manager can deviates from the

optimal level of activity and engages in real earnings management, and then presumably there would be long run economic consequences. According to them, real earnings management negatively impacts future firm performance because the manager is willing to sacrifice future cash flows for current period income. Moreover, survey data by Graham et al. (2004) indicate real earnings management may hinder future performance, but managers engage in real earnings management in the hope that future earnings growth will offset current real earnings management. Many studies such as DeFond and Park (1997), Subramanyam (1996) and Altamuro et al. (2003) reveal that earnings management is positively and significantly connected with the expectation of managers' future performance.

2.4 Review of Empirical Studies on the Determinants of Real Earnings Management

Accrual-based earnings management has dominated the literature in the last two decades. But recently, there is a growing body of research (Roychowdhury, 2006; Cohen et al., 2008; Gunny, 2010; Zang, 2012) that shows firms engage extensively in real earnings management. These studies provide evidence that the levels of real and accrual earnings management are likely to differ, depending on the costs and the benefits of utilizing each of the different methods of earnings management. For instance, Graham et al. (2005) show that managers prefer real over accrual earnings management to avoid the scrutiny of regulators and auditors. While, Ewert and Wagenhofer (2005) theoretically indicate that real earnings management increases after accounting standards are strengthened to restrict accrual-based earnings management.

While there are shift from accruals-based earnings management to real earnings management researches in the literature, little has been done in Nigeria in this area. In this section, a review of empirical studies on the determinants of real earnings management with particular emphasis on audit quality, financial structure, board monitoring and performance is

presented. Cohen et al. (2008) find evidence that US firms utilize a higher level of real earnings management post-SOX compared to pre-SOX. This result suggests that more restrictive regulation mitigates accrual earnings management, but at the expense of greater real earnings management. Further, Zang (2012) finds evidence that managers utilize real and accrual earnings management as substitutes.

Though there is limited research that has examined the effect of audit quality on real earnings management, empirical evidences from Chi et al., (2011) and Cohen and Zarowin (2010) documented the association between audit quality and accrual earnings management. Chi et al. (2011) find that firms with strong incentives to manage earnings (firms undertaking a Seasoned Equity Offering) engage in a higher level of real earnings management to avoid the monitoring of accrual earnings management by big-N audit firms. Cohen and Zarowin (2010) find similar evidence that Seasoned Equity Offering (SEO) firms audited by big-N audit firms have a higher propensity to undertake real earnings management during the offer year, relative to accrual-based manipulations. However, early empirical studies (Becker et al., 1998; Johnson et al., 2002; Balsam et al., 2003; Reichelt and Wang, 2010) provide evidence that high-quality auditing (proxied by the presence of big-N audit firms and auditor industry specialism) is associated with a lower level of accrual earnings management. Similarly, Elder and Zhou (2002) and Chen et al. (2005) find the presence of big-N audit firms and auditor industry specialism mitigates accrual earnings management during the IPO year. Hence, and based on the previous evidence, high-quality auditing is expected to constrain accrual-based manipulation and lead firms to resort to a higher level of real earnings management.

With regards real earnings management and board monitoring, Cornet et al. (2009) investigated the corporate governance mechanisms impact on earnings management of United

State Public Hank Holding Company and report that CEO pay-for-performance sensitivity (PPS), board independence and capital have negative association with earnings management. In same study also reported that PPS has positive association with earnings management. Furthermore, the study indicates that board independent and PPS have positive association. Both board independent and PPS have association with higher level earnings and their outcomes show that board independent decrease earnings management that greater PPS compels.

Dimitropoulosb and Asterioua (2010) examine the impact of board composition on the quality of periodic earnings and report that the informativeness of annual information earnings has positive association with outside directors' ratio serving on the board, but board size is not associated with informativeness. Similarly, companies that have higher ratio of outside directors established to be higher conservative when reporting bad information, however, they are not displaying higher timeliness on the recognition of good news. Furthermore, the study shows that companies with higher ratio of outside directors report higher earnings quality compared with the companies that have lower ratio of outside directors.

In Nigeria, Yero (2012) investigates the effects of leverage incentives on earnings management strategies of the Nigerian listed manufacturing firms. The author dwelt on different dimensions of earnings management including accruals earnings management, real earnings management and deferred tax manipulations. With regards the real earnings management, the study found that both financial and total leverage have significant negative impact on real earnings management. The study concludes that managers commit real earnings management to avoid violating debt covenants.

Norhayati, Rahayu, and Noor (2013) examine the association between leverage and Real Earnings Management activities. They analyzed how leverage is able to reduce earnings

management by using abnormal Cash Flow from Operation, Abnormal Production Cost and Abnormal Discretionary Expenses model by Roychowdhury (2006), as a proxy for real earnings management. Using a sample of 3,745 firm-year observations for the period of 2006-2011, which listed on Bursa Malaysia, the study find a significant negative association between leverage and real earnings management. The finding reveals that leveraged firms have lower levels of real earnings management. This supports the view that leverage limits the real earnings management activities, which in another way round, which in turn, could affect the quality of accounting earnings. Ge and Kim (2013) examine the impact of board governance and takeover protection on real-based earnings manipulation, and the article regard four types of real-based earnings manipulations; "sales manipulation, overproduction, the abnormal reduction of research and development (R&D) expenses, and the abnormal reduction of other discretionary expenditures". The study disclosed that the level of real-based earnings management ("sales manipulation, abnormal declines in R&D expenses, and other discretionary expenses") enhances with good board governance and reduces with higher takeover protection. Generally, the two governance factors have not impacted significantly on overproduction. Furthermore, the study show that companies change accrual-based earnings manipulation with real-based earnings manipulation (such as sales manipulation and discretionary accrual abnormal cut-off) and the change impact is higher pronounced in companies with effective board governance. The overall result shows that the level of real-based earnings manipulation is larger when companies are faced with tough board monitoring, and that takeover protection may decrease managers' motivations for embarking on real-based earnings manipulations.

This study implies that, after controlling for other factors, firms with better board governance schemes have a higher level of real earnings management and firms that are better

protected from takeovers (via stronger antitakeover provisions) have a lower level of real earnings management. It also suggests that the results hold for sub-samples of firms in the manufacturing and R&D-intensive industries, except that the effect on sales manipulation is insignificant. Moreover, the findings also indicate that firms substitute accrual-based earnings management with certain types of real earnings management (sales manipulation and abnormal cuts of discretionary expenses) and the substitution effect is more pronounced for firms with stronger board governance.

Alhadab, Clacher and Keasey (2013) examined IPO firms engage in real and accrual earnings management during the IPO and how big-N audit firms constrain discretionary expenses-based and accrual-based manipulations. Based on the restriction of these forms of earnings management leads IPO firms to resort to a higher level of sales-based manipulation. Their results show that both sales-based and accrual-based earnings management predict post-IPO return underperformance, and that sales-based manipulation has the most severe negative consequences for future return performance. In addition, they find IPO firms audited by big-N audit firms experience a severe decline in post-IPO return performance due to the extensive use of sales-based manipulation that takes place during the offer year. Zhe, Donghui, and Jin (2013) examine the effect of earnings management on financial leverage and how this relation is influenced by institutional environments by employing a large panel of 25,798 firms across 37 countries spanning the years 1989 to 2009. The study find firms with high earnings management activities tend to have high corporate leverage. More importantly, this positive relation is attenuated by strong institutional environments. Their results lend strong support to the agency theory of free cash flow. Other studies that examined the effect of corporate governance on real earnings management include Visvanathan (2008) in U.S who finds that most key governance

variables, except board independence, do not play a role in limiting real earnings management. Osma (2008) using UK data finds that, in the United Kingdom, independent boards efficiently constrain the manipulation of R&D expenditures, while Zhao et al. (2012) find that staggered boards reduce managerial pressure to resort to real earnings management.

Using a sample of deposit money banks in Nigeria, Modibbo (2016) investigated the impact of audit quality and corporate governance on real–based earnings management in Nigerian banks using two real–based earnings manipulation activities (discretionary accruals expenses manipulation to smooth earnings and manipulation of revenue to alter cash flow from operations) for the period of 10 years (2004-2013) for 15 banks. The study adopted cross-sectional research design and the study reported that, there is insignificant association between Big4 auditors and earnings management ("revenue and discretionary expenses manipulation") and positively related between real earnings management and joint audit. The study findings reveal that governance variables (board of directors size and board of directors independent) have positively and significant impact on cash flow manipulation furthermore, audit committee (audit committee size, audit committee financial knowledge and audit committee independence) have negative and significantly effect on cash flows manipulation within the period. The overall results reveal a significant association between total real earnings manipulation and audit quality measures and governance machinery

2.5 Theoretical Framework

The purpose of financial reports is to reflect economic events by providing information about the financial position, financial performance and cash flows of an entity. Financial reporting variables such as accounting earnings are incorporated by investors into security prices swiftly and accurately if there is no information asymmetry (capital market is efficient).

Signalling theory explains how information asymmetry can be reduced when the more informed party communicates their private knowledge to the less informed party (Morris 1987). The quality of the signal and the reduction in information asymmetry as a result of financial reporting depends on the informativeness of the financial statements, which in turn depends upon the basis of their preparation. However, earnings management is the purposeful intervention in the preparation and presentation of financial reports, hence, create information asymmetry by sending poor quality signal to the markets. Prior research indicates that earnings management is a signalling mechanism that can increase information asymmetry, if managers resort to their opportunistic accounting behavior, which cause the reliability and usefulness of the financial reports to be substantially reduced.

Apart from the signaling theory, earnings management activities can be analyzed from the relationship between principal and agent i.e managers and the shareholders, which also stress the need to employ the services of an auditor to install corporate governance mechanisms in order to minimized agency problems. For example, Dang (2004) posits that corporations where management interest differ with shareholders' own, and the compensation of the management is attached to the reported earnings for wealth maximization, that motivate management to manage reported earnings. Managers have the incentive to manage earnings. Furthermore, in line with agency theory, audit serve as a monitoring instrument that gives confidence to the stakeholder that reported financial information is free from materials errors (Watts and Zimmerman, 1986). Therefore, higher audit quality is playing important role for auditors to successful discharge their duties.

According to Brau and Fawcett (2006) agency induced managers to manipulate accounting information in form of accounting earnings that send as signal of performance to the

investors. Managers manage earnings to achieve the minimum target because, they want to create good reputation in the capital market in order to increase their company's stock value (Graham et al., 2005), numerous failures by managers to meet the target is an indication of incompetent management. Managers manipulate earnings to achieve their target by extracting rents from shareholders (in form compensation and decrease chances of dismissal for poor performance). Shehu (2012) used agency theory to explain the linkage between firm leverage and financial reporting quality. That is, as leverage increases, there are wealth transfers from fixed claimants to residual claimants. As debenture holders are able to 'price protect' themselves, managers and shareholders have an incentive to voluntarily increase the level of monitoring, such as by increasing the disclosure of additional information about the firm's activities (Schipper, 1981). Alsaeed (2006) further lamented that higher debt firms have higher agency costs and therefore need to have more information disclosed in order to satisfy the needs of creditors for information.

Fama and Jensen (1983) speak out that board of directors is the highest body responsible for the internal control that's responsible for the monitoring activities of higher ranking officer in the organisation. Majority of the finance and accounting researches (such as Klein 2002; Xie et al. 2002; Peasnell et al. 2005; Cornett et al. 2006) show that board of directors play a vital roles in decreasing financial information misstatement. Thus, Ge and Kim (2013) review the under effective monitoring perspective and reveal that the impact of strong board governance on real-based earnings management should be negative, but under the market pressure perspective, it show positive association between board governance and real-based earnings management.

With regard theoretical nexus between audit quality and real earnings management, Ge and Kim (2013) argue that, although real earnings management can reduce economic value, it is

not a violation of financial reporting rules (as long as the accounting treatments of real business decisions are in compliance with GAAP) and is thus beyond the scope of the external auditor's responsibility. Under this situation, there should be no relation between audit and real earnings management. However, independent auditors are normally accountable to a firm's audit committee and have a duty to report to shareholder meetings, may have incentives to discourage income-increasing earnings manipulation via real activities restructuring. This is because high-quality, external auditors such as Big 4 auditors, are faced with relatively higher litigation risk when their clients report inflated earnings numbers (Choi et al. 2008, 2009). In such a case, one can expect a negative association between Audit and the extent of real earnings management. On the other hand, to the extent that independent external auditors deter the use of accrual-based earnings management, managers may use real earnings management techniques instead to manage reported earnings. This argument suggests a positive relation between Audit and real earnings management variables.

Furthermore, auditing procedure serves as an investigation tool that can constrain managers' incentive to influence a firm's reported earnings (Wallace, 1980). Thus, auditing may reduce misreporting and mispricing in financial reporting and control managerial incentives and discretion with respect to earnings management. External quality auditors are linked with financial reports featuring fewer earnings manipulation practices. Larger auditing firms have more incentive to preserve their reputation as well as more resources, which allows them to perform better auditing services than smaller auditors (Palmrose, 1988).However, with regard financial Leverage and real earnings management, DeFond and Jiambalvo (1994) show that firms that have a higher level of debt (leverage, total debt/total assets ratio) have higher incentives to manage earnings. Therefore, negative relation is expected based on this; in contrast,

negative relation between leverage and earnings management is suggested by (Jensen, 1986). According to him, leverage increases' reduce opportunistic earnings management for some reasons; leverage required debt repayment, thus reduces cash available to management for non-optimal spending; and when a firm employs debt financing, it undergoes the scrutiny of lenders and is often subject to lender-induced spending restriction.

On firm performance and real earnings management, Gunny, (2010) consider that real earnings management is been induced by the level of performance, that managers may undertake actions that may have changed the timing or structuring of an operation, investment and financial transaction. Additionally, Roychowdhury (2006) provide evidence on the negative association between real earnings management and performance, by management of sales, reduction of discretionary expenses, overproduction and reduction of R&D expenses. He found that the sample firms are manipulating real activities to avoid reporting losses.

In another prediction, Watts and Zimmerman (1990) argue that large firms face higher political costs and may therefore have a stronger incentive to engage in income-decreasing earnings management to reduce visibility and political costs. Therefore, large firms may be less likely to inflate earnings via structuring transactions (real earnings management). This study includes firm size to control for the effect of firm size on real earnings management.

Therefore it is based on the agency theory and signaling theory frameworks that this study intends to examine audit quality, financial structure, board monitoring and corporate performance in relation to real earnings management in the sample of Nigerian industrial goods firms.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, methods and techniques adopted to answer the research questions and objectives are discussed and presented. The chapter presents and discusses research design adopted for the study, population and sample size of the study, sources and methods of data for the study, technique of data analysis and the variables measurement and models specification. The chapter discusses the justifications of the methods and techniques employed in the study.

3.2 Research Design

The study adopts correlational research design in assessing the determinants of real earnings management in the listed industrial goods firms in Nigeria. Correlational design is considered suitable because it is effective in cause and effect studies that aimed at determining the relationship among variables. Hence, this is consistent with the main objective of the study. The design is in two phases; in the first phase, the study estimate the real earnings management as developed by Roychowdhury (2006), by measuring and removing the normal levels of revenue, discretionary expenses and production costs respectively, from the total revenue, total discretionary expenses and production costs. While in the second phase, the study examine the effect of the audit quality and board monitoring, financial Leverage, performance and institutional ownership on real earnings management of the listed industrial goods firms in Nigeria.

3.3 Population of the Study

The present study population comprised all the 25 industrial goods firms quoted on the floor of the Nigerian Stock Exchange (NSE) Market. It covers all the firms under the four

sub-sectors (building materials, electronic and electrical products, packaging/containers and tools and machinery) of the industrial goods sector of the NSE. This population is chosen because of two main reasons; one, the nature of operations of the industrial goods firms, which is manufacture and trading of tangible goods; and two both accruals earnings management and real earnings management can be identified. The population of the study consist 25 firms as presented in Table 3.1 below.

Table 3.1 Population and Sample of the Study

S/N	Population
	Building Materials
1	African Paints Nigeria plc
2	Ashaka Cement plc
3	Berger Paints plc
4	Chemical and Allied Products plc
5	Cement Company of Northern Nigeria plc
6	Dangote Cement plc
7	DN Meyer plc
8	First Aluminum Nigeria plc
9	IPWA plc
10	Lafarge Cement Wapco Nigeria plc
11	Paints and Coatings Manufacturers Nig plc
12	Portland paints and products Nig plc
13	Premier paint
	Electronic/Electrical Products
14	Cutix plc
15	Nigerian wire and cable plc
16	Nigerian wire industries plc
	Packaging/Containers
17	ABPLAST Products plc
18	Avon Crown caps and Containers plc
19	Greif Nigeria plc
20	Nigerian Bags Manufacturing Company plc
21	Poly products Nigeria plc
22	West African glass industry plc
	Tools and Machinery
23	Nigerian Sewing Machine Manufacturing Co. plc
24	Nigerian Ropes plc
25	Stokvis Nigeria plc

Source: Industrial Goods Sector (NSE)

3.4 Sample Size of the Study

In arriving at the sample size of the study, the study considered availability and accessibility of data for all the period covered by the study (2009 through 2015). Based on that, 15 firms are filtered out, and 10 firms emerged as the sample size of the study as presented in Table 3.2 below.

Table 3.2 Sample of the Study

S/N	Sample Firms
	Building Materials
1	Ashaka Cement plc
2	Berger Paints plc
3	Avon Crown caps and Containers plc
4	Cement Company of Northern Nigeria plc
5	Dangote Cement plc
6	First Aluminum Nigeria plc
7	Lafarge Cement Wapco Nigeria plc
8	Premier paint
9	Portland paints and products Nig plc
10	Greif Nigeria plc

3.5 Sources and Method of Data Collection

The study makes use of secondary data for the period of 7 years (2009-2015) from the secondary sources (financial statements of the sample firms). The use of secondary data in the study is informed by the fact that the study adopts the positivists' research paradigm, which mostly uses quantitative methodology and hypothetico-deductive reasoning. Thus, the estimation of the model and the test of the research hypotheses require quantitative data.

3.6 Technique of Data Analysis

The present study employs panel regression technique of data analysis, the technique is consistent with studies that combine cross-sectional and time-series data. Regression technique is

effective in assessing relationships as well as the impact of one variable(s) on another variable that are theoretically related. However, to ensure robust and Best Linear Unbiased Estimators (BLUE) in the study, the study apply Ordinary Least Squares (OLS) estimators, Fixed Effect estimators and Random Effects estimators. Similarly, the study ensure that the Classical Regression Assumptions are met; such as the independency of the error term (absence of serial correlation), constant variance of the error term (Homoscedasticity), and the problem of multicollinearity among the explanatory variables.

This is necessary because the presence of multicollinearity and heteroscedasticity (non-constant variance of the error term) may produce spurious regression problem that can lead to an inconsistency and statistical bias (Granger & Newbold 1974). Therefore, addressing those problems may lead estimators that are BLUE. The study used Random Effects estimators based on the data behaviors. The study used STATA 13.0 software for analyzing the study data.

3.7 Variables Measurements and Models Specification

The variables of interest in this research are the determinants; institutional ownership, financial leverage, audit quality, board monitoring and performance, which are the explanatory variables. And, the dependent variable, real earnings management, while size of firm is control variable in the model. The measurement of the variables is presented in table 3.2 as follows;

Table 3.3 Variables Definition and Measurement

Variables	Definition/Measurements
Dependent Variable	
Real Earnings Management (REM)	Consistent with Cohen and Zarowin (2010) and Kim and Ge (2013), REM proxy is measured by summing up the standardized differences between actual and computed abnormal cash flow from operations, abnormal production cost and abnormal discretionary expenses.
Explanatory Variables	
Financial leverage (LEV)	Is defined as leverage. Consistent with Rashida and Fairuzana (2006) and Norhayati et al (2013) leverage is measured based on the ratio of total liabilities to total assets.
Board Size (BSZ)	Is measured by the total number of directors sitting on the board at year end.
Board Composition (BCOM)	Is defined as the composition independent directors of the board of directors and ownership by insiders. Is measured by the ratio of outside/non-executive directors and independent directors to total directors sitting on the board at year end.
Audit Quality (AUQ)	Is defined as the auditor-type (big4 and Non-big4). Is measured by 1 if the firm is audited by one of the BIG4 auditors and 0 for otherwise, consistent with Becker et al., (1998), Chung et al., (2005) and Alhadab, Clacher and Keasey (2013).
Performance (PER)	Is defined as profitability. Is measured by the ratio of profit before tax to total assets, consistent with Kothari et al (2005), Jiraporn et al., (2007), Gunny (2010) and Alhadab, Clacher and Keasey (2013).
Institutional Ownership (INSOW)	Is measured by the proportion of equity ownership by corporate institutions, to total equity.
Control Variables	
Firm Size (FSZ)	Is measured by the log of total assets consistent with Gu et al (2005) and Aini et al (2006).

3.7.1 Models Specification

Consistent with prior studies like Roychowdhury (2006), Cohen and Zarowin (2010), Zang (2012) and Ge and Kim (2013) the study employ three metrics to examine real earnings management (these are the abnormal cash flow from operations, abnormal production costs, and abnormal discretionary expenses). In line with these studies, this research estimates the abnormal cash flow from operations, abnormal production costs, and abnormal discretionary expenses as

the standardized differences between the actual and calculated estimates from the following models;

$$CFO_{it}/A_{it-1} = \gamma_0(1/A_{it-1}) + \gamma_1 Sales_{it}/A_{it-1} + \gamma_2 \Delta Sales_{it}/A_{it-1} + \mu_{it}. \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots i$$

Where;

CFO_{it} = Cash flow from operation of firm *i* in year *t*

A_{it-1} = Total assets of firm *i* in year *t-1*;

$Sales_{it}$ = Sales of firm *i* in year *t*

$\Delta Sales_{it}$ = Sales of firm *i* in year *t* less sales of firm *i* in year *t-1*;

μ_{it} = A residual term that captures the level of abnormal cash flow of firm *i* in year *t*.

γ_0 is the intercept and γ_1 and γ_2 are the coefficients.

$$PROD_{it}/A_{it-1} = \gamma_0(1/A_{it-1}) + \gamma_1 Sales_{it}/A_{it-1} + \gamma_2 \Delta Sales_{it}/A_{it-1} + \gamma_1 Sales_{it-1}/A_{it-1} + \mu_{it} \ldots\ldots\ldots\ldots\ldots ii$$

Where;

$PROD_{it}$ = the sum of cost of goods sold and change in inventory of firm *i* in year *t*;

$\Delta Sales_{it-1}$ = Sales of firm *i* in year *t-1* less sales of firm *i* in year *t-2*;

μ_{it} = A residual term that captures the level of abnormal production costs of firm*i* in year *t*.

$$DISEXP_{it}/A_{it-1} = \gamma_0(1/A_{it-1}) + \gamma_1 Sales_{it-1}/A_{it} + \mu_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots iii$$

Where;

$DISEXP_{it}$ = The discretionary expenses, sum of Selling, General & Administrative expenses of firm *i* in year *t*;

μ_{it} = error term of firm *i* in year *t*.

Therefore, the overall real earnings management is the sum of the standardized differences between the actual and calculated abnormal cash flow from operations, abnormal production costs and the abnormal discretionary expenses. However, to examine the determinants of the real earnings management of listed industrial goods firms in Nigeria, the study estimates the following model;

$$REM_{it} = \gamma_0 + \gamma_1 LEV_{it} + \gamma_2 AQLTY_{it} + \gamma_3 ROA_{it} + \gamma_4 INSOW_{it} + \gamma_5 BSZE_{it} + \gamma_6 BCOM_{it} + \gamma_7 FSZ_{it} + \mu_{it...iv}$$

Where;

REM_{it} = is the real earnings management of firm *i* in year *t*

LEV_{it} = is the financial leverage of firm *i* in year t

$BCOM_{it}$ = is the board of directors composition of firm *i* in year t

$BSZE_{it}$ = is the board size of firm *i* in year t

$AQLTY_{it}$ = is the audit quality of firm *i* in year t

ROA_{it} = is the financial performance of firm *i* in year t

$INSOW_{it}$ = is the institutional ownership of firm *i* in year t

FSZ_{it} = is the size of firm i in year t

μ_{it} = A residual term/error term of firm *i* in year *t*.

γ_0 is the intercept and γ_1 -$\gamma_7$are the coefficients (estimators).

CHAPTER FOUR

RESULTS PRESENTATION, ANALYSIS AND INTERPRETATIONS

4.1 Introduction

In this chapter, pre-statistical assumption test and analyses were perform on the study data are presented. The analysis is divided into two parts; the first part covers the analysis of the descriptive statistics and normality of the data, while the second part deals with the analysis of the inferential statistics and the hypotheses testing. The chapter presents the discussions of the major findings as well as the policy implications of the findings of the study.

4.2 Descriptive Statistics

This section covers the analysis and interpretations of the descriptive statistics obtained from the data collected for the study; the summary of the descriptive statistics of the data collected is presented in Table 4.1 as follows;

Table 4.1: Descriptive Statistics

Variables	Mean	SD	Min.	Max.	Skewness	Kurtosis	N
CFO	0.0769	0.1080	-0.2700	0.3000	-1.0526	5.7615	70
PROD	0.2314	0.1461	0.0300	0.6100	0.8969	2.9636	70
DSXP	0.2337	0.2097	0.0100	0.8700	1.0759	3.3782	70
SALES	0.1432	0.1963	0.0100	0.8400	2.4282	8.3631	70
ΔSALES	0.2016	0.2499	-0.3700	0.8400	0.9142	4.3079	70
lgSALES	0.5851	0.2421	0.1300	0.9900	-0.2421	2.1871	70
ABCFO	0.3576	0.0444	0.1718	0.3825	-3.0967	12.274	70
ABPROD	0.2700	0.0932	0.0946	0.4184	-0.2056	2.1823	70
ABDXP	0.2289	0.0212	0.1490	0.2518	-1.7474	6.3583	70
REM	0.3576	0.1128	0.1740	0.5526	-0.0988	1.9975	70
LEV	0.5181	0.2103	0.0700	0.9200	-0.0551	2.2509	70
AQTY	0.7857	0.4132	0.0000	1.0000	-1.3926	2.9394	70
ROA	0.0971	0.2305	-0.6000	0.3300	-1.7164	5.0782	70
INOW	0.0939	0.1303	0.0000	0.6500	2.4348	9.2994	70

BSZ	10.414	2.2746	6.0000	15.000	0.6107	2.6099	70
BCOM	0.7396	0.2089	0.1400	0.9300	-1.7903	5.0312	70
FSIZ	7.5029	0.6194	5.5100	8.5400	-1.0960	4.5850	70

Source: Computed from Annual Report Data (2009-2015) using STATA

Table 4.1 presents the descriptive statistics of the data collected from a sample of 10 listed industrial goods firms for the period of 7 years leading to the 70 firm-year observations in the analysis. The two-stage research design adopted in this study comprises of the separation of abnormal from normal in the first-stage to estimate real earnings management, while in the second-stage, the study estimates the determinants of real earnings management in the Nigerian quoted industrial goods firms.

Table 4.1 shows that the average cash flow from operations (CFO) of the sample firms is 7.69% (0.0769) of the lag total assets during the period, with the standard deviation (SD) of 0.1080. The minimum and maximum CFO is -27.00% (-0.2700) and 33% (0.3300) of the lag total assets respectively. This result implies that the sample industrial firms in Nigeria have generated positive cash from operations (sales in the case of this study) of up to 33% of the previous year's total assets. Although the analysis indicated minimum negative cash flows of 27%, the average CFO of the period of 7.69% is substantial, but the CFO deviates from both sides of the mean by 0.1080 suggesting fluctuations. The table also shows a kurtosis of 5.7615 and a coefficient of skewness of -1.0526. The kurtosis value indicated the peakedness of the distribution of the data that the data did not flow the normal distribution assumption, while the skewness implied that the data is negatively skewed, that is, most of the data are on the left-hand side of the normal curve. Table 4.1 indicates that the average total cost of production (PROD) of the sample firms is 23.14% (0.2314) of the lag total assets during the period, with the SD of 0.1461. The minimum and maximum PROD is 3% (0.0300) and 61% (0.6100) of the lag total

assets respectively. This result implies that the sample industrial firms in Nigeria have a huge expenditure in the production of up to 61% of the previous year's total assets. While the analysis indicated minimum costs of production of 3%, the average PROD of the period is high at 23.14% but the data from PROD deviates from both sides of the mean by 0.1461 suggesting higher volatility. The results also show that the value of kurtosis of 2.964 and a coefficient of skewness of 0.8969, that the data did not flow the normal distribution assumption, while the skewness implied that the data are positively skewed, that is, most of the data are on the right-hand side of the normal curve.

The descriptive statistics from Table 4.1 shows that the average total discretionary expenses (DSXP) of the sample firms is 23.14% (0.2314) of the lag total assets during the period, with the standard deviation of 0.2097. The minimum and maximum DSXP is 1% (0.0100) and 87% (0.8700) of the lag total assets respectively. This indicated that the sample industrial firms in Nigeria expenditures on DSXP (selling and distribution expenses and administrative expenses) during the period is up to 87% of the previous year's total assets. Although the analysis indicated a minimum 1%, the average DSXP of the period of 23.37% is substantial, but the deviation from both sides of the mean is high at 0.2096 suggesting higher dispersion. The table also shows a value of kurtosis of 3.3782 and a coefficient of skewness of 1.0759. The kurtosis value indicated that the data did not flow the normal distribution assumption, while the data skewness are positively skewed, that is, most of the data are on the right-hand side of the normal curve.

Table 4.1 also shows that the average total revenue (SALES) of the sample firms is 14.32% (0.1432) of the lag total assets during the period, with the standard deviation of 0.1963. The minimum and maximum SALES are 1% (0.0100) and 84% (0.8400) of the lag total assets

respectively. This indicated that the sample industrial firms in Nigeria have generated large revenue of 84% of the previous year's total assets from sales. However, the analysis indicated a minimum sales value of 1%, the average sales of the period of 14.32% is large, but the deviation from both sides of the mean is high at 0.1963 suggesting higher dispersion among the sample firms. The table also shows a value of kurtosis of 8.3631 and a coefficient of skewness of 2.4282. The kurtosis value indicated that the data did not flow the normal distribution assumption, which requires the value of the kurtosis and skeweness to be zero. The skewness coefficient implied that the data are positively skewed, that is, most of the data are on the right-hand side of the normal curve.

Table 4.1 also shows that the average total changes in revenue (ΔSALES) of the sample firms is 20.16% (0.2016) of the lag total assets during the period, with the standard deviation of 0.2499. The minimum ΔSALES during the period is -37% (-0.3700) and 84% (0.8400) of the lag total assets as the maximum. The maximum change in sales is high at 84% of the previous year's total assets. Similarly, the analysis indicated a negative minimum sales value of 37%, while the deviation from both sides of the mean is 0.2499 suggesting higher dispersion among the sample firms. The table also shows a value of kurtosis of 4.3079 and a coefficient of skewness of 0.9141. The kurtosis value is high implying that the data did not follow the normal distribution assumption, which requires the value of the kurtosis and skewness to be zero. The skewness coefficient implied that the data are positively skewed, that is, most of the data are on the right-hand side of the normal curve. Table 4.1 indicated that the average lag total revenue (lgSALES) of the sample firms is 58.51% (0.5851) of the lag total assets during the period, with the standard deviation of 0.2421. The minimum lgSALES during the period is 13% (0.1300) and 99% (0.9900) of the lag total assets as the maximum. This indicated that the sample industrial firms in

Nigeria have suffered decrease in revenue generation in the later periods of the period as the maximum previous year sales is higher than the current period. However, the standard deviation implies that the data deviate from both sides of the mean by 0.2421 suggesting higher dispersion among the sample firms. The table shows a value of kurtosis of 2.1871 and a coefficient of skewness of -0.2429. The kurtosis value is implying that the data did not flow the normal distribution assumption, while the skewness coefficient implied that the data are negatively skewed, that is, most of the data are on the left-hand side of the normal curve.

One of the components of real earnings management in this study is the abnormal operating cash flows (as a measure of revenue manipulations), other components are the abnormal production cost and the abnormal discretionary expenses. Table 4.1 shows that the average abnormal cash flow from operations (ABCFO) of the sample firms is 0.3575 during the period, with the standard deviation of 0.0444. The minimum ABCFO is 0.1718, while the maximum value of ABCFO is 0.3825. This result implies that the sample industrial firms in Nigeria have a substantial ratio of abnormal cash flow from operations during the period, as the maximum value is 0.3825. The standard deviation indicated that the data deviates from both sides of the mean by 0.0444 suggesting dispersion among the sample firms. The table also shows a high coefficient of kurtosis of 12.2749 and a coefficient of skewness of -3.0967. The kurtosis value indicated that the data did not flow the normal distribution assumption, while the skewness implied that the data are negatively skewed, that is, most of the data are on the left-hand side of the normal curve. Table 4.1 on the other hand shows that the average abnormal cost of production (ABPROD) of the sample firms is 0.2700 during the period, with the standard deviation of 0.0932. The minimum and maximum ABPROD is 0.0946 and 0.4184 respectively. This result implies that the sample industrial firms in Nigeria have a large ratio of abnormal costs

of production during the period, as the maximum value is 0.4184. The standard deviation indicated that the data deviates from both sides of the mean by 0.0932 suggesting dispersion among the sample firms. The table also shows a coefficient of kurtosis of 2.1823 and a coefficient of skewness of -0.2056. The kurtosis value indicated that the data did not flow the normal distribution assumption, while the skewness implied that the data are negatively skewed, that is, most of the data are on the left-hand side of the normal curve.

A descriptive result in Table 4.1 shows that the average abnormal discretionary expense (ABDSXP) of the sample firms is 0.2289 during the period, with the standard deviation of 0.0212. The minimum ABDSXP is 0.1490, while the maximum value of ABDSXP is 0.2518. This result implies that the ratio of abnormal discretionary expenses in the sample industrial firms in Nigeria is very high during the period, as the maximum value is 0.2518. The standard deviation indicated that the data deviates from both sides of the mean by 0.0212 suggesting dispersion among the sample firms. The table also shows a coefficient of kurtosis of 6.3583 and a coefficient of skewness of -1.7474. The kurtosis value indicated that the data did not follow the normal distribution assumption, while the skewness implied that the data are negatively skewed, that is, most of the data are on the left-hand side of the normal curve. Moreover, the measure of real earnings management (REM), which is measured by the sum of standardized absolute values of ABCFO, ABPROD and ABDSXP has a mean value of 0.3576 during the period, with the standard deviation of 0.1128. The minimum REM is 0.1740, while the maximum value of REM is 0.5526. This result implies that the sample industrial firms in Nigeria have a high ratio of real earnings management during the period, and that the maximum value is 0.5526. The standard deviation indicated that the data deviates from both sides of the mean by 0.1128 suggesting a wide dispersion among the sample firms. The table also shows a coefficient of kurtosis of 1.9975

and a coefficient of skewness of -0.0988. The kurtosis value indicated that the data did not follow the normal distribution assumption, while the skewness implied that the data are negatively skewed, that is, most of the data are on the right-hand side of the normal curve.

Table 4.1 shows that the average measure of financial structure, leverage (LEV) of the sample industrial firms is 0.5181 during the period, with the standard deviation of 0.2103. The minimum LEV is 0.0700, while the maximum value of LEV is 0.9200. This result implies that the ratio of debt financing in the financial structure is very high in the sample industrial firms in Nigeria during the period, as the maximum value is 0.9200. The standard deviation indicated that the data deviates from both sides of the mean by 0.2103 suggesting dispersion among the sample firms. The table also shows a coefficient of kurtosis of 2.2509 and a coefficient of skewness of -0.0551. The kurtosis value indicated that the data did not follow the normal distribution assumption, while the skewness implied that the data are negatively skewed, that is, most of the data are on the right-hand side of the normal curve. The Table also indicated that 78.57% of the sample industrial firms are audited by the BIG4 auditor type. BIG4 serve as the proxy for audit quality (AQLTY), from the mean value of 0.7857, standard deviation of 0.4133 and the values of minimum and maximum are 0 and 1 respectively. The result suggests that the data turn aside from the two side mean value by 0.4133. The coefficient of skewness -1.3926 reveals that the data is negatively skewed, that is, the data lies on the left side of the normal curve, and the data did not follow the normal distribution. Similarly, the coefficient of kurtosis of 2.9394 implies that most of the data has values above the mean value, that the data is not normally distributed.

Table 4.1 shows that the average financial performance, returns on assets (ROA) is 9.71%, as shown by the result, the mean value of 0.0971 with standard deviation of 0.2305 and minimum and maximum values of -60% (0.6000) and 33.00% (0.3300) respectively. The

standard deviation suggests that the data deviate from both sides of the mean value by 0.2305. This implies wide dispersion among the sample firms. The coefficient of skewness of -1.7164 reveals that the data is negatively skewed, that is, the data lies on the left side of the normal curve, and the data did not follow the normal curve. The coefficient of kurtosis of 5.0782 implies that most of the data has values above the mean value, that the data is not normally distributed. Moreover, Table 4.1 shows that on average 9.39% of the equity share capital of the sample industrial firms is owned by corporate institutions (INSOW), going by the mean value of 0.0939, standard deviation of 0.1303, and minimum and maximum values of 0% (0.0000) and 65% (0.6500) respectively. The standard deviation suggests that the data deviate from both sides of the mean value by 0.1303. The coefficient of skewness of 2.4348 reveals that the data is positively skewed, that is, the data lies on the left side of the normal curve, and the data did not follow the normal curve. Similarly, the coefficient of kurtosis of 9.2994 implies that most of the data has values above the mean value, that the data is not normally distributed. Table 4.1 shows that the sample firms has an average board size (BSZ) of 10 directors during the period, with standard deviation of 2.2745, and minimum and maximum board size of 6 and 15 directors respectively. The standard deviation suggests the turn away from the two sides of the mean value by 2. The coefficient of skewness of 0.6107 implies that the data is positively skewed, that is, the data lies on the right side of the normal curve, and the data did not follow the normal distribution. On the other hand, the coefficient of kurtosis of 2.6099 implies that most of the data has values above the mean value, that the data is not normally distributed.

The results in Table 4.1 indicate that the average composition of the independent and non-executive/outside directors (BCOM) of the sample industrial firms during the period is 73.96% (0.7396) with standard deviation of 0.2089. The standard deviation suggests that the data

deviate from both sides of the mean value by 0.2089. The minimum board composition is 14% (0.1400), while the maximum BCOM is 93.0% (0.9300). This higher composition of the outside/independent directors is expected to provide independent judgment and control, which will affect the real earnings management significantly. The coefficient of skewness of -1.6026 implies that the data is negatively skewed, that is, the data lies on the left side of the normal curve, and the data did not follow the normal curve. Similarly, the coefficient of kurtosis of 4.7818 implies that most of the data has values above the mean value, that the data is not normally distributed. Moreover, the results from table 4.1 show that the average firm size (FSIZ) of the sample industrial firms is 7.5029 with standard deviation of 0.6194 and the minimum and maximum values of 5.5100 and 8.5400 respectively. The coefficient of skewness of 0.6194 implies that the data is positively skewed, that is, the data lies on the right side of the normal curve, and the data did not follow the normal curve. Similarly, the coefficient of kurtosis of 4.5850 implies that most of the data has values above the mean value, that the data is not normally distributed. In view of the descriptive statistics of the data, which reveals that most of the variables covered by the study did not follow the normal distribution assumption, Shapiro Wilk test for normal data is used to ascertain the normality of the data.

Table 4.2: Results for Normal Data Test

Variables	W	V	Z	P-Values	N
CFO	0.8117	11.588	5.328	0.0000	70
PROD	0.8732	7.804	4.468	0.0000	70
DSXP	0.8759	7.642	4.422	0.0000	70
SALES	0.5208	29.495	7.359	0.0000	70

lgSALES	0.9687	1.927	1.427	0.0768	70
ΔSALES	0.8241	10.825	5.180	0.0000	70
ABCFO	0.5303	28.911	7.316	0.0000	70
ABPROD	0.9557	2.725	2.180	0.0146	70
ABDXP	0.8111	11.627	5.335	0.0000	70
REM	0.9437	3.464	2.702	0.0035	70
LEV	0.9745	1.568	0.978	0.1641	70
AQTY	0.8241	10.825	5.180	0.0000	70
ROA	0.9901	0.607	-1.086	0.8613	70
INOW	0.6802	19.683	6.480	0.0000	70
BSZ	0.5208	29.495	7.359	0.0000	70
BCOM	0.6908	19.035	6.407	0.0000	70
FSIZ	0.9687	1.927	1.427	0.0768	70

Source: STATA Output (Appendix 2)

Parametric techniques of data analysis like regression technique are built based on the assumption that the data follows the normal distribution. Thus, any deviation from the normal distribution may leads to an unreliable result. In this study, Shapiro Wilk (W) technique of data analysis is used to determine the data of the variables distribution for the study. Shapiro technique tests the null hypothesis (that the data is normal), that is, the variables came from a normally distributed population. The results from table 4.2 indicate that the data from all the variables of the study are not normally distributed, because the P-values are statistically significant at 5% and below. Except the data from LEV, ROA and FSZ, which are not statistically significant at 5% and below levels of significance (0.1641, 0.8613 and 0.0768 respectively). Thus, the null hypothesis (that, the data is normally distributed) is rejected for LEV, ROA and FSZ, as the variables follow the normal distribution assumption of normality.

4.3 Analysis of Inferential Statistics

In this section, the analysis of the inferential results is conducted. The section covers the analysis of correlations, regression and the test of the research hypotheses.

4.3.1 Correlation Results

The Pearson correlation coefficients of the study variables are presented in Table 4.3 below:

Table 4.3: Correlation Matrix

Var.	REM	LEV	AQLTY	ROA	INOW	BSZ	BCOM	FSIZ
REM	1.000							
LEV	-0.2801	1.000						
	(0.0189)							
AQLTY	0.3202	-0.1745	1.000					
	(0.0069)	(0.1485)						
ROA	-0.1756	-0.4989	-0.1753	1.000				
	(0.1460)	(0.0000)	(0.1466)					
INOW	0.2023	-0.2064	0.2515	0.1257	1.000			
	(0.0931)	(0.0864)	(0.0357)	(0.2998)				
BSZ	-0.6017	0.3615	-0.3042	-0.1199	-0.1721	1.000		
	(0.0000)	(0.0021)	(0.0105)	(0.3229)	(0.1542)			
BCOM	-0.3764	0.0484	-0.1149	-0.0581	-0.1326	0.3548	1.000	
	(0.0013)	(0.6806)	(0.3435)	(0.6327)	(0.2740)	(0.0026)		
FSIZ	0.5295	0.0154	0.0295	-0.1348	0.2972	-0.1270	-0.0720	1.000
	(0.0000)	(0.8996)	(0.8087)	(0.2660)	(0.0125)	(0.2948)	(0.5534)	

P-values in Parenthesis, Source: STATA Output (Appendix 7)

Table 4.3 presents the degree of association between the real earnings management and the determinants of the real earnings management in the listed industrial goods firms in Nigeria. The table indicates a significant negative statistical relationship between the firm leverage (LEV) and the real earnings management (REM) of the sample industrial firms in Nigeria, from the correlation coefficient of -0.2801, which is statistically significant at 5% level of significance (p-value of 0.0189). This result indicates that higher debt financing in the capital structure of the sample industrial firms is associated with the reduced level of real earnings management during the period of the study. Table 4.3 indicates a significant positive relationship between the audit quality (AQLTY) and the real earnings management (REM) of the sample industrial firms in Nigeria, from the correlation coefficient of 0.3202, which is statistically significant at 1% level

of significance (p-value of 0.0069). This finding implies that employing the services of BIG4 auditor type, is likely associated with the increased level of real earnings management during the period of the study.

Table 4.3 also show a negative relationship between the firm financial performance (ROA) and the real earnings management (REM) of the sample industrial firms in Nigeria, from the correlation coefficient of -0.1756, which is not statistically significant (p-value of 0.1460). This result indicates that higher financial performance in the sample industrial firms is associated with the reduced level of real earnings management during the period of the study. The correlation results in Table 4.3 indicates a significant positive relationship between the institutional ownership (INSOW) and the real earnings management (REM) of the sample industrial firms in Nigeria, from the correlation coefficient of 0.2023, which is statistically significant at 10% level of significance (p-value of 0.0931). This implies that higher equity ownership by corporate institutions in the sample industrial firms is associated with the increased level of real earnings management during the period of the study. The results from table 4.3 indicates a negative relationship between the size of the board of directors (BSZ) and the real earnings management (REM) of the sample industrial firms in Nigeria, from the correlation coefficient of -0.6017, which is statistically significant at 1% level of significance (p-value of 0.0000). This result indicates that larger size of the board of directors in the sample industrial firms is associated with the reduced level of real earnings management during the period of the study. Similarly, the results from table 4.3 indicates a negative relationship between the composition of independent/non-executive directors (BCOM) and the real earnings management (REM) of the sample industrial firms in Nigeria, from the correlation coefficient of -0.3764, which is statistically significant at 1% level of significance (p-value of 0.0013). This result

indicates that higher independence of the board of directors in the sample industrial firms is associated with the reduced level of real earnings management during the period of the study.

The table indicates a significant positive relationship between the firm size (FSIZ) and the real earnings management (REM) of the sample industrial firms in Nigeria, from the correlation coefficient of 0.5295, which is statistically significant at 1% level of significance (p-value of 0.0000). This result indicates that large size firms in the listed industrial firms are associated with the increased level of real earnings management during the period of the study.

4.3.2 Analysis of Regression Results

Analyses and discussions of the regression results of all the study models are presented in this section. This section stared the presentation of regression results of model one.

Table 4.4: Random Effect Results: Model One (Operating Cash Flow Model)

Variables	Statistics	P-values
R^2 Within	0.2413	
R^2 Between	0.4887	
R^2 Overall	0.3677	
Wald Chi2	23.32	0.0000
Mean VIF	1.10	
Hettest: Chi2	0.63	0.4283
Hausman Chi2	4.82	0.0898
Random Effect: Chibar2	63.80	0.0000
Sales	-0.1623	0.000
Δsales	0.0108	0.844
Constant	0.3795	0.000

Source: STATA Output (Appendix 4)

Model one of the study is used to decompose abnormal components of cash flows from the normal, which is used as a proxy for revenue manipulation in this study. Consistent with the requirements of panel data, the study employs Fixed and Random Effects regression models alongside the pooled OLS regression model together with the relevant tests. However, Random Effect Regression technique appears to be the most appropriate for model one of the study, from Hausman specification test and the Breusch and Pagan Lagrangian Multiplier Test for Random Effects. The Hausman specification test suggests that the random effect model is the most appropriate (as indicated by the Chi2 of 4.82 with the p-value of 0.0898), a further test between OLS and random effect model suggests that the Random Effect Regression is the most appropriate for model one, from the Breusch and Pagan Lagrangian Multiplier Test for Random Effects, Chibar2 of 63.80 with p-value of 0.0000, implying that random effect regression model is the most appropriate model for the first model.

Table 4.4 on the other hand shows the absence of the problem of heteroskedasticity, as evidence by the Breuch Pagan/Cook-Weisberg Chi2 of 0.63, with p-value of 0.4283; that is, the null hypothesis that the variance in the residuals is constant (homoscedastic) is not rejected. Similarly, the results from table 4.4 indicate the absence of multicollinearity among the independent variables, because the mean Variance Inflation Factor (VIF) is 1.10, which is less than 10. The table show that the explanatory variables of the study explained 36.77% of the total variations in the total cash flows from operations of the sample industrial firms in Nigeria during the period, from the coefficient of multiple determinations (overall R square of 0.3677). Similarly, the result from the table shows that the model is fit as indicated by the F-Statistic (Wald Chi2 of 23.32 which is statistically significant at 1% significance level (P-value of 0.0000). The table also indicated that change in sales (ΔSALES) has insignificantly and

positively affected the CFO, from coefficient of 0.0107 which is not statistically significant (p-value 0.844). This implies that a ₦1 change in sales, CFO decreases by 1.07%.On the other hand, the table indicated that sales (SALES) have negative effect on the CFO, from the coefficient of -0.1623, which is statistically significant at 1% levels (p-value of 0.000). This suggests that when sales revenue increases by ₦1, CFO decreases by 16.23k. Based on this, the study used the difference between actual and calculated values of NCFO as abnormal cash flows from operating activities.

Table 4.5: Random Effect Results: Model Two (Production Costs Model)

Variables	Statistics	P-values
R^2 Within	0.1279	
R^2 Between	0.2406	
R^2 Overall	0.1828	
Wald Chi2	18.69	0.0003
Mean VIF	1.08	
Hettest: Chi2	18.56	0.0000
Hausman Chi2	3.44	0.3285
Random Effect: Chibar2	15.99	0.0000
Sales	0.0277	0.844
Δsales	0.0068	0.929

LgSales	0.3722	0.000
Constant	0.0442	0.530

Source: STATA Output (Appendix 5)

Model two of the study is used to decompose abnormal components of production costs from the normal, which is used as a proxy for production costs manipulation in this study. Consistent with the requirements of panel data, the study employs Fixed and Random Effects regression models alongside the pooled OLS regression model together with the relevant tests. However, Random Effect Regression technique appears to be the most appropriate for model two of the study, from Hausman specification test and the Breusch and Pagan Lagrangian Multiplier Test for Random Effects. The Hausman specification test suggests that the random effect model is the most appropriate (as indicated by the Chi2 of 3.44 with the p-value of 0.3285), a further test between OLS and random effect model suggests that the Random Effect Model is the most appropriate for model two, from the Breusch and Pagan Lagrangian Multiplier Test for Random Effects, Chibar2 of 15.99 with p-value of 0.0000, implying that random effect regression model is the most appropriate model for the second model.

Table 4.5 shows the presence of the problem of heteroskedasticity, as evidence by the Breuch Pagan/Cook-Weisberg Chi2 of 18.56, with p-value of 0.0000; that is, the null hypothesis that the variance in the residuals is constant (homoscedastic) is rejected. Similarly, the results from table 4.5 indicate the absence of perfect multicollinearity among the independent variables, because the mean Variance Inflation Factor (VIF) is 1.08, which is less than 10. The table show that the explanatory variables of the study explained 18.28% of the total variations in the total costs of production of the sample industrial firms in Nigeria during the period, from the coefficient of multiple determinations (overall R square of 0.1828). Similarly, the result from the table shows that the model is fit as indicated by the F-Statistic (Wald Chi2 of 18.69 which is

statistically significant at 1% significance level (P-value of 0.0003). The table also indicated that lag sales revenue (lgSALES) has significantly and positively affected the PROD, from coefficient of 0.3722 which is statistically significant at 1% level of significance (p-value 0.000). This implies that a N1 change in previous year's sales, PROD increases by 46k. On the other hand, the table indicated that sales (SALES) and changes in sales (ΔSALES) have an insignificant positive effect on the PROD, from the coefficient of 0.0277 and 0.0068, which are not statistically significant at all levels (p-value of 0.844 and 0.929 respectively). This suggests that when sales revenue and sales growth increases, PROD increases proportionately, but it is not significant. Based on this, the study used the difference between the actual and computed production costs as abnormal production costs.

Table 4.6: Random Effect Results: Model Three (Discretionary Expenses Model)

Variables	Statistics	P-values
R^2 Within	0.0085	
R^2 Between	0.3160	
R^2 Overall	0.1045	
Wald Chi2	3.04	0.0815
Hettest: Chi2	6.80	0.0091
Hausman Chi2	6.66	0.0099
Random Effect: Chibar2	61.69	0.0000
lgSales	-0.1389	0.081
Constant	0.2518	0.000

Source: STATA Output (Appendix 6)

Table 4.6 present the regression results of model three. Model three of the study is used to decompose abnormal components of discretionary expenses from the normal, which is used as

a proxy for discretionary expenses manipulation in this study. Consistent with the requirements of panel data, the study employs Fixed and Random Effects regression models alongside the pooled OLS regression model together with the relevant tests. However, Random Effect Regression technique appears to be the most appropriate for model three of the study, from the Breusch and Pagan Lagrangian Multiplier Test for Random Effects. The Hausman specification test suggests that the fixed effect model is the most appropriate (as indicated by the Chi2 of 6.66 with the p-value of 0.0099), however, a further test between OLS and random effect model suggests that the Random Effect model is the most appropriate for model three, from theBreusch and Pagan Lagrangian Multiplier Test for Random Effects, Chibar2 of 61.69 with p-value of 0.0000, implying that random effect regression model is the most appropriate for the model three.

Table 4.6 indicated the absence of the problem of heteroskedasticity, as evidence by the Breuch Pagan/Cook-Weisberg Chi2 of 6.80, with p-value of 0.0091; that is, the null hypothesis that the variance in the residuals is constant (homoscedastic) is not rejected. The results from table 4.6 indicate that the explanatory variables of the study explained 10.45% of the total variations in the total discretionary expenses of the sample industrial firms in Nigeria during the period, from the coefficient of multiple determinations (overall R square of 0.1045). Similarly, the results from the table shows that the model is fit as indicated by the F-Statistic (Wald Chi2 of 3.04) which is statistically significant at 10% significance level P-value of 0.0815. The table also indicated that lag sales revenue (lgSALES) has significantly and positively affected the DSXP, from coefficient of -0.1389 which is statistically significant at 10% level of significant (p-value 0.081). This implies that a N1 change in sales, DSXP increases by 8.1k. Based on this, the study

used the difference between the actual and calculated DSXP as abnormal cash flows from operating activities.

4.3.3 Analysis of Regression and Hypotheses Testing

Following the estimation of our proxy of real earnings management, the regression results for the test of research hypotheses are presented and analyzed as in this section.

Table 4.7: Robust Random Effect Regression Summary- Model of the Study

Variables	Statistics	P-values
R^2 Within	0.3571	
R^2 Between	0.8751	
R^2 Overall	0.6787	
Wald Chi2	68.01	0.0000
Mean VIF	1.36	
Hettest: Chi2	0.21	0.6468
Hausman Chi2	31.65	0.0000
Random Effect: Chibar2	4.86	0.0137

Source: STATA Output (Appendix 8)

Table 4.7 present the summary of the results from the regression of the study model. Before arriving at the robust random regression technique, the study employs Fixed and Random Effects regression models alongside the pooled OLS regression model together with the relevant tests. However, the tests conducted proved that Random Effect Regression technique is the most

suitable for the model of the study, from the Breusch and Pagan Lagrangian Multiplier Test for Random Effects and the Hausman specification test. The Hausman specification test suggests that the random effect model is the most appropriate (as indicated by the Chi2 of 5.77 with the p-value of 0.5671). Additionally, a further random effect test suggests that the Random Effect model is consistent for the model, from the Breusch and Pagan Lagrangian Multiplier Test for Random Effects, Chibar2 of 1.84 with p-value of 0.0877, implying that random effect regression model is the most appropriate for the model of the study.

Table 4.7 also indicated the presence of the problem of heteroskedasticity, as evidence by the Breuch Pagan/Cook-Weisberg Chi2 of 3.32, with p-value of 0.0685; that is, the null hypothesis that the variance in the residuals is constant (homoscedastic) is rejected. The results from table 4.7 indicated that the explanatory variables of the study explained 38.73% of the total variations in the real earnings management of the sample industrial firms in Nigeria during the period, from the coefficient of multiple determinations (overall R square of 0.3873). Similarly, the results from the table shows that the model is fit as indicated by the F-Statistic (Wald Chi2 of 811.63) which is statistically significant at 1% significance level P-value of 0.0000. Following the overall fitness of the model and in line with the reliability of the estimators, the study examines the effects of the determinants on the real earnings management in the listed industrial goods firms in Nigeria.

4.3.4 Test of Research Hypotheses

This section covers the test and the analysis of the research hypothesis. The results of the analysis are presented in table 4.8.

Table 4.8: Robust GLS Regression Coefficients- Random Effect Model

Variables	Coefficients	z-values	P-values
LEV	-0.1141	-2.58	0.010

AQLTY	0.0168	0.29	0.770
ROA	-0.1181	-2.99	0.003
INSOW	-0.0159	-0.21	0.835
BSZ	-0.1637	-4.71	0.000
BCOM	-0.0479	-1.73	0.084
FSIZ	0.1270	3.19	0.001
CONSTANT	0.4361	8.49	0.000

Source: STATA Output (Appendix 8)

Hypothesis one (H_{01}) of the study states that financial Leverage has no significant effect on real earnings management of the listed industrial firms in Nigeria. This study capture financial structure using firm leverage; Table 4.8 indicates that firm leverage (LEV) of the sample industrial firms in Nigeria have negative and significant impact on real-based earnings management. From the coefficient of -0.1141 with t-value of -2.58 which is statistically significant at 1% level of significance (p-value of 0.010). This implies that an increase in the debt financing in the financial structure of the industrial firms, real earnings management decreases significantly, suggesting that the debt is a monitoring mechanism in reducing managerial interference in the financial reporting processes. The result suggests that a 1% increase in debt, real earnings management decreases by 11.41%, and the outcome is significant statistically at 99% level. The study therefore rejects the null Hypothesis one (H_{01}), which states that financial leverage has no significant effect on real earnings management of the listed companies in Nigeria. The study infers that financial structure is a significant determinant of real earnings management in the listed industrial firms in Nigeria.

Hypothesis two (H_{02}) of the study states that audit quality has no significant effect on real earnings management of the listed industrial firms in Nigeria. In this, audit quality is proxy by the size and type of auditor (BIG4 and Non-BIG4); the result from Table 4.8 indicates that audit

quality (AQLTY) in the sample industrial firms in Nigeria has an insignificant statistical positive effect on real earnings management of the firms. From the coefficient of 0.0168 with t-value of 0.29 which is not statistically significant at all levels of significance (p-value of 0.770). This implies that an increase in the use of services of BIG4 audit firm in the industrial firms, real earnings management increases, suggesting that the type, size and expertise of the external auditor is not part of the significant control and monitoring mechanism in reducing managerial interferences through real activities in the financial reporting processes. The results suggests that a as BIG4 auditor spend additional accounting period with a firm, real earnings management increases by 1.68%, and the result is not statistically significant at all levels. The study therefore failed to reject the null Hypothesis two (H_{02}), which states that audit quality has no significant effect on real earnings management of the listed industrial firms in Nigeria. The study infers that audit quality is not a significant determinant of real earnings management in the listed industrial firms in Nigeria.

Hypothesis three (H_{03}) of the study states that firm financial performance has no significant effect on real earnings management of the listed industrial firms in Nigeria. This study measure firm financial performance using profitability (ROA); Table 4.8 shows that firm financial performance of the sample industrial firms in Nigeria has a significant statistical negative effect on real earnings management of the firms. From the coefficient of -0.1181 with t-value of -2.99 which is statistically significant at 1% level of significance (p-value of 0.003). This implies that an increase in the profitability of the industrial firms, real earnings management decreases significantly, suggesting that the profitability is among the reasons managers interfere in the financial reporting processes. The result suggests that a 1% increase in profitability, real earnings management increases by 11.81%, and the result is statistically significant at 1% significance

level. The study therefore rejects the null Hypothesis three (H_{03}), which states that firm financial performance has no significant effect on real earnings management of the listed industrial firms in Nigeria. The study infers that firm financial performance is a significant determinant of real earnings management in the listed industrial firms in Nigeria.

Hypothesis four (H_{04}) of the study states that institutional ownership has no significant effect on real earnings management of the listed industrial firms in Nigeria. In this, proportion of equity ownership by corporate institutions is employed; the results from Table 4.8 indicates that institutional ownership (INSOW) in the sample industrial firms in Nigeria is negative and statistically insignificant affecting real earnings management of the firms. From the coefficient of -0.0159 with t-value of -0.21 which is not statistically significant at all levels of significance (p-value of 0.835). This implies that an increase in the equity ownership by corporate institutions in the industrial firms, real earnings management decreases, suggesting that the ownership by institutions did not serve as a significant control and monitoring mechanism in reducing managerial interferences through real activities in the financial reporting processes. The results suggest that a 1% increase in equity ownership by corporate institutions, real earnings management decreases by 1.59%, and the result is not statistically significant at all levels. The study therefore failed to reject the null Hypothesis four (H_{04}), which states that institutional ownership has no significant effect on real earnings management of the listed industrial firms in Nigeria. The study infers that equity ownership by corporate institutions is not a significant determinant of real earnings management in the listed industrial firms in Nigeria.

Hypothesis five (H_{05}) of the study states that board of directors monitoring has no significant effect on real earnings management of the listed industrial firms in Nigeria. This study measure board monitoring by using board of directors size and the composition in the

board. Table 4.8 indicated that composition of independent/non-executive directors (BCOM) in the board of sample industrial firms in Nigeria has a significant negative effect on real earnings management of the firms. From the coefficient of -0.0479 with t-value of -1.73 which is statistically significant at 10% level of significance (p-value of 0.084). This implies that an increase in the number of independent directors and non-executive directors in the board of the industrial firms, real earnings management decreases, suggesting that the independence of the board is among the control mechanisms in the financial reporting processes. The result suggests that when a board increases by 1 independent director, real earnings management decreases by 4.79%, the result is statistically significant at 10%significance level. On the other hand, the Table indicated that board of directors size (BSZ) of the sample industrial firms in Nigeria has a significant negative effect on real earnings management of the firms. From the coefficient of -0.1637 with t-value of -4.71 which is statistically significant at 1% level of significance (p-value of 0.000). This implies that an increase in the size of the board by one member, real earnings management decreases, suggesting that the size of the board is among the control mechanisms in the financial reporting processes. The result suggests that when the board increases by 1 member, real earnings management decreases by 16.37%, the result is statistically significant at 1% significance level. The study therefore rejects the null Hypothesis five (H_{05}), which states that board of directors monitoring has no significant effect on real earnings management of the listed industrial firms in Nigeria. The study infers that board monitoring is a significant determinant of real earnings management in the listed industrial firms in Nigeria.

Lastly, in view of the role firm size is playing, this study control for the effects of the firm size in the model of the study. Table 4.8 indicated that firm size (FSIZ) of sample industrial goods firms in Nigeria has a significant positive effect on real earnings management of the firms.

From the coefficient of 0.1270 with t-value of 3.19 which is statistically significant at 1% level of significance (p-value of 0.001). This implies that an increase in the size of the industrial firms, real earnings management increases, suggesting that the size of firm induces managers to manage the financial reporting processes. The results suggests that when a size of firm increases by 1%, real earnings management increases by 12.70%, but the result is not statistically significant at all significance levels.

4.4 Discussion of Major Findings

From the data collected and analyzed, the study found a strong significant statistical association between real earnings management and the determinants of real earnings management of listed industrial firms in Nigeria during the period covered by the study. The findings from the study revealed that the determinants (leverage, board monitoring, institutional ownership, audit quality, financial performance and firm size) accounted for 67.87% of the total variations in the real earnings management of the sample industrial goods firms in Nigeria.

The major findings from this study include that, after controlling for firm size financial structure (firm leverage) of the sample industrial firms in Nigeria has a significant negative effect on real earnings management of the firms. This finding support the findings of Ghosh et al. (2010), Shehu (2012), Leila and Naseer (2012), Norhayati, Rahayu, and Noor (2013), and contradict those of Rahman and Ali, (2006), Rahnamay and Nabavi (2011), Abed et al. (2012), and Zhe, Donghui, and Jin (2013). Similarly, the findings of the study revealed that audit quality as proxy by the size and type of auditor (BIG4 and Non-BIG4) in the sample industrial firms in Nigeria has an insignificant statistical positive effect on real earnings management of the firms. This finding contradicts the findings of the researches by Chi et al. (2011), Chi et al., (2011) and Cohen and Zarowin (2010), and the findings of the early empirical studies of Becker et al.,

(1998), Elder and Zhou (2002), Johnson et al., (2002), Balsam et al., (2003), Chen et al. (2005), and Reichelt and Wang, (2010). The finding on the other hand, supports the findings of Alhadab, Clacher and Keasey (2013), Ramzi et al (2016), and Modibbo (2016).

Moreover, the study found that firm financial performance of the sample industrial firms in Nigeria has a significant statistical negative effect on real earnings management of the firms. This finding supports the findings of Waweru and Riro (2013). The study also found that institutional ownership in the sample industrial firms in Nigeria has an insignificant statistical negative effect on real earnings management of the firms. The finding contradicts the findings of Ahmadpour and Krdtbar (2008), Al-Fayonmi, Abuzayed and Alexander (2010), Rahnamay and Nabavi (2011), from Nigeria, Emamgholipour, Bageni, Mansourning and Arabi (2013) from Tehran, and Salisu and Modibbo (2014b) from Nigeria may be due to the time or industry differences. The finding also supports the findings of Mitra and Cready (2005), Shehu (2011) from Nigeria, Shehu and Ahmad (2012), and Shehu (2012).

The study also found that composition of independent/non-executive directors in the board of sample industrial firms in Nigeria has a significant negative effect on real earnings management of the firms. This finding support the findings of Peasnell, Pope, and Young (2005), Hossain, and Adams (2006), Cornett et al (2006), Ahmadpour and Krdtbar (2008), McNutt, and Tehranian (2009), Aglin et al (2009), Cyrus et al (2015), and Moss (2016). On the other, the finding contradicts the findings of Xie and Davidson (2002), Park and Shin (2004), Davidson et al. (2005), the Agency theory, Ghosh et al. (2010), Bello (2011), Uadiale (2012),Olayinka (2012) in Nigeria, Ge and Kim (2013), Fodio et al (2013), Salisu and Modibbo (2014b), Omoye and Eriki (2014), Kantudu and Samaila (2015), Patrick, Ezelibe and Akoh (2016), and Modibbo (2016).

Similarly, the findings from the study indicated that board size of the sample industrial firms in Nigeria has a significant negative effect on real earnings management of the firms. This finding supports the findings of Cornett et al (2006), Hashim and Devi (2008), Cornett, Gulzar and Wang (2011), and Abed et al. (2012). On the contrary, the finding contradicts the findings of Yeo et al. (2003), Johari et al. (2008), and Kantudu and Samaila (2015).

4.5 Policy Implications of the Findings

The findings from this study are of interest to policy makers, as they have implications to policy directions in the companies in Nigeria. For instance, the findings implied that to improve financial reporting quality of listed companies in Nigeria, real earnings management should be given attention in addition to accruals-based earnings management. On the other hand, policy makers need to consider the determinants like board monitoring, financial performance, board size and composition of outside/independent directors, leverage and auditor type in order to minimize the practices of earnings management. The findings also implied that corporate governance quality is weak and its ability to constrain earnings management is also weak. Hence, the findings implied to the listed companies to boost their compliance with corporate governance code to improve the integrity and reliability of financial reports.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study focused on earnings management through real activities in the listed industrial goods firms in Nigeria, in relation to the determinants of real earnings management. Chapter one highlighted the problems of the study, research questions, objectives of the study, hypotheses of the study scope of the study and significance of the study.

Chapter two presents a related literature review on the determinants of real earnings management and the real earnings management activities. The chapter covers the conceptual literature, the empirical literature and the theoretical underpinning of the study. Thus, the concept of real earnings management, board monitoring, financial structure, audit quality and corporate performance are reviewed and presented in the chapter. Empirical studies on the determinants of real earnings management are also reviewed and presented as well as the theoretical framework of real earnings management and its determinants.

In this chapter three, methods and techniques adopted to answer the research questions and objectives are discussed and presented. The chapter presents and discusses research design adopted for the study, population and sample size of the study, sources and methods of data for the study, technique of data analysis and the variables measurement and models specification. The chapter discusses the justifications of the methods and techniques employed in the study.

In this chapter four, pre-statistical assumption test and analyses were perform on the study data are presented. The analysis is divided into two parts; the first part covers the analysis of the descriptive statistics and normality of the data, while the second part deals with the analysis of the inferential statistics and the hypotheses testing. The findings from the study indicated a significant statistical association between determinants of earnings management and real

earnings management of listed industrial firms in Nigeria during the period covered by the study. The findings from the study showed that the determinants (leverage, board independence, board size and composition, institutional ownership, audit quality, financial performance and firm size) accounted for 67.87% of the total variations in the real earnings management of the sample industrial goods firms in Nigeria. The findings also showed after controlling for firm size that firm leverage, firm performance, board size and composition have negative and significant impact on real earnings management in the sample industrial goods firms. The findings from the study also revealed that institutional ownership have an insignificant negative effect on real earnings management during the period covered by the study. The findings showed that audit quality have an insignificant positive effect on real earnings management of the listed industrial goods firms in Nigeria.

5.2 Conclusions

Emanating from the data collected and the tests of the research hypotheses, the study concludes after controlling for the size of the firms a significant statistical negative relationships between firm leverage, profitability, board size, board composition and real earnings management in the sample industrial goods firms. The study also concludes after moderating the effect of firm size, that institutional ownership have an insignificant negative effect on real earnings management for the period under study. Lastly, this study concludes that audit quality as proxy by the auditor-type (Big4 and Non-Big4) has an insignificant positive effect on real earnings management of the listed industrial goods firms in Nigeria. Overall, the study concludes that financial structure, firm financial performance, and board monitoring (in terms of size and composition of the board) are significant determinants of real activities manipulations in the listed companies in Nigeria. Moreover, audit quality and institutional ownership have not

significantly influenced the real earnings management activities of the sample firms during the period of the study.

5.3 Recommendations

Consistent with the results and findings from this research, the study upper some recommendations for policy makers and regulators in Nigeria to consider real-based and accrual-based earnings manipulations in bringing out policies that will mitigate managerial opportunistic practices in corporate reporting. The following specific recommendations are also offered:

i. The study recommends that the Securities and Exchange Commission and NSE should review the code of corporate governance by increasing the proportion of outside/independent directors in the board of listed companies. This could improve the corporate governance quality and its ability to constrain earnings management.

ii. The study recommends that the board of directors of listed companies in Nigeria should boost their supervision and compliance with corporate governance code to improve the integrity and reliability of financial reports.

iii. The study recommends that investors, particularly institutional investors should also consider real activities management when making decision to invest in the listed companies. This will help improve their controlling ability in the firms.

iv. The study also recommends that lenders should increase their monitoring and control activities on the managers so as to improve the quality of accounting information.

5.4 Limitations and Area of Further Research

Like any other research, the result of this study is subject to some limitations due to some factors. First, all the publicly quoted companies in Nigeria are many, but this study is restricted to industrial goods sector of the economy. Therefore, the generalization of the findings to other

sectors is subject to research findings in the future. Secondly, there are many measures of firm performance, but the study covers the return on assets, increasing the number of performance variables could have give a broader picture of the situation. Lastly, board monitoring has many variables and mechanisms but this study is limited to only two attributes of the board, the ownership and independence.

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APPENDICES

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

1. **DESCRITPIVE STATISTICS**

```
. su cfo prod dexp sales lgSales Csales abcfo abpro abdxp rem lev aqty roa inow bsz bcom fsz, de
> tail
```

cfo

Percentiles		Smallest		
1%	-.27	-.27		
5%	-.24	-.24		
10%	.02	-.24	Obs	70
25%	.03	-.24	Sum of Wgt.	70
50%	.06		Mean	.0768571
		Largest	Std. Dev.	.1080733
75%	.14	.24		
90%	.18	.27	Variance	.0116798
95%	.24	.3	Skewness	-1.052576
99%	.3	.3	Kurtosis	5.761502

prod

Percentiles		Smallest		
1%	.03	.03		
5%	.03	.03		
10%	.07	.03	Obs	70
25%	.16	.03	Sum of Wgt.	70
50%	.18		Mean	.2314286
		Largest	Std. Dev.	.1460622
75%	.31	.52		
90%	.51	.53	Variance	.0213342
95%	.52	.56	Skewness	.8969245
99%	.61	.61	Kurtosis	2.963564

dexp

Percentiles		Smallest		
1%	.01	.01		
5%	.02	.02		
10%	.03	.02	Obs	70
25%	.07	.02	Sum of Wgt.	70
50%	.165		Mean	.2337143
		Largest	Std. Dev.	.2096593
75%	.34	.69		
90%	.535	.71	Variance	.043957
95%	.69	.76	Skewness	1.075969
99%	.87	.87	Kurtosis	3.378209

sales

	Percentiles	Smallest		
1%	.01	.01		
5%	.02	.01		
10%	.02	.012	Obs	70
25%	.03	.02	Sum of Wgt.	70
50%	.06		Mean	.1432
		Largest	Std. Dev.	.1962917
75%	.15	.78		
90%	.35	.78	Variance	.0385304
95%	.78	.84	Skewness	2.428175
99%	.84	.84	Kurtosis	8.363098

lgSales

	Percentiles	Smallest		
1%	.13	.13		
5%	.16	.14		
10%	.21	.16	Obs	70
25%	.47	.16	Sum of Wgt.	70
50%	.61		Mean	.5851429
		Largest	Std. Dev.	.2421147
75%	.76	.98		
90%	.93	.99	Variance	.0586195
95%	.98	.99	Skewness	-.242934
99%	.99	.99	Kurtosis	2.18713

Csales

	Percentiles	Smallest		
1%	-.37	-.37		
5%	-.24	-.27		
10%	.03	-.27	Obs	70
25%	.07	-.24	Sum of Wgt.	70
50%	.135		Mean	.2015714
		Largest	Std. Dev.	.24985
75%	.28	.78		
90%	.64	.84	Variance	.062425
95%	.78	.84	Skewness	.9141667
99%	.84	.84	Kurtosis	4.307975

abcfo

	Percentiles	Smallest		
1%	.1718192	.1718192		
5%	.2447231	.1718192		
10%	.3233667	.1961579	Obs	70
25%	.3577647	.2447231	Sum of Wgt.	70
50%	.3739905		Mean	.3575816
		Largest	Std. Dev.	.0444407
75%	.3776672	.3812314		
90%	.3804201	.3814471	Variance	.001975
95%	.3812314	.3819865	Skewness	-3.096694
99%	.3825258	.3825258	Kurtosis	12.27498

abpro

	Percentiles	Smallest		
1%	.0945787	.0945787		
5%	.1061414	.0986464		
10%	.1239468	.1058864	Obs	70
25%	.2207901	.1061414	Sum of Wgt.	70
50%	.2839329		Mean	.27
		Largest	Std. Dev.	.0932012
75%	.3306653	.4145743		
90%	.4079058	.4178759	Variance	.0086865
95%	.4145743	.4180235	Skewness	-.2055773
99%	.4183578	.4183578	Kurtosis	2.182323

abdxp

	Percentiles	Smallest		
1%	.1490184	.1490184		
5%	.192094	.1629138		
10%	.2032103	.1629138	Obs	70
25%	.2184952	.192094	Sum of Wgt.	70
50%	.2365591		Mean	.2288571
		Largest	Std. Dev.	.0211723
75%	.2421173	.251844		
90%	.2490649	.251844	Variance	.0004483
95%	.251844	.251844	Skewness	-1.747446
99%	.251844	.251844	Kurtosis	6.358338

rem

	Percentiles	Smallest		
1%	.1740466	.1740466		
5%	.1854734	.182777		
10%	.1859418	.1854734	Obs	70
25%	.2911263	.1854734	Sum of Wgt.	70
50%	.3663562		Mean	.3575816
		Largest	Std. Dev.	.112817
75%	.4413404	.5298317		
90%	.5115868	.5420535	Variance	.0127277
95%	.5298317	.5501258	Skewness	-.0987921
99%	.5525732	.5525732	Kurtosis	1.997513

lev

	Percentiles	Smallest		
1%	.07	.07		
5%	.17	.11		
10%	.265	.12	Obs	70
25%	.34	.17	Sum of Wgt.	70
50%	.55		Mean	.5181429
		Largest	Std. Dev.	.2102882
75%	.66	.88		
90%	.81	.89	Variance	.0442211
95%	.88	.91	Skewness	-.0550773
99%	.92	.92	Kurtosis	2.250922

aqty

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	70
25%	1	0	Sum of Wgt.	70
50%	1		Mean	.7857143
		Largest	Std. Dev.	.4132886
75%	1	1		
90%	1	1	Variance	.1708075
95%	1	1	Skewness	-1.392621
99%	1	1	Kurtosis	2.939394

roa

	Percentiles	Smallest		
1%	-.6	-.6		
5%	-.37	-.6		
10%	-.27	-.6	Obs	70
25%	.16	-.37	Sum of Wgt.	70
50%	.16		Mean	.0971429
		Largest	Std. Dev.	.2305076
75%	.18	.33		
90%	.33	.33	Variance	.0531337
95%	.33	.33	Skewness	-1.716397
99%	.33	.33	Kurtosis	5.078242

inow

	Percentiles	Smallest		
1%	0	0		
5%	.01	0		
10%	.01	0	Obs	70
25%	.02	.01	Sum of Wgt.	70
50%	.05		Mean	.0938571
		Largest	Std. Dev.	.1302872
75%	.09	.37		
90%	.26	.39	Variance	.0169748
95%	.37	.6	Skewness	2.434831
99%	.65	.65	Kurtosis	9.299396

bsz

	Percentiles	Smallest		
1%	6	6		
5%	7	7		
10%	8	7	Obs	70
25%	9	7	Sum of Wgt.	70
50%	10		Mean	10.41429
		Largest	Std. Dev.	2.274578
75%	12	15		
90%	14	15	Variance	5.173706
95%	15	15	Skewness	.6107145
99%	15	15	Kurtosis	2.609885

bcom

	Percentiles	Smallest		
1%	.14	.14		
5%	.2	.18		
10%	.29	.2	Obs	70
25%	.7	.2	Sum of Wgt.	70
50%	.8		Mean	.7395714
		Largest	Std. Dev.	.2088716
75%	.86	.92		
90%	.9	.92	Variance	.0436273
95%	.92	.93	Skewness	-1.790317
99%	.93	.93	Kurtosis	5.031151

fsz

	Percentiles	Smallest		
1%	5.51	5.51		
5%	6.37	5.57		
10%	6.855	5.88	Obs	70
25%	7.1	6.37	Sum of Wgt.	70
50%	7.6		Mean	7.502857
		Largest	Std. Dev.	.6193548
75%	7.92	8.37		
90%	8.13	8.45	Variance	.3836004
95%	8.37	8.47	Skewness	-1.096086
99%	8.54	8.54	Kurtosis	4.585045

2. NORMAL DATA RESULTS

```
. swilk cfo prod dexp sales lgSales Csales abcfo abpro abdxp rem lev aqty roa inow bsz bcom fsz
```

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
cfo	70	0.81173	11.588	5.328	0.00000
prod	70	0.87321	7.804	4.468	0.00000
dexp	70	0.87585	7.642	4.422	0.00000
sales	70	0.52082	29.495	7.359	0.00000
lgSales	70	0.96869	1.927	1.427	0.07683
Csales	70	0.82412	10.825	5.180	0.00000
abcfo	70	0.53030	28.911	7.316	0.00000
abpro	70	0.95574	2.725	2.180	0.01464
abdxp	70	0.81110	11.627	5.335	0.00000
rem	70	0.94372	3.464	2.702	0.00345
lev	70	0.97453	1.568	0.978	0.16410
aqty	70	0.82412	10.825	5.180	0.00000
roa	70	0.99014	0.607	-1.086	0.86129
inow	70	0.68022	19.683	6.480	0.00000
bsz	70	0.52082	29.495	7.359	0.00000
bcom	70	0.69075	19.035	6.407	0.00000
fsz	70	0.96869	1.927	1.427	0.07683

3. CORRELATION MATRIX: MODEL OF THE STUDY

```
. pwcorr rem lev aqty roa inow bsz bcom fsz, star (0.05) sig
```

	rem	lev	aqty	roa	inow	bsz	bcom
rem	1.0000						
lev	-0.2801*	1.0000					
	0.0189						
aqty	0.3202*	-0.1745	1.0000				
	0.0069	0.1485					
roa	-0.1756	-0.4989*	-0.1753	1.0000			
	0.1460	0.0000	0.1466				
inow	0.2023	-0.2064	0.2515*	0.1257	1.0000		
	0.0931	0.0864	0.0357	0.2998			
bsz	-0.6017*	0.3615*	-0.3042*	-0.1199	-0.1721	1.0000	
	0.0000	0.0021	0.0105	0.3229	0.1542		
bcom	-0.3764*	0.0484	-0.1149	-0.0581	-0.1326	0.3548*	1.0000
	0.0013	0.6906	0.3435	0.6327	0.2740	0.0026	
fsz	0.5295*	0.0154	0.0295	-0.1348	0.2972*	-0.1270	-0.0720
	0.0000	0.8996	0.8087	0.2660	0.0125	0.2948	0.5534

	fsz
fsz	1.0000

4 REGRESSION RESULTS MODEL I

```
. reg cfo sales Csales
```

Source	SS	df	MS		
Model	.336155455	2	.168077727	Number of obs	= 70
Residual	.542053814	67	.008090355	F(2, 67)	= 20.78
				Prob > F	= 0.0000
Total	.878209269	69	.012727671	R-squared	= 0.3828
				Adj R-squared	= 0.3643
				Root MSE	= .08995

cfo	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
sales	-.2316566	.0420012	-5.52	0.000	-.3154915	-.1478218
Csales	.111905	.0746021	1.50	0.138	-.0370014	.2608113
_cons	.3729242	.0187525	19.89	0.000	.3354942	.4103543

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of cfo

         chi2(1)      =     0.63
         Prob > chi2  =   0.4283

. vif
```

Variable	VIF	1/VIF
Csales	1.10	0.907445
sales	1.10	0.907445
Mean VIF	1.10	

```
. xtreg cfo sales Csales, fe

Fixed-effects (within) regression               Number of obs      =        70
Group variable: id                              Number of groups   =        10

R-sq:  within  = 0.2419                         Obs per group: min =         7
       between = 0.4767                                        avg =       7.0
       overall = 0.3607                                        max =         7

                                                F(2,58)            =      9.26
corr(u_i, Xb)  = 0.3406                         Prob > F           =    0.0003

------------------------------------------------------------------------------
         cfo |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       sales |  -.1502925   .0356087    -4.22   0.000     -.221571    -.079014
      Csales |  -.0021631   .0553638    -0.04   0.969    -.1129859    .1086597
       _cons |   .3799036   .0131513    28.89   0.000     .3535783    .4062288
-------------+----------------------------------------------------------------
     sigma_u |  .08350653
     sigma_e |  .05463076
         rho |  .70028502   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(9, 58) =    13.74                 Prob > F = 0.0000

. est store fixed


. xtreg cfo sales Csales, re

Random-effects GLS regression                   Number of obs      =        70
Group variable: id                              Number of groups   =        10

R-sq:  within  = 0.2413                         Obs per group: min =         7
       between = 0.4887                                        avg =       7.0
       overall = 0.3677                                        max =         7

                                                Wald chi2(2)       =     23.32
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

------------------------------------------------------------------------------
         cfo |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       sales |  -.1622585   .0347476    -4.67   0.000    -.2303625   -.0941545
      Csales |   .0107869   .0549052     0.20   0.844    -.0968253    .1183992
       _cons |     .37951   .0271873    13.96   0.000     .3262239    .4327961
-------------+----------------------------------------------------------------
     sigma_u |  .07465241
     sigma_e |  .05463076
         rho |  .65123936   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. est store random


. hausman fixed random

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    fixed        random       Difference          S.E.
-------------+----------------------------------------------------------------
       sales |  -.1502925    -.1622585         .011966        .0077836
      Csales |  -.0021631     .0107869        -.01295         .0071113
------------------------------------------------------------------------------
                           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(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =          4.82
                Prob>chi2 =        0.0898
```

```
. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        cfo[id,t] = Xb + u[id] + e[id,t]

        Estimated results:
                     |       Var     sd = sqrt(Var)
             ---------+------------------------------
                 cfo |    .0127277        .112817
                   e |    .0029845       .0546308
                   u |     .005573       .0746524

        Test:   Var(u) = 0
                                 chibar2(01) =    63.80
                              Prob > chibar2 =   0.0000

. xtreg cfo sales Csales, re

Random-effects GLS regression                   Number of obs      =        70
Group variable: id                              Number of groups   =        10

R-sq:  within  = 0.2413                         Obs per group: min =         7
       between = 0.4887                                        avg =       7.0
       overall = 0.3677                                        max =         7

                                                Wald chi2(2)       =     23.32
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

------------------------------------------------------------------------------
         cfo |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       sales |  -.1622585   .0347476    -4.67   0.000    -.2303625   -.0941545
      Csales |   .0107869   .0549052     0.20   0.844    -.0968253    .1183992
       _cons |     .37951   .0271873    13.96   0.000     .3262239    .4327961
-------------+----------------------------------------------------------------
     sigma_u |  .07465241
     sigma_e |  .05463076
         rho |  .65123936   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. predict abcfo
(option xb assumed; fitted values)
```

5.REGRESSION RESULTS MODEL II

```
. reg prod sales Csales lgSales

      Source |       SS       df       MS              Number of obs =      70
-------------+------------------------------           F(  3,    66) =    6.29
       Model |  .680409288     3  .226803096           Prob > F      =  0.0008
    Residual |  2.37859067    66  .036039253           R-squared     =  0.2224
-------------+------------------------------           Adj R-squared =  0.1871
       Total |  3.05899996    69  .044333333           Root MSE      =  .18984

------------------------------------------------------------------------------
        prod |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       sales |   .1848997   .0893365     2.07   0.042     .0065336    .3632658
      Csales |   .0218637   .1574619     0.14   0.890    -.2925192    .3362465
     lgSales |   .3680267   .0913977     4.03   0.000     .1855453    .5505081
       _cons |   .0212267   .0686108     0.31   0.758    -.1157592    .1582125
------------------------------------------------------------------------------

. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of prod

         chi2(1)      =    18.56
         Prob > chi2  =   0.0000
```

```
. vif
```

Variable	VIF	1/VIF
sales	1.12	0.893501
Csales	1.10	0.907359
lgSales	1.02	0.983779
Mean VIF	1.08	

```
. xtreg prod sales Csales lgSales, fe

Fixed-effects (within) regression               Number of obs      =        70
Group variable: id                              Number of groups   =        10

R-sq:  within  = 0.1359                         Obs per group: min =         7
       between = 0.1598                                        avg =       7.0
       overall = 0.1442                                        max =         7

                                                F(3,57)            =      2.99
corr(u_i, Xb)  = -0.1304                        Prob > F           =    0.0385
```

prod	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
sales	-.0428382	.1013111	-0.42	0.674	-.2457101	.1600337
Csales	.0100173	.1569155	0.06	0.949	-.3042005	.3242351
lgSales	.3789477	.131926	2.87	0.006	.1147704	.643125
_cons	.0499956	.0911025	0.55	0.585	-.1324339	.2324252
sigma_u	.14312884					
sigma_e	.15384705					
rho	.46395579	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(9, 57) =     4.83                 Prob > F = 0.0001

. est store fixed

. xtreg prod sales Csales lgSales, re

Random-effects GLS regression                   Number of obs      =        70
Group variable: id                              Number of groups   =        10

R-sq:  within  = 0.1279                         Obs per group: min =         7
       between = 0.2406                                        avg =       7.0
       overall = 0.1828                                        max =         7

                                                Wald chi2(3)       =     11.15
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0109
```

prod	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
sales	.0276896	.0935106	0.30	0.767	-.1555878	.2109669
Csales	.006831	.1500843	0.05	0.964	-.2873287	.3009908
lgSales	.3722467	.1117809	3.33	0.001	.1531602	.5913332
_cons	.0441874	.0878427	0.50	0.615	-.1279811	.2163559
sigma_u	.12284218					
sigma_e	.15384705					
rho	.38933294	(fraction of variance due to u_i)				

```
. est store random
```

```
. hausman fixed random

                 ---- Coefficients ----
             |      (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
             |    fixed        random       Difference          S.E.
-------------+------------------------------------------------------------
       sales |  -.0428382     .0276896       -.0705278        .0389834
      Csales |   .0100173      .006831        .0031863         .045795
    lgSales |   .3789477     .3722467         .006701        .0700679
------------------------------------------------------------------------------
                           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(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =          3.44
                Prob>chi2 =        0.3285

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        prod[id,t] = Xb + u[id] + e[id,t]

        Estimated results:
                     |       Var     sd = sqrt(Var)
             ---------+-----------------------------
                prod |    .0443333        .2105548
                   e |    .0236689         .153847
                   u |    .0150902        .1228422

        Test:   Var(u) = 0
                             chibar2(01) =    15.99
                          Prob > chibar2 =   0.0000

. xtreg prod sales Csales lgSales, re robust

Random-effects GLS regression                   Number of obs      =        70
Group variable: id                              Number of groups   =        10

R-sq:  within  = 0.1279                         Obs per group: min =         7
       between = 0.2406                                        avg =       7.0
       overall = 0.1828                                        max =         7

                                                Wald chi2(3)       =     18.69
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0003

                                    (Std. Err. adjusted for 10 clusters in id)
------------------------------------------------------------------------------
             |               Robust
        prod |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       sales |   .0276896   .1407769     0.20   0.844    -.2482281    .3036072
      Csales |    .006831   .0762028     0.09   0.929    -.1425237    .1561857
    lgSales |   .3722467   .1023173     3.64   0.000     .1717085    .5727849
       _cons |   .0441874   .0703175     0.63   0.530    -.0936324    .1820071
-------------+----------------------------------------------------------------
     sigma_u |  .12284218
     sigma_e |  .15384705
         rho |  .38933294   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. predict abpro
(option xb assumed; fitted values)
```

6.REGRESSION RESULTS MODEL III

```
. reg dexp lgSales
```

Source	SS	df	MS	Number of obs =	70
Model	.32727324	1	.32727324	F(1, 68) =	7.93
Residual	2.80523531	68	.04125346	Prob > F =	0.0063
				R-squared =	0.1045
				Adj R-squared =	0.0913
Total	3.13250855	69	.045398675	Root MSE =	.20311

dexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgSales	-.4519938	.160475	-2.82	0.006	-.7722168	-.1317709
_cons	.3036298	.0359734	8.44	0.000	.231846	.3754137

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of dexp

         chi2(1)      =     6.80
         Prob > chi2  =   0.0091

. xtreg dexp lgSales, fe

Fixed-effects (within) regression               Number of obs      =        70
Group variable: id                              Number of groups   =        10

R-sq:  within  = 0.0085                         Obs per group: min =         7
       between = 0.3160                                        avg =       7.0
       overall = 0.1045                                        max =         7

                                                F(1,59)            =      0.51
corr(u_i, Xb)  = 0.3197                         Prob > F           =    0.4786
```

dexp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgSales	-.0906597	.1271479	-0.71	0.479	-.3450821	.1637627
_cons	.2438549	.0260187	9.37	0.000	.1917916	.2959181
sigma_u	.18019859					
sigma_e	.12813403					
rho	.66417722	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(9, 59) =    12.43                 Prob > F = 0.0000

. est store fixed

. xtreg dexp lgSales, re

Random-effects GLS regression                   Number of obs      =        70
Group variable: id                              Number of groups   =        10

R-sq:  within  = 0.0085                         Obs per group: min =         7
       between = 0.3160                                        avg =       7.0
       overall = 0.1045                                        max =         7

                                                Wald chi2(1)       =      1.22
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.2692
```

dexp	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lgSales	-.1389535	.1257631	-1.10	0.269	-.3854447	.1075376
_cons	.251844	.0560445	4.49	0.000	.1419989	.3616892
sigma_u	.15485938					
sigma_e	.12813403					
rho	.59360326	(fraction of variance due to u_i)				

```
. est store random
```

```
. hausman fixed random
```

	Coefficients (b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
lgSales	-.0906597	-.1389535	.0482938	.0187146

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(1) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 6.66
Prob>chi2 = 0.0099

```
. xttest0
```

Breusch and Pagan Lagrangian multiplier test for random effects

dexp[id,t] = Xb + u[id] + e[id,t]

Estimated results:

	Var	sd = sqrt(Var)
dexp	.0453987	.2130696
e	.0164183	.128134
u	.0239814	.1548594

Test: Var(u) = 0
chibar2(01) = 61.69
Prob > chibar2 = 0.0000

```
. xtreg dexp lgSales, re robust
```

Random-effects GLS regression — Number of obs = 70
Group variable: id — Number of groups = 10

R-sq: within = 0.0085 — Obs per group: min = 7
between = 0.3160 — avg = 7.0
overall = 0.1045 — max = 7

Wald chi2(1) = 3.04
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0815

(Std. Err. adjusted for 10 clusters in id)

dexp	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
lgSales	-.1389535	.0797554	-1.74	0.081	-.2952712	.0173642
_cons	.251844	.0639934	3.94	0.000	.1264192	.3772689
sigma_u	.15485938					
sigma_e	.12813403					
rho	.59360326	(fraction of variance due to u_i)				

```
. predict abdxp
(option xb assumed; fitted values)
```

8.REGRESSION RESULTS MODEL IV

```
. reg rem lev aqty roa inow bsz bcom fsz
```

Source	SS	df	MS
Model	.608573674	7	.086939096
Residual	.269635594	62	.004348961
Total	.878209269	69	.012727671

Number of obs	70
F(7, 62)	19.99
Prob > F	0.0000
R-squared	0.6930
Adj R-squared	0.6583
Root MSE	.06595

rem	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lev	-.1374396	.0439377	-3.13	0.003	-.2252699	-.0496094
aqty	.0598047	.0594679	1.01	0.318	-.0590699	.1786793
roa	-.1348772	.0404752	-3.33	0.001	-.2157859	-.0539685
inow	-.0582499	.0681945	-0.85	0.396	-.1945688	.0780689
bsz	-.1632147	.0350504	-4.66	0.000	-.2332794	-.09315
bcom	-.0728199	.0266169	-2.74	0.008	-.1260264	-.0196133
fsz	.2002168	.0339987	5.89	0.000	.1322544	.2681792
_cons	.4160748	.0492404	8.45	0.000	.3176446	.5145049

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of rem

         chi2(1)      =     0.21
         Prob > chi2  =   0.6468

. vif
```

Variable	VIF	1/VIF
lev	1.63	0.615020
roa	1.55	0.646117
bsz	1.43	0.700450
aqty	1.30	0.767671
inow	1.25	0.798425
bcom	1.17	0.854888
fsz	1.17	0.857933
Mean VIF	1.36	

```
. xtreg rem lev aqty roa inow bsz bcom fsz, fe

Fixed-effects (within) regression               Number of obs      =        70
Group variable: id                              Number of groups   =        10

R-sq:  within  = 0.3866                         Obs per group: min =         7
       between = 0.6961                                        avg =       7.0
       overall = 0.5729                                        max =         7

                                                F(7,53)            =      4.77
corr(u_i, Xb)  = 0.4410                         Prob > F           =    0.0003

------------------------------------------------------------------------------
         rem |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         lev |  -.1007864   .0458159    -2.20   0.032    -.1926813   -.0088914
        aqty |  -.0193268   .0562739    -0.34   0.733     -.132198    .0935444
         roa |  -.1098085   .0390147    -2.81   0.007    -.1880621   -.0315548
        inow |  -.0086684    .083498    -0.10   0.918    -.1761442    .1588074
         bsz |  -.1557979   .0349447    -4.46   0.000    -.2258881   -.0857077
        bcom |  -.0233073   .0285903    -0.82   0.419    -.0806521    .0340375
         fsz |    .035171   .0457005     0.77   0.445    -.0564927    .1268346
       _cons |   .4778524   .0533282     8.96   0.000     .3708896    .5848153
-------------+----------------------------------------------------------------
     sigma_u |  .06804688
     sigma_e |  .05140741
         rho |  .63664439   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(9, 53) =     5.45                 Prob > F = 0.0000

. est store fixed

. xtreg rem lev aqty roa inow bsz bcom fsz, re

Random-effects GLS regression                   Number of obs      =        70
Group variable: id                              Number of groups   =        10

R-sq:  within  = 0.3571                         Obs per group: min =         7
       between = 0.8751                                        avg =       7.0
       overall = 0.6787                                        max =         7

                                                Wald chi2(7)       =     68.01
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

------------------------------------------------------------------------------
         rem |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         lev |  -.1140841    .044213    -2.58   0.010      -.20074   -.0274281
        aqty |   .0168122   .0575471     0.29   0.770    -.0959781    .1296024
         roa |  -.1180907   .0395451    -2.99   0.003    -.1955977   -.0405837
        inow |  -.0159489   .0766556    -0.21   0.835    -.1661911    .1342933
         bsz |  -.1637488   .0347455    -4.71   0.000    -.2318486    -.095649
        bcom |  -.0478572   .0276763    -1.73   0.084    -.1021018    .0063874
         fsz |   .1270221   .0398633     3.19   0.001     .0488916    .2051527
       _cons |   .4361162   .0513757     8.49   0.000     .3354217    .5368108
-------------+----------------------------------------------------------------
     sigma_u |  .03042045
     sigma_e |  .05140741
         rho |  .25935291   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. est store random
```

```
. hausman fixed random
```

	Coefficients (b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
lev	-.1007864	-.1140841	.0132977	.0120125
aqty	-.0193268	.0168122	-.036139	.
roa	-.1098085	-.1180907	.0082822	.
inow	-.0086684	-.0159489	.0072805	.0331034
bsz	-.1557979	-.1637488	.0079509	.0037264
bcom	-.0233073	-.0478572	.0245499	.0071711
fsz	.035171	.1270221	-.0918512	.0223486

```
                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(7) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                   =       31.65
         Prob>chi2 =      0.0000
         (V_b-V_B is not positive definite)

. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        rem[id,t] = Xb + u[id] + e[id,t]

        Estimated results:
                     |       Var     sd = sqrt(Var)
             ---------+-----------------------------
                 rem |    .0127277        .112817
                   e |    .0026427       .0514074
                   u |    .0009254       .0304204

        Test:   Var(u) = 0
                            chibar2(01) =     4.86
                         Prob > chibar2 =   0.0137
```