MODERATING EFFECT OF AUDIT COMMITTEE ON THE RELATIONSHIP BETWEEN AUDIT QUALITY ATTRIBUTES AND EARNINGS MANAGEMENT OF LISTED MANUFACTURING FIRMS IN NIGERIA

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DECLARATION

I declare that thework in this dissertationtitled “effect of Audit Quality AttributesandEarnings Management of Listed ManufacturingFirms in Nigeria”has been carried out by me in the Department of Accounting. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this project dissertation was previously presented for another degree or diploma at this or any other Institution.

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CERTIFICATION

This project dissertation titled **AUDIT QUALITY ATTRIBUTES ANDEARNINGS MANAGEMENT OF LISTED MANUFACTURING FIRMS IN NIGERIA**byAminaYUSUFmeets the regulations governing the award of degree of Masters of Science in Accounting and Finance of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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ABSTRACT

This study examinedthe moderating effect of audit committee on the relationship between audit quality attributes andearnings management of listed manufacturing firms in Nigeria over a period of ten years (2007-2016).Audit quality attributes was proxied by auditor size, auditorindependence, auditor tenure and auditor industry specialization, while earnings managementwas proxied by discretionary accruals obtained usingperformance matched discretionary accruals model by Kothari, Leone and Wasley (2005). The population consists of the thirty eight (38) listed manufacturing firms as at 31st December, 2016. A sample of twenty eight firms was used based on availability of data. Secondary source of data collection was used and the data were extracted from the annual reports and accounts of the firms. Multiple regression technique was used and Stata 13 was employed as the tool of data analysis. The findings revealed that auditor size, auditor independence, auditor tenure and auditor industry specialization has significant effects on earnings management of listed manufacturing firms in Nigeria. The study recommended amongst others that, manufacturing firms should continue to engage the services of the Big4 auditors for continued earnings quality in a joint audit with the non-Big4 firm in order to avoid the Big4 monopoly. Also audit fee should be increased to guarantee the independence of the auditors in order to carry out their audit function without undue influence which may be detrimental to the quality of earnings, however, audit fees must be a function of balance sheet size and turnover.

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CHAPTER ONE
INTRODUCTION

1.1 Background to the study

The financial scandals that rocked the UK and the USA towards the end of the 1990s and the beginning of the 21st century have brought about a major awareness on the need for more transparency and credibility in order to protect shareholders and stakeholders alike. Earnings management, which has always been the phenomenon at the core of these scandals, has received considerable attention in accounting literature because it has been a consistent cause of concern among practitioners and regulators, and has become one of the most important challenges confronting corporate governance mechanisms in trying to resolve the negative impact of earnings management on financial reporting.

The practice of earnings management involves altering the earnings figures being reported, through the use of the judgmental discretions as allowed by the generally accepted accounting principles (GAAP), so as to either mislead the users into believing what is actually not true in respect of the earnings' figures, and hence secure favorable response (like increased demand for the firm's shares); or to influence contractual outcomes which depend on the reported earnings (Okolie, 2014)(b). From this, it is evident that the practice of earnings management can only be carried out by the managers, on whose shoulders lies the responsibility of reporting the firm's earnings figures. Also, looking at agency theory relations, especially the part that explained how managers' interests are at conflict with that of the shareholder, it is clear that managers will always try to influence the contractual outcomes in their favor. This is so because managers are employees of the shareholders and their performance is usually measured using the earnings they reported, and based on it, they receive their rewards.

In Nigeria, the Security and Exchange Commission (SEC) has made it mandatory for public companies to publish and make available their audited financial statements annually which must conform with guidelines, formats, and regulations issued by the apex accounting institution and other regulatory and supervisory agencies. Yet, management of corporate organizations often embark on earnings management in order to increase market value and thus maximize shareholders wealth (Ekoja, 2002). The regulatory inconsistency and the choice available in accounting policies have often called for the exercise of judgments in preparing financial statements. The implication of exercising such judgments is that information provided by management which invariably arouses a certain decision by different users may make them to take wrong decision when preparers decide to convey self-serving information (Farouk, 2014).

The demand for audit of companies' accounts is created by the agency problems which are related to the separation of corporate ownership from control (Gerayli, Yanesari&Ma'atoofi, 2011). The agency problem arises from the existence of asymmetric information in the principal – agent contracts (Jenson& Messier, 2000). Some studies (Trueman& Titman, 1988; Dye, 1988; Schipper, 1989; Warfield, Wild & Wild, 1995) have shown that the existence of information asymmetry between corporate management and shareholders is a necessary condition for the perpetration of earnings management practice. The audit of a company's accounts is a monitoring and control mechanism that diminishes information asymmetry and protects the interests of the principal.

Auditing, as an external monitoring mechanism, has become a fundamental requirement in the business environment and has been established as a regulated activity in most industrialized countries (Piot, 2001) due to its important role in offering more confidence and transparency in financial reporting. Recent financial scandals have increased the question of whether an external

audit is effective in constraining earnings management and the wave of audit failure in the capital market has also increased concerns about audit quality (Velury, 2005).

The link between audit quality attributes and earnings management stems from a general belief which exists among the public that creative accounting is employed opportunistically by managers for their own selfish gains rather than the interest of the shareholders and other stakeholders. External audit therefore became an important instrument for shareholders, to ensure the transparency and credibility of financial reporting. External auditors are responsible for verifying that the financial statements are fairly stated in conformity with GAAP and that these statements reflect the 'true' economic condition and operating results of the entity, thus, the external auditor's verification adds credibility to the company's financial statements, therefore, a quality audit is expected to constrain opportunistic earnings management.

Audit services may not ensure that falsified materials have been detected; but the amount of manipulation discovered depends on the quality of audit services. The quality of audit services in turn depends on the experience of the auditors, their knowledge of the industry (industry specialization), their size, and their independence, amongst others. Such knowledge and experience will help the auditor to diagnose the complex issues in specific industries. According to agency theory, Gul, Kim and Qui (2009), state that higher quality audits can restrain insiders from abusing accounting-based contractual constraints and manipulating earnings as a result of the separation of ownership and control.

Audit committee plays the pivot role of monitoring to ensure the quality of financial reporting and corporate accountability. It serves as a liaison and bridge the information asymmetry between the external auditor and the board, facilitates the monitoring process, and enhances the

independence of an auditor from management. A properly functioning audit committee is therefore essential in enhancing effective oversight of the financial reporting process and achieving high quality financial controls. Abbott, Parker & Peters (2004) reported that an effective audit committee is negatively associated with the occurrence of earnings management.

The decision to focus on manufacturing firms stems from the fact that these firms play a very significant role towards the economic development of Nigeria. The variety of firms in the sector gives room to study different firms that are into different lines of operations within the sample. Some of the monumental fraud and remarkable earnings management scandals in Nigeria were carried out by manufacturing giants such as Cadbury Nigeria plc.

1.2 Statement of the problem

Despite the existence of codes of best practice for corporate governance in Nigeria, corporate financial scandals continue to evolve in the business environment. These scandals have cast doubt on the quality of reported earnings and the ability of the audit process to effectively constrain earnings management. As a result, earnings management has received considerable attention from business strategists and academic researchers. Though earnings management does not violate accounting rules, its practice by managers is highly unethical and negates the principles of agency relationship. Hence the need to assess this assertion in listed Manufacturing firms in Nigeria

A large number of studies have been conducted on audit quality and earnings management (such as Salim, 2012; Khrishnan, 2003; Balsam, Khrishnan&Yand, 2003; DeFond, Raghunandan&Subramanyam, 2002; Abbott & Parker, 2000; Craswell, 1999) most of which recognized the audit quality mechanisms as effective factors that restrain excessive opportunistic

behavior among managers. However, these studies were conducted in developed economies, hence it is uncertain if such evidence on audit quality can be generalized to the developing countries like Nigeria that have different litigation environment.

Some studies have been conducted in Nigeria (such as Okoh, 2015; Jibril, 2014; Okolie, 2014; Okolie, 2013). However, most of these studies have ignored the use of auditors' industry specialization as an attribute of audit quality. Okolie (2013) used only one variable (audit firm size). Similarly, Okolie (2014)(b) used only two variables (auditor tenure & auditor independence), while Jibril (2014) used three variables (audit fee, audit firm tenure& auditor type). The importance of industry specialized auditors is attributable to the foreign research findings that auditor industry expertise is associated with better auditor performance and higher audit quality. Therefore, this study includes auditor industry specialization as a variable to establish its influence on earnings management of listed manufacturing firms in Nigeria.

Okoh (2015) employed the modified jones model for capturing earnings management which has been criticized for ignoring manipulations of sales because it assumes that all sales in the period are non-discretionary and estimates are stationary and, overtime, may generate a survivorship bias. Consequently, this study adopt performance matched discretionary accruals model developed by Kothari, Leone and Wasley (2005).

Also, most sighted literatureson the effect of audit quality attributes on earnings management (such as Okoh, 2015; Jibril, 2014; Okolie, 2014; Okolie, 2013) only looked at their direct relationship without considering the use of a moderator or mediator variables. Thus, this study make attempt to examine the moderating effect of audit committee on the relationship between audit quality attributes on earnings management in listed Manufacturing firms in Nigeria.

Additionally, the period covered by most of the previous studies leaves a gap. For instance, the works of Okolie (2014) covered a period of 2006-2012, Jibril (2014) covered 2006-2012, Okoh (2015) covered 2006-2011, Bala (2014) covered the period from 2006 to 2012. These studies can be said to be not too recent as some of the findings have been overtaken by events such as the FRCN's newly released national code of corporate governance 2016. Furthermore, most studies in this area were focused on the banking and other sectors of the economy, and none has specifically covered the listed manufacturing firms in Nigeria despite the diversity of the firms in this sector and the role they play in the economic development of Nigeria.

In view of the above, it is needful to conduct a study with a vision of filling these gaps identified in the literature. Therefore, this study examines the moderating effectof audit committee on the relationship betweenaudit quality attributes and earnings management of listed manufacturing firms in Nigeria.

1.3 Research Questions

In view of the foregoing paragraphs, this study raised the following questions;

i. To what extent does auditor size affect earnings management of listed manufacturing firms in Nigeria?
ii. What is the effect of auditor independence on earnings management of listed manufacturing firms in Nigeria?
iii. How does auditor industry specialization affect earnings management of listed manufacturing firms in Nigeria?
iv. How does auditor tenure influence earnings management of listed manufacturing firms in Nigeria?

v. What is the moderating effect of audit committee on the relationship between audit quality attributes and earnings management of listed manufacturing firms in Nigeria?

1.4 Objectives of the Study

The main aim of the study is to investigate the effect of audit quality on earnings management of listed manufacturing firms in Nigeria. The specific objectives are to;

i. Examine the effect of auditor size on earnings management of listed manufacturing firms in Nigeria;

ii. Determine the effect of auditor independence on earnings management of listed manufacturing firms in Nigeria;

iii. Ascertain the impact of auditor industry specialization on earnings management of listed manufacturing firms in Nigeria;

iv. Investigate the influence of auditor tenure on earnings management of listed manufacturing firms in Nigeria;

v. Examine the moderating effect of audit committee on the relationship between audit quality attributes and earnings management of listed manufacturing firms in Nigeria.

1.5 Hypotheses of the Study

Based on the above stated objectives, the following hypotheses have been formulated in null form;

H_{01}: Auditor size has no significant effect on earnings management of listed manufacturing firms in Nigeria.

H_{02}: Auditor independence has no significant effect on earnings management of listed manufacturing firms in Nigeria.

H_{03}: Auditor industry specialization has no significant effect on earnings management of listed manufacturing firms in Nigeria.

H_{04}: Auditor tenure has no significant effect on earnings management of listed manufacturing firms in Nigeria.

H_{05}: Audit committee has no moderating effect on the relationship between audit quality attributes and earnings management of listed manufacturing firms in Nigeria.

1.6 Scope of the Study

The study is limited to manufacturing firms listed on the Nigerian stock exchange as at 31st December, 2016. The study will cover the period of ten years from 2007-2016 with twenty eight firms giving a total of 280 firm-years observations. The period under review is considered appropriate because it falls within the period when several scandals on reported earnings where witnessed in both the developed and developing countries. The dependent variable of the study is earnings management which was measured using the performance matched discretionary accruals model by Kothari, Leone and Wasley(2005). With regards to the independent variables, because there is no agreed-upon metric for audit quality construct, it was measured using auditor size, auditor independence, auditor industry specialization, and auditor tenure. Audit committee was introduced as a moderator variable to check its moderating effect on the relationship between the dependent and independent variables. Variables that have been identified in prior literatures as likely to affect the reporting of discretionary accruals including Firm Size and leverage were controlled for.

1.7 Significance of the Study

The beneficiaries of the results of this study shall include the listed manufacturing firms in Nigeria, standard setters, investors, creditors, regulatory bodies, accounting professional bodies and the academia.

Results from this research will provide an understanding and appreciation of link between auditor size, auditor independence, auditor industry specialization, auditor tenure and earnings management. Gaining such fact will enable listed manufacturing firms in Nigeria to reap the benefits of having a quality audit exercise.

This study is expected to help standard setters adjust and determine an optimal level of management judgment and discretion to ensure an effective communication between managers and investors and to discourage widespread abusive earnings management. The results of this study can be used as a consideration for investors in deciding to invest and for the creditor in making lending decisions.

The results of this study will have an important policy implication for regulatory bodies who are striving to improve transparency and quality of financial reporting in the country. That is, the quality of audit is an important determinant of a country's financial reporting quality and lower earnings manipulations.

The study would assist regulators and others such as the management, to assess the practice of good monitoring mechanisms such as auditing within the organization in order to ascertain whether much have to be done by putting an effective and efficient Corporate Governance mechanisms to mitigate the natural tendencies for earnings manipulation in listed manufacturing firms in Nigeria.

The accounting professional bodies will also find this study critical in that it will show whether their members are complying with the ethical code of conduct set by the bodies. In addition, this study will contribute to existing literature on audit quality attributes and earnings management in the Nigerian context with specific reference to the manufacturing sector. Hence, researchers and students will benefit from this study.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This section is organized to discuss relevant literature of the study as follows: concept of earnings management, earnings management proxies, concept of audit quality attributes, concept of audit committee, review of empirical literature, and the theoretical framework.

2.2.Concept of Earnings Management

Earnings in Accounting are the excess of revenue over expenses. Earnings are also referred to as Income or profit. Income is regarded as an indicator of management's effectiveness in utilizing the resources belonging to the external users. Income tends to provide the basic standard by which success is measured. Thus, income is a measure to evaluate the quality of management's policy making, decision making and controlling activities (Farouk, 2014).

Earnings management has been considered as one of the most crucial ethical financial reporting issues, which accountants confront in everyday practices around the world (Armstrong, 1993). In general, since earnings management is a difficult concept to define and measure, it seems that there is no universally-accepted definition. However, earnings management is generally attributed to the process by which financial information is manipulated to provide a firm's financial stance and performance. This may involve numerous accounting treatments that are not accommodated within Generally Accepted Accounting Principles (GAAP) and are considered as either aggressive or conservative accounting treatments which mislead users of financial reporting (Xiong, 2006).

Generally, the distinctions of the definitions provided by prior studies rely on their own assumptions, the motivations behind earnings management and their perceptions in respect of

behaviors, which can vary from one researcher to another depending on numerous factors including culture. For example, Louis and Sun (2008) support the theory that cultural differences play a vital role in defining types of earnings management and motivations. Similarly, Geiger, O,Connell, Clikeman, Ochai, Witkowski and Basioudis (2006) argue that motivation for and practice of earnings management is not perceived similarly in all countries due to a numbers of factors, one of the most important being culture. A study conducted by Noronha, Zeng and Vinten (2008) shows that another factor, the nature of earnings management motivations or techniques, might be affected by the size and ownership of companies; in China, for example public ownership companies have a strong motive for manipulating earnings management. For the above reasons, accounting literature cannot accomplish consensus on the definition of earnings management; however, numerous attempts have been made by studies to understand earnings management practices.

Earnings management may be define as reasonable and legal management decision making and reporting intended to achieve stable and predictable financial results (Rahman, Mohammad & Jamil, 2013). Earnings management is the deliberate dampening of fluctuations about some level of earnings considered to be normal for the firm (Barnea, Ronen &Sandan, 1976, P. 4).

Healy and Wahlen (1999) suggest that earnings management takes place when management (executives) use their discretion in financial reporting and in structuring transactions to change financial reports in order to mislead some stakeholders regarding underlying economic performance of a firm or to affect contractual outcomes relying on reported accounting practices.

Davidson, Stickney and Weil (1987) define earnings management as the process of taking deliberate steps within the constraints of generally accepted accounting principles to bring about

a desired level of reported earnings. In the same vein, Roychowdhury (2006) defines earnings management as departures from normal operational practice, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations. In addition, Schipper (1989) defines earnings management as a way of using opportunities provided by the accounting system to engage earnings by adopting accounting methods for a specific purpose. Likewise, Smith (1993) defines earnings management as techniques that comprise financial reporting decisions, such as the selecting of accounting methods and timing of expenses and revenue reporting.

Earnings Management involves the repetitive selection of accounting measurement or reporting rules in a particular pattern, the effect of which is to report a stream of income with a smaller variation from trend than would otherwise have appeared (Copeland, 1968). Earnings Management is also defined an intentional structuring of reporting or production/investment decisions around the bottom line impact (Hui&Fatt, 2007).

From the preceding definitions, it is observed that earnings may be manipulated in two main ways: accounting choices and discretionary accruals. In other words, managers may exploit or abuse the flexibility of accounting standards by choosing specific methods such as revenue recognition methods or FIFO to LIFO in inventory to manipulate earnings or violating accounting standards. Thus, this study defines earnings management as the system of using various methods of manipulating accounting policies by managers who employ their experience and knowledge in business to transform financial accounting figures to achieve a desired level of reported income.

Proxies of Earnings Management

Numerous accrual-based models for detecting earnings management are proposed by different studies such as the Healy Model (1985), the DeAngelo Model (1986), the Jones Model (1991), the modified Jones Model (1995), Kothari *et al*. Model (2005). Among these models, the Jones Model (1991) and the modified Jones Model (1995) still attract attention in studies of earnings management, since they are the most powerful test of earnings management and the best in terms of robustness according to most of the prior studies. On the other hand, the Kothari *et al*. Model (2005) has recently become the focus of accounting researchers and is characterized by controlling for the prior performance of the company. Salim Ali (2012) investigated the proxies for earnings management and posited that the development of measuring earnings management began with total accruals, then others models were presented in the accounting literature as follows:

The Healy Model (1985)

The Healy Model (1985) attempts to measure earnings management by employing mean aggregate accruals (measured by lagged total assets) in the computing period as the measure of nondiscretionary accruals. This model was the first attempt to measure manipulation. Healy's argument was that systematic earnings management takes place in every period; thus, accruals were defined as the difference between reported earnings and cash flow from operations.

The DeAngelo Model (1986)

The second attempt was provided by DeAngelo (1986) who avoided the shortcomings of the Healy Model (1995) by ignoring a benchmark for what expected accruals may be (Aljifri, 2007). According to this model, discretionary accruals are measured by calculating the difference between total accruals in the current period and total accruals in the previous period.However,

this model was criticized for misclassifying non-discretionary accruals as discretionary accruals, and the prior year, which could be employed as a benchmark for what anticipated accruals should be, could comprise earnings manipulation (Aljifri, 2007).

The Jones Model (1991)

A more influential model was presented by Jones (1991) and measures non-discretionary accruals including property, plant and equipment variables in order to control any change in non-discretionary accruals stemming from depreciation and arising from changes in business activities of the company.

The Jones model has attracted a large number of studies such as Subramanyam (1996) and Guay, Kothari and Watts (1996) which suggest that the Jones Model is more powerful than others models (the DeAngelo Model and the Healy Model) since they produce discretionary accruals that are consistent with the opportunistic accruals and measure performance hypotheses. Moreover, it has been found that using the Jones Model with cross-section provides more control than using it with time series. In addition, Dechow, Sloan and Sweeney(1995) find that the Jones Model is considered the most effective model for detecting earnings management. However, Aljifri (2007) claims that this model ignores the manipulation of sales because it assumes that all sales in the period are nondiscretionary and estimates are stationary and, over time, may generate a survivorship bias.

The Modified Jones Model (1995)

The shortcomings of the Jones Model (1991) was a focus of Dechow*et al.* (1995) who presented a more effective model than the Jones Model for detecting earnings management. Dechow*et al.* (1995) believe that the Jones Model (1995) disregards the potentiality of revenues manipulation,

which is considered as non-discretionary according to the Jones Model. Therefore, the modified Jones model takes into consideration property, plant, and equipment and the change in revenues are adjusted for changes in receivables. In other words, the modified Jones Model regress aggregate accruals on gross property, plant, and equipment and changes in cash revenues to present coefficients that are then employed to measure unmanaged accruals.

Numerous studies have investigated the performance of discretionary accrual models and suggest that the Jones model and the modified Jones Model are the most effective models for detecting earnings management (Habbash, 2010). Although the two models were presented as time series, many studies such as Subramanyam (1996) and Bartov, Gul andTsui (2001) who compare these models in terms of cross-sectional and time series, document that the Jones and modified Jones Models are more powerful in cross-sectional than in time-series at detecting earnings management.

Performance Matched Discretionary Accruals (2005)

Numerous studies have raised the importance of performance when earnings management is computed. For example, Dechow*et al*. (1995) and Kasznik (1999) suggest that the findings estimated by the Jones model imply that discretionary accruals are significantly positively associated with the return on assets (ROA). To solve this issue of performance associated with misspecification, a number of studies conducted by Kasznik (1999), Bartov*et al*. (2001) and Kothari, Leone andWasley (2005) exclude the possible influences of this correlation between discretionary accruals and earnings performance by using a matched-firm or portfolio method to adjust the discretionary accruals.

The pioneer study among accounting literature which discusses this issue is that of Kothari *et al*. (2005) who argue that discretionary accruals, as measured by both the Jones and the modified

Jones Models, might involve severe measurement error in discretionary accruals since these models disregard the performance of the firm.

2.3 Concept of Audit Quality Attributes

Audit quality is perceived as the probability of detecting and reporting material misstatements, financial errors or lower quality accounting numbers (DeAngelo, 1981). This definition is interpreted as the ability of an auditor to detect accounting misstatements and then to express them in appropriate audit opinion. The audit provides assurance to the owners and management of companies and to investors and stakeholders. Audit, along with financial reporting, regulation and other corporate governance mechanisms, supports confidence in capital markets.

Watts and Zimmerman (1986) simplifiesDeAngel's definition. They indicated that the first part refers to auditor's competence and the quantity of inputs devoted to the audit, while the second part refers to auditor's independence. In other words, according to Watts and Zimmerman, any factors that are associated with a lack of auditor competence or a lack of auditor independence are able to compromise the quality of audit. In view of DeAngelo's definition and the additional explanation offered by Watts and Zimmerman, audit quality may be described as the competence of the auditors to detect errors and the objectivity (in fact and in appearance) of the auditors in reporting such errors.

Palmrose (1988) describes audit quality in terms of levels of assurances. Higher levels of assurances (i.e. possibility that financial statements contain fewer errors or misstatements) are associated with a higher audit quality and *vice-versa*. According to Francis (2004), audit failure can be classified as extremely low audit quality (end quality) that can result in several outcomes such as regulatory sanctions, litigation rates, and business failure and earnings restatement. From

the regulators perspective, as long as the auditors provide an independent audit opinion that is supported by adequate audit evidence, the regulator assumes that such auditors have performed a quality auditing service.

Despite the fact that technical qualities, such as an auditor's ability to detect and report errors, have been argued as the defining aspects of audit quality; Duff and Mayhew (2004) suggest that audit quality is made up of both technical quality and service quality (the levels of clients' satisfaction and expectations). Technical quality consists of reputation, capital, capability, expertise, experience and independence scales. Service quality is defined by responsiveness, empathy and the provision of non-audit services (NAS) and audit services.

The concept of audit quality has been defined in so many ways but the basic features of the system remains the same in all definitions. This study suggests audit quality is an important instrument for shareholder, to ensure transparency and credibility of financial reporting. Audit services may not ensure that falsified materials have been detected; however, the amount of manipulation discovered depends on the quality of audit.

2.3.1 Auditor size

Audit firm size signifies various types of qualities. It is assumed that size of audit firms suggest reputation, international affiliation, and integrity which are reflected in the audit report on the accounts of their clients. DeAngelo (1981) argues that Big4 auditors provide better quality audits than non-Big4 auditors, which is supported by extensive subsequent empirical research. Teohand Wong (1993) find higher Earnings Response Coefficients (ERCs) for clients audited by Big4 firms compared to those audited by non-Big4 firms. Similarly, Francis and Yu (2009) and Choi,

Kim, Kim andZang (2010) have shown that audit office size is a primary determinant of audit quality.

The two studies show that audit quality is higher for clients of large audit offices of Big4 firms than for clients of smaller offices. DeAngelo (1981) and Datar, Felthamand Laughton (1991) claim that large and more prestigious public accounting firms concerned about protecting their investment in reputation capital have more incentive than do other auditors to supply a high-quality audit. Further, Craswell, Francis and Taylor (1995), and Francis and Reynolds (2000) find that the large audit firms have brand-name reputation, charge higher audit fees, and/or behave qualitatively differently from smaller audit firms. Therefore, with regards to auditor size, this study suggests large firms to be the Big4 auditors while non-Big4 auditors are regarded as "small" firms.

2.3.2 Auditor independence

Independence according to United State Securities and Exchange Commission (2000) refers to a mental state of objectivity and lack of bias. Auditor's independence may be defined as an auditor's unbiased mental attitude in making decisions throughout the audit and financial reporting process. An auditor's lack of independence increases the possibility of being perceived as not being objective (Okolie, 2014). This means that the auditor will not likely report a discovered breach (DeAngelo, 1981).

Hope andLangli (2007) see auditor independence as the auditor objectivity and ability to withstand client pressure. This pressure includes monetary inducement and otherwise, provided it makes auditor comply with management desire rather than his professional judgment. This view is consistent with the code of Ethics of the International Federation of Accountants (IFAC,

2000) and the Institute of Chartered Accountants‟ of Nigeria (ICAN, 2010) where they define independence as a state of not being controlled by other people or things, such as financial benefits. The code further states that auditor needs to be objective in the course of duty.

The major threat to auditor independence is the audit fees received by the auditor for audit and non-audit services. Prior studies contend that high fees paid by a company to its external auditor increase the economic bond between the auditor and the client and thus the fees may impair the auditor's independence (e.g. Frankel, Johnson & Nelson 2002; Li & Lin, 2005). Thus, the concept of auditor independence in the context of this study refers to a state of not being controlled by the management of an entity using any means financial or otherwise.

2.3.3 Auditor industry specialization

Auditor industry specialization is a major topic in auditing literature. Although studies on auditor industry specialization are extensive, definition and designation of industry specialized auditor are not clearly agreed upon by researchers. Auditor industry specialization is the auditor's knowledge and experience about a client or an industry. According to Kend (2008) auditor industry specialization consist of developing constructive ideas in order to help clients to create added value in addition to provision of approaches and or new actions for some of the subjects that the client is faced with in the relevant industry. To be known as an industry specialist, auditors should know and understand special industrial issues, know the key organizations in that industry, be active in that industry, and be aware of the effectiveness of special industrial issues on different sectors of the industry.

Regarding the designation, most research follows Palmrose (1986) who defines auditor industry specialists to include the largest supplier in each industry, as well as the second and third largest

suppliers in the industry in which readily observable differences existed between the second and the third or between the third and the remaining suppliers. This definition basically takes the within-industry market share approach in which an auditor is considered to be industry specialists if it possesses a significant part of the market shares in that industry.

The importance of industry specialized auditors is attributable to the research findings that auditor industry expertise is associated with better auditor performance and higher audit quality. For better auditor performance, researchers argue that industry specialized auditors produce more accurate and efficient audit. For instance, Solomon and Shields (2009) use an experiment and show that industry specialist auditors have a greater quantity of and more accurate knowledge of financial statement non-error factors for their industries of specialization relative to other industries. Low (2004) examines the effects of industry specialization on auditors' risk assessment and audit-planning decisions and finds that industry knowledge improves audit risk assessment and influences the perceived quality of audit-planning decisions.

Auditor industry specialization in the context of this study refers to the extent of specialist knowledge of an industry developed through extensive auditing experience, specialized staff training and expensive investment in information technology, by an audit firm.

2.3.4 Auditor tenure

Auditor tenure is the length of the audit-client relationship as of the fiscal year-end covered by the audited financial statements. Following prior research (e.g Pierre & Anderson, 1984; Stice 1991), audit tenure is defined as short when the same auditor has audited the financial statements of a company for two or three years. Audit tenure is defined as long when the same auditor has audited the financial statements of a company for nine or more years.

Auditor Tenure is defined in this study as the length of the auditor-client relationship. A rather too long association between the auditor and the client may constitute a threat to independence as personal ties and familiarity may develop between the parties, which may lead to less vigilance on the part of the auditor and even to an obliging attitude of the latter towards the top managers of the company. Aside from this threat to independence, the audit engagement may become routine over time, and if so, the auditor will devote less effort to identifying the weaknesses of internal control and risk sources. An experimental study by Knapp (1991) tends to establish a connection between audit tenure and competence. As perceived by US audit committee members, the likelihood that the auditor will detect an anomaly increases in the first years of his mandate, and then decreases gradually, reaching its weakest level after 20 years of service. Hence, as a whole, a negative association is commonly assumed between auditor tenure and the quality of audit.

In reaction, and without mandating auditor rotation, stock market authorities generally impose a rotation of engagement partners. In the US, this rotation was reduced from seven to five years by the Sarbanes-Oxley Act, 2002. In May 2002, the European Commission recommended a rotation of engagement partners every seven years. Most member states have followed this recommendation, including the French market authority as from September 2002.

2.4 Concept of Audit Committee

The Bank of Britain defined audit committee as a sub-committee of the board of directors that is responsible to follow-up financial matters in the company and to assist the board in making financial decisions, in which the board may not have the time and expertise to know its details. Additionally, it was defined by the American Institute of Certified Public Accountants (AICPA)

as the management by which can mitigate and curb illegal behavior used by the senior management of companies.

In Nigeria, section 359(3) & (4) of the Company and Allied Matters Act (CAMA, 1990) requires every public traded firm to establish an audit committee. It is the committee's responsibility to assist in the oversight of the integrity of the company's financial statements, compliance with legal and other regulatory requirements, assessment of the qualification of independence of external auditors and performance of the company's internal audit function and ensure that there are other means of obtaining sufficient assurance of regular review or appraisal of the system of internal controls in the company, oversee management's process for the identification of significant fraud risks across the company and ensures adequate prevention, detection and reporting mechanisms are in place. In addition to these statutory functions, the Security and Exchange Commission Code of Corporate Governance (2011) provides that the audit committee shall assist in the oversight of the integration of company's financial requirements.

The definition of audit committee varies according to the objectives, functions and responsibilities assigned to them. Arens, Elder and Besaly (2009) define audit committee as "a group of persons selected from members of the board of directors who are responsible for retraining independence of auditors". AL-Thuneibut (2006) defines audit committee as "that which is composed of non-executive directors in the establishment". The second definition may be defective as audit committee does constitute only non-executive directors, most audit committees consist of executive and non-executive directors. Therefore, the primary objective behind the establishment of audit committee is to improve quality of audit and check the board of directors thereby increasing the quality of financial reporting.

The audit committee plays a critical role in providing oversight and serving as a check and balance on a company's financial reporting system. The committee provides independent review and oversight of a company's financial reporting processes, internal controls, and external auditors. It provides a forum separate from management in which auditors and other interested parties can candidly discuss concerns. By effectively carrying out its functions and responsibilities, the audit committee helps to ensure that management properly develops and adheres to a sound system of internal controls, that procedures are in place to objectively assess management's practices and internal controls, and that external auditors, through their own review, objectively assess the company's financial reporting practices.

There is no specific precise definition for audit committee, but it differs by different professional environment, as well as interests, Hussain andHanefah (2012). This study suggest audit committee to be a selected number of members of a company's board of directors whose responsibilities include helping auditors remain independent of management.

2.5 Empirical Studies on Audit Quality Attributes and Earnings Management

Extensive academic literature studied earnings management in response to incentives to achieve specific objectives. Managers purposely select preferred accounting policy or arranged transactions to accomplish the business anticipations. Quality audits are expected to reduce earnings management because they ensure that financial reporting reflects the 'true' economic condition and operating findings of the entity. Watts and Zimmerman (1986) document that quality audit specifically provides shareholders and potential shareholder reasonable assurance that management's financial statements are free from material misstatements. The following section will provide an overview of the link between audit quality and earnings management

using the selected variables of auditor industry specialization,auditor tenure, auditor independence, andauditor size, as well as audit committee.

2.5.1 Auditor Industry Specialization and Earnings Management

Auditor industry specialization is a major topic in auditing literature. The importance of industry specialized auditors is attributable to the research findings that auditor industry expertise is associated with better auditor performance and higher audit quality. The research of the association between auditor industry specialization and audit quality is extensive. One stream of literature argues that auditor industry specialization will help constrain earnings management while others suggest otherwise;

Chen, Wu and Zhou (2016) investigate the relationship between auditor brand name, industry specialization, and earnings management as measured by discretionary accruals. The study concludes that industry specialist auditors constrain income-increasing earnings management; this implies that the employment of industry specialist auditors can further enhance the credibility of financial reporting.The study was conducted in Taiwan covering a period from 2008 to 2012, out of a population of 5,355 firms; a sample of 450 firms taken seems too small to represent the entire population.

On the contrary, Okoh (2015) examines the impact of industry specialist auditor- measured by the market share approach, on earnings management. Using a total sample of 48 firm-year observation and multiple regressions to estimate the relationship between the variables, the study suggest that auditor industry specialization has no significant impact on earnings management. Data on 8 chemical and paints firms was used to provide this evidence, considering the fact that there are about 191 firms listed on the NSE within 2006 and 2012 (which is the period covered

by the study), it is difficult to generalize or extend the finding as the sample seem small and might be inadequate.

A study conducted by Balsam *et al*. (2013) use a sample of 50,000 firm-year observations over the period between 2001 and 2009, measured auditor industry specialization based on both the market share approach and the portfolio share approach, and measured earnings management using the modified Jones model. They conclude that firms dealing with industry specialist auditors have lower manipulation than firms dealing with non-specialist auditors. Even though the research was conducted using a large sample size of about 5,600 firms, the modified Jones model used have been criticized by some accounting literatures like Kothari et al. (2005) as involving severe measurement error in discretionary accruals since the model disregards the performance of the firm.

Further, Lawrence, Minutti-mezaand Zhang (2011) find no association between industry specialization and absolute discretionary accruals. The majority of these findings suggest that auditors with industry expertise are more likely to detect misrepresentations and irregularities than auditors without industry expertise. The linkage is based on the assumption that industry-specialist auditors have the industry expertise that results in better understanding of the client's business. Therefore, the constraints of accruals-based manipulation from industry specialist auditors may motivate managers to alter real activities during the year with the specific objective of meeting earnings targets. Chi et al. (2011) find that auditor industry expertise is associated with greater real earnings management. Thus, it is expected that with the increase of auditor industry specialization the accruals earnings manipulation will diminish.

Based on a sample of 4,422 clients audited by Big6 auditors for the period 1989-1998, Krishnan (2003) investigates the effect of industry specialist auditors on the level of earnings management. He measured auditor industry specialization using both the market share and portfolio share approach, and stresses that absolute discretionary accruals are higher with firms audited by non-specialist audit firms than firms audited by specialist audit firms.

Similarly, PricewaterhouseCoopers (2002) argue that audit quality depends on numerous factors including an auditor's knowledge and understanding of the company being audited and the industry in which it operates. Furthermore, Zhou and Elder (2003) and Rusmin (2010) argue that the discretionary accruals of industry specialist auditor clients are lower than discretionary accruals of non-industry specialist clients. These arguments thus suggest that auditors with industry expertise are more likely to detect misrepresentations and irregularities than auditors without industry expertise, especially in the early years of the audit assignment. The linkage is based on the assumption that industry specialist auditors have the industry expertise that results in better understanding of the client's business.

2.5.2 Auditor Tenure and Earnings Management

There is no consensus on the association between the duration of the audit firm-client relationship and financial reporting quality. One view state that long auditor tenure might lead to excessive familiarity between the auditor and the client which can threaten the auditor's objectivity, could lead to poor audit quality and high level of earnings management, as the auditor are more lenient towards financial reporting of accruals. Others are of the view that a long tenured auditor can minimize manipulations of discretionary accruals because as the audit firm tenure increases, the auditors are better at evaluating the risk of material misstatements as

they gain more experience and better insights into the client's operations, business strategies and internal controls over financial reports.

Mohammed and Wan-Hussin (2015) investigate the association of audit firm tenure and earnings management, based on a sample of 525 Malaysian public listed firms between 2008 and 2009 employing two alternative measures of discretionary accruals models- discretionary current accruals by Ashbaugh et al (2003) and modified Jones model (1995) - without controlling for performance, find that extended audit firm tenure is not detrimental to the quality of financial reporting.

Similarly, Okoh (2015) investigates the effect of auditor tenure on earnings management. Using a total sample of 8 listed chemical and paints firms between 2006-2011 and document that auditor tenure as a measure for audit quality does not show significant impact on earnings management, that is, auditor tenure does not significantly reduce earnings management in the chemical and paints industry.

Based on a sample of 10,458 firm-year observation for the period 1990-2009, Li andGuo (2015) used tax expenses as a measure of last minute earnings management. They provide insight on the necessity for mandatory auditor rotation and its impact on audit materiality assessment. They suggest that the longer an auditor serves the same client, the more likely the auditor will stress the qualitative factor of audit materiality. They further document that regulations, such as SEC's guidance, enhances the positive of audit firm tenure on reducing the probability of using tax expense reduction as a last minute earnings management.

Okolie (2014) examine the effect of auditor tenure and independence on earnings management. Based on a sample of 342 firm-years observations for the fiscal years 2006-2011 and a

multivariate analysis conducted, the study concludes that auditor tenure exert significant effect on earnings management of quoted companies in Nigeria. However, the study adopted the Jones model (1991) which has been widely criticized by scholars such as Aljifri (2007) for ignoring manipulation of sales because it assumes that all sales in the period are non-discretionary and estimates are stationary and, overtime, may generate a survivorship bias.

Similarly, Jibril (2014) conduct a study on the relationship between auditor independence-measures by auditor tenure, on earnings management. Based on the OLS regression analysis conducted on data from the Nigerian banking sector between 2006-2012, the study found a significant positive impact of auditor tenure on earnings management via discretionary accruals indicating that as auditor tenure increases, the greater the possibility of not detecting earnings management. Furthermore, Davis, Soo and Trumpeter (2000) measured auditor tenure as the length of audit engagement and estimated discretionary accruals using the modified Jones model (1995), using a sample of 855 firms for the period 1981-1998. They find that absolute discretionary accruals increase with auditor tenure. These findings are consistent with the claim that long standing auditors are more likely to allow client management greater latitude in recording accruals to manage earnings.

Myers, Myers and Omer (2003) find that auditor tenure reduces abnormal accruals. Their study runs counter to the assumption that the quality of audit deteriorates as the length of auditor-client relationships increases, their findings imply that auditors with longer tenure actually restrict management discretion in the reporting of earnings. In France, auditors are chosen for six financial years. As a result, their mandate (and to some extent their tenure) enjoys a strong legal protection, initially enforced to limit opinion-shopping opportunities. However, this legal protection may have adverse effects. By reducing the role of market forces, it accelerates the

formation of economic rents and the auditor's economic dependence on his client (Pigé, 2000). If this is so, the capacity of the auditor to resist managerial pressure is likely to deteriorate over time. In Nigeria, the Institute of Chartered Accountants of Nigeria (ICAN) suggests that audit tenure should not exceed three years but this does not appear to be enforced.

2.5.3 Auditor Independence and Earnings Management

Audit Independence is an auditor's unbiased mental attitude in making decisions throughout the audit and financial reporting process. Independence refers to the quality of being free from influence, persuasion or bias, the absence of which will greatly impair the value of the audit service and the audit report (Sweeney, 1994). An auditor's lack of independence increases the possibility of being perceived as not being objective. This means that the auditor will not likely report a discovered breach (DeAngelo, 1981). Prior studies assert that high fees paid by a company to its external auditor increase the economic bond between the auditor and the client and thus, the fees may impair the auditor's independence (Frankel et al, 2002; Li & Lin, 2005). The impaired independence may result in poor audit quality and allows for greater earnings management and lower earnings quality (Okolie, 2013). However, empirical studies on the relationship between auditor independence and earnings management provide contradictory results.

Okolie (2014) examine the impact of auditor independence- measured by the quantum of audit fees received, on accrual-based earnings management- measured as a residual of the modified Jones model (1995), using a sample of 57 quoted companies in Nigeria between 2011-2016. Based on the results of the various tests conducted on the OLS multiple regression models, Okolie (2014) find that the effect of audit fees on the level of discretionary accruals was positive

and significant. This suggests that higher audit fees may result in impairment of auditor independence and hence create greater opportunities for accruals manipulation.

A study conducted by Jibril (2014) to investigate the effect of auditor independence on earnings management, based on a sample of 15 deposit money banks in Nigeria over a period between 2006-2012 using the ordinary least square, finds that auditor independence is compromised via total audit fees, that is, excessive total audit fees and/or non-audit fees have significant positive effect on earnings management.

Haribar,Kravet and Wilson (2010) provide evidence of positive association between unexplained audit fees and low earnings quality from a sample of US firms. This implied higher earnings management and lack of independence. They conclude that auditors increase audit hours and audit fees in cases where they perceived client's accounting quality to be poor and this improves accounting quality. Chung andKallapur (2003) use the ratio of client audit fees to total audit firm revenues and client non-audit fee to total audit firm revenues as a measures of auditor independence and study their relation with earnings management. They report no association between audit fee and the absolute value of discretionary accruals measured using the modified Jones model. They conclude lack of association between non-audit fees and earnings management.

Still in the US, Koh*et al*., (2008) investigate the impact of non-audit services provided by auditors on auditor independence and on clients' financial reporting quality. Their results contradict economic bonding hypothesis, that is, they indicate no statistical association between non-audit fees and absolute discretionary accruals. They also report a significant negative association between non-audit fees and the likelihood of reporting a small earnings surprise and a

positive correlation between non-audit services and earnings informativeness. They conclude that audit and or non-audit fees do not impair auditor independence, and consequently do not result in earnings management.

Hope and Langli (2007) investigate whether higher levels of audit and non-audit fees impair auditor objectivity using a sample of Norwegian private firms, by examining the relationship between abnormal or unexplained auditor fees and auditors' propensity to issue a going concern opinion. Their results indicate that there is no evidence that fees have the negative consequences on auditor independence/objectivity. That is, they find no evidence of a negative association between audit and/or non-audit services and the likelihood of issuing going concern qualification.

Frankel, Johnson and Nelson (2002) study the association between non-audit fees, audit fees and earnings management via discretionary accruals and the likelihood of firms meeting earnings benchmarks to draw inferences on auditor independence, in a sample of 3,074 US firms for the year 2001, find a positive relationship between non audit fees and small earnings surprises and the magnitude of discretionary accruals. While the result on total audit fees indicates that there is no association between total audit fees and earnings management, (and also) audit fees are significantly negatively associated with earnings management. Their results suggest that auditors' independence is compromised when clients pay high non-audit fees relative to total fees, and conclude that clients are more likely to manage earnings via accruals if they also pay their auditors high amount of non-audit fees.

Similarly, Ashbaugh, Lafond and Mayhem (2003) examine the relationship between discretionary accruals and audit fee ratio and total fees in a sample of US firms, after controlling

for firm performance, and like Frankel *et al.* (2002), they find that there is no statistically significant association between discretionary accruals and total audit fees. They also document a positive correlation between the absolute value of firm's discretionary current accruals and fee ratio. In their second test, they indicate no association between fee ratio and the likelihood of firms reporting small earnings increases and a negative association between total fees and the likelihood of firms reporting small earnings increases. Contrary to Frankel *et al.* (2002), Ashbaugh*et al.*, (2003) find no significant association between either the fee ratio or total fees, and firms meeting analysts' forecasts. They conclude that there is a little evidence supporting the claim that auditors violate their independence as a result of clients paying high fees.

In the same vain, Basioudis, Geiger andPapanastasiou (2002) examine the assertion that auditors may act more favorable towards those clients from whom they receive higher non-audit fees. Based on a sample of 643 companies listed on the London stock exchange, they studied the audit reports rendered to financially distressed companies in the UK and their relative magnitude of non-audit fees (and audit fees) paid by such companies to their auditors. They find that financially distressed companies with high non-audit fees are less likely to receive a going-concern modified audit opinion, that is, a significant adverse effect of non-audit fees on auditor reporting judgment.

Contrary to the above results, Defond, RaghunandanandSubramanyam (2002) find no association between non-audit fees and impaired auditor independence in a study of non-audit fees and the issuance of a going concern audit opinion in the US. They conclude that auditor's concern over the loss of reputation and litigation costs is responsible for the reported result. They add that the costs of loss of reputation and litigation outweigh the expected benefits from compromising independence.

In Craswel, Stokes and Laughton (2002), it was shown that auditor independence may be related to audit fee dependence. Using the propensity of auditors to issue qualified audit reports measured by the ratio of audit fee to total national fee of the audit firm, Craswel*et al,* (2002) argue that in a situation where public disclosure of audit fee and non-audit fee is mandatory, auditors may be willing to issue qualified audit opinions irrespective of the economic importance of the client to the auditor and issue unqualified opinion if otherwise.

Dee, Lulseged and Nowlin (2002) study the relationship between audit and non-audit fees and earnings management. Their results provide evidence that client firms paying high proportions of non-audit fees have income-increasing discretionary accruals and total accruals, suggesting that auditors may be less diligent in curbing income-increasing earnings management for client firms from which they receive high proportion of non-audit fees, which give auditors economic incentives to compromise their independence, resulting in lower quality audits and thus, higher earnings management.

2.5.4 Auditor size and earnings management

There is a growing body of research that has provided evidence for the use of auditor size as a proxy for audit quality including DeAngelo (1981),Hoitash, Markelerich and Baragato(2007), Chen, Lin and Zhou (2005) and Dye (1993).

More evidence has recently been revealed that big audit firms constitute a constraint on earnings management. Okolie (2014) examines and document evidences that are consistent with the association and effects which audit firm size exerts on earnings management of companies quoted on the Nigerian Stock Exchange. Based on a sample of 342 companies-year observations

for the fiscal years 2006-2011, the results showed that audit firm size exerts significant negative relationship with real cash-based earnings manipulation by quoted companies in Nigeria. Even though there's no agreed matrix for the measurement of audit quality, it is widely agreed that the quality audit is a combination of different elements; therefore, the use of auditor size alone as proxy for audit quality may be insufficient to generalize findings of the study.

Lin and Hwang (2010) using various factors for audit quality (auditor size, industry specialist auditor, audit fees, auditor tenure), find that only Big4 auditors and industry specialist auditors have a significant negative relationship with earnings management. However, this research did not mention the techniques and tools adopted for the research to ascertain the appropriateness of the findings. Charles, Stanley& Charlotte (2010) investigate whether audit quality, as proxied by auditor size, can constrain earnings management practices in the US. Using a total sample size of 1,251 companies listed on the American stock exchange, they stressed that the manipulation of earnings is less likely to be managed with firms audited by Big4 auditors while clients with non-Big4 auditors show signs of manipulation. However the study did not indicate the period covered.

Kim, Chung and Firth (2003) document that only when managers have incentives to prefer income-increasing accrual choices are Big4 auditors more effective than non- Big4 auditors in monitoring opportunistic earnings management. Contrary to conventional wisdom, they find Big4 auditors less effective than non- Big4 auditors when both managers and auditors have incentives to prefer income-decreasing accrual choices and thus no conflict of reporting incentives exist between the two parties.

Krishnan (2003) examines whether there is a linkage between audit quality and the practice of discretionary accruals. Based on a sample of 18,658 firm-year observation between 1989-1998 using the panel multiple regression technique, finds that clients of Big4 auditors report lower amounts of discretionary accruals than clients of non- Big4 auditors.

Teoh and Wong (1993) find higher earnings response coefficients for clients audited by Big-4 firms compared to those audited by non-Big4 firms. Francis et al (1999) and Krishnan (2003) demonstrate that Big4 auditors are better at constraining client earnings management compared to non-Big4 auditors. In addition, Zhou and Elder (2001) find that Big-4 auditors are associated with less earnings management. Becker et al (1998) investigate the effect of audit quality on earnings management based on a multivariate sample of 10,881 firms for the period 1989-1992 finds that discretionary accruals of firms with Big4 auditors are higher than the discretionary accruals of firms with non- Big4 auditors.

DeAngelo (1981) theoretically analyze the relation between the quality of audit and auditor's size and argued that large audit firms have more clients and their total fees are allocated among those clients. Defining the auditor's independence by the conditional probability that the auditor will disclose any misstatement in financial statements given that this misstatement was already discovered, DeAngelo (1981) assert that large audit firms are more independent and therefore, provide higher quality of audit because they have a greater reputation at stake. In addition, because larger firms have more resources at their disposal, they can attract more highly skilled employees. In considering auditor size and earnings management, DeAngelo (1981) argues that Big-4 auditors provide better quality audits than non-Big4 auditors. This position has gained extensive support of subsequent empirical studies including Palmrose (1988); Deis and Giroux

(1992); Becker, *et al (*1998); Francis and Krishnan (1999); Krishnan and Schauer (2000); Kim, Chung and Firth (2003); Krishnan (2003).

Summing up, DeAngelo (1981); Palmrose (1988); Deis& Giroux (1992); Becker, *et al* (1998); Francis and Krishnan, (1999); Krishnan and Schauer (2000); Kim, Chung and Firth, (2003); Krishnan, (2003); Salim, (2012); and Okolie (2014) agree on audit quality as a function of audit firm size and demonstrate that larger audit firms possess greater capacity to measure audit quality. Wooten (2003) found that detecting material misstatements is influenced by how well the audit team performs the audit, which in turn is influenced by the quality control system and management resources of the audit firm. The major proposition of this study is that earnings management depends on audit quality and audit quality is a function of audit firm size.

2.5.5 Audit Committee and Earnings Management

Audit committee plays a vital role in monitoring management with the aim of ensuring the quality of financial reporting and corporate accountability, and protecting the interest of the shareholders. The effectiveness of audit committee is dependent on a number of components including the audit committee composition, authority, resource and diligence. Many professional and regulatory bodies worldwide have recommended that members of audit committee should have specific qualification and expertise to discharge their responsibility. The code of corporate governance best practice in Nigeria requires that audit committee should be largely independent, highly competent, and possess high level of integrity. Many prior literatures exist on the relationship between audit committee and earnings management using various constructs of audit committee effectiveness such as audit committee size, composition, meetings and financial expertise (Bala, 2014; Mohammed &Aiman, 2014; Chandrasegaram et al 2013; Hussain

&Hanefah, 2012). The results of studies examining audit committee characteristics and earnings management are inconclusive.

Bala (2014) examines the relationship between audit committee characteristics and earnings management using a sample of 8 listed food and beverages firms in Nigeria over a period of 6 years from 2007 to 2012. After running the OLS regression, the dependent variable was generated using 2 steps regression in order to determine the discretionary accruals of the sample. He employed the multiple regressions to run the data of the study using random model. The results from the analysis revealed significant association between audit committee characteristics and earnings management of the firms. The study concludes that; larger audit committee members are more effective in monitoring the activities of management and are also better at maintaining the financial reporting process; audit committee members with financial knowledge are better in detecting and reducing the likelihood of aggressive earnings management; audit committee independence might not guarantee that managers would not manipulate earnings; and more audit committee meetings will not result in more effective monitoring. However, the study is limited to just 8 out of the 21 listed food and beverages firms in Nigeria as at 31 December, 2012.

Mohammed andAiman (2014) examine the association between audit committee effectiveness, audit quality and earnings management practices of 40 most active companies listed on the Egyptian stock exchange between 2007 and 2010. The results of the univariate and multivariate analysis indicate that audit committee independence and audit quality have significant negative association with discretionary accruals- as a proxy for earnings management. However, the sample of 40 most active Egyptian listed companies may not be representative of the average activities of the Egyptian firms.

Chandrasegaram et al (2013) study 153 Malaysian public listed companies to ascertain the impact of audit committee characteristics on earnings management. Using the modified Jones model (1995) to determine the discretionary accruals, the study focuses on cross sectional data for year 2011, in line with the post 2007 Malaysian code on corporate governance but before amendments were made to the code in 2012. The study revealed that audit committee characteristics, that is, frequency of audit committee meetings, audit committee size, and independence of audit committee are not a sufficient deterrent to the practice of earnings management in Malaysian public listed companies. However, this study focuses on data of just one year (year 2011). Since it is not a study that is made up of several years, there might be lack of sufficient data to determine the categorical impact of audit committee on earnings management. Hence, a longitudinal study of this phenomenon would be more beneficial.

Ku andShamsul (2013) examine women representation on boards and audit committees in restricting earnings management based on data for the year 2008 from 639 companies listed on the Bursa Malaysia. The results from the regression analysis shows negative correlations between discretionary accruals and women in audit committee, this implies that audit committee with female representation are less likely to engage in earnings management. The study provide evidence that companies with women on audit committee would perform better in mitigating earnings management, this support the argument that women are more ethical and stricter than men when it comes to financial matters.

Using panel data regression for 270 Malaysian Shariah compliant companies, Hussain andHanefah (2012) investigate the effect of four independent variables of audit committee characteristics on earnings management- estimated by the modified Jones model (1995). Furthermore, 3 data estimations namely pooled OLS, fixed and random effects models were

conducted. The results indicate that; audit committee size is not a significant factor in mitigating earnings management practice; audit committee independence is an effective monitoring mechanism to reduce opportunistic earnings management practice; there is an insignificant negative relationship between the proportion of accounting expertise among the audit committee members and earnings management; and an insignificant positive relationship between percentage of muslim directors in audit committee to the total number of directors on the board and earnings management.

Nelson and Jamil (2011) examine audit committees and financial reporting quality following the government transformation program in Malaysia. They took the sample of 20 out 33 Firms for the period of 2003 to 2009. They also adopted Dechow and Dichev (2002) model to measure earnings quality. The study revealed a positive relationship between audit committee size and earnings management. This finding was supported by that of Rahman and Ali (2006) who used discretionary accruals as proxy for earnings management and Ismail, Iskandar and Rahmat (2008).

Sharma and Kuang (2013) investigate on voluntary audit committee characteristics incentives and earnings management in New Zealand. The study used a sample of 194 Firms out of 393 Firms listed in New Zealand Stock Exchange Market for the period 2004. They adopted performance adjusted modified Jones model in measuring discretionary accruals. Their finding showed a significant positive relationship between audit committee size and earnings management. This is consistent with the proposition by Jensen (1993) that streamlined boards can operate more effectively in maintaining management and can be extended to audit committee size. This indicates that smaller audit committee is more efficient in monitoring the financial reporting process, thereby reducing earnings management.

In Contrast, Yang and Krishman (2005) who analyze the relationship between audit committees and earnings management in US using a sample of 896 firm-year observations for the period 1996-2000, found that audit committee size has negative significant relationship with earnings management. This is in consonance with the work of Lin *et al.* (2006) .This makes some researchers to posit that lager audit committees are better at maintaining the financial reporting process. For instance, Beasley and Salterio (2001) found that as audit committee size increases, Firms are more likely to include outside directors on the committee beyond the mandated minimum requirements, which enhances audit effectiveness. As such, it can be said that audit committee size constrains earnings management.

Collier and Gregory (1999) study audit committee activity and agency cost in UK. Using a sample from UK major companies listed on the London Stock Exchange for the year 1991, they documented that the frequency of audit meetings is assumed to increase the effectiveness of monitoring. This indicates that the more often an audit committee meets the more likely it is to have fewer financial problems (Williams 1994).

2.6 Theoretical Framework

Agency theory

Essentially, agency theory justifies the key function of auditing as a mechanism for mitigating information asymmetries among related parties. The demand for audit of companies' accounts is created by the agency problems which are related with the separation of corporate ownership from control. The agency problem arises from the existence of asymmetric information in the principal – agent contracts (Jenson & Messier, 2000). Some studies (Trueman and Titman, 1988; Schipper, 1989; Warfield, Wild & Wild, 1995) have shown that the existence of information asymmetry between corporate management and company shareholders is a necessary condition

for earnings management and financial statements manipulations. The audit of a company's accounts is a monitoring or control mechanism that diminishes information asymmetry and protects the interests of the principal.

According to the agency theory propounded by Jensen andMeckling (1976), different parties involved in a situation with same goals will have different motives; this means that there will always be partial goal conflict among parties. This conflict of interest between owners and managers give birth to the managers' opportunistic tendencies such as earnings management, as such, managers needs to be monitored. In as much as owners have more to lose should something bad happen as a result of managers' opportunism, shareholders have every reason to monitor managers and limit divergences from the entity's interest by establishing an appropriate monitoring mechanism, such as audit.

Agency theory clearly acknowledges the existence of incentive for managers to manage earnings. Since management performance is mostly measured based on the company's performance which is in turn measured by earnings, management could use earnings to mislead shareholders and the public by showing a different image of the company's earnings. Sun &Rath (2008) point out that the two fundamental conditions for the existence of earnings management are information asymmetry and agency cost. These conditions occur as a result of the separation of ownership and control and the fact that managers have a comparative information advantage over shareholders thereby creating conducive atmosphere for managers to use accounting discretions in order to promote their own interest at the expense of shareholders, and also communicate the company's performance to investors. Because of these opportunistic behaviors of managers, it has however, become very important for companies to employ mechanisms that will serve as a watchdog on behalf of the shareholders. Corporate governance mechanisms,

which auditing is an integral part, serve as an effective tool in achieving the expectation and needs of the shareholders, thereby providing better monitoring of management.

Corporate governance has embraced agency theory for a long time as a framework. Thus, it seems to be a major theory in understanding the conflict of interest between principals and agents, particularly those resulting from possible issues of opportunism. The effect of agency theory on corporate governance studies can be observed in prior studies which provide contradictory results in the examination of the relationship between earnings management and audit quality. Therefore, using agency theory as a framework to explain how external auditing reduces earnings management is an appropriate approach for the current study.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This section presents details on the research design and methodology adopted in this study. The section describes the population of the study, the various sources and methods of data collection, the techniques employed in data analysis together with the justification for the method and techniques used. Finally, the variable measurement, model specification and justification for control variables were explained in detail.

3.2 Research Design

The study adopts the ex post facto design since the researcher has no direct control over the variables being studied. The ex post facto design helps in investigating possible causes and relationships by first identifying some existing consequences and then analyzing data to establish possible causal factors. Since the research is quantitative, it is based on the positivism paradigm. The design of the study is considered appropriate in determining the extent to which audit quality attributes constrains earnings management.

3.3 Population, Sample Size and Sampling Technique

The population of the study consists of the thirty eight (38) manufacturing firms in the Nigerian stock exchange as at 31 December, 2007 which is not delisted as at 31 December, 2016. The justification for choosing the listed manufacturing firms in Nigeria is due to the strategic nature of the sector in the development of the Nigerian economy, and the fact that large scale multi-faceted earnings management in Nigeria is mostly associated with the manufacturing firms (such as Cadbury Nigeria PLC). In addition, the financial reports from the sector seem to have all the data required by the Performance Matched Discretionary Accruals model. The study intends to

take the entire population, but due to data availability, filtering was used as sampling criteria to select only firms that have published financial statements for the period of the study (2007 to 2016). As a result of the filtering criteria, 28 firms were qualified, the rest were filtered because they did not provide required information necessary for the study. (See appendix A)

3.4 Sources and Methods of Data Collection

Data collected for this study comes solely from secondary source. Data was extracted from the Published Audited Annual Reports and Accounts of the listed manufacturing firms in Nigeria from 2007-2016. Information regarding each of the variables was extracted specifically from the auditors' report, notes to accounts and five years financial summary. Secondary data are useful not only for finding out information to answer research questions, but also for providing a better understanding of and explaining research problems (Ghauri and Gronhaug, 2010). The data is quantitative and panel in nature.

3.5 Techniques of Data Analysis

The preliminary analysis involves descriptive statistics and correlation analysis of data. Two steps regression was used in determining the level of earnings management of listed manufacturing firms in Nigeria adopting the performance matched discretionary accruals by Kothari et al. (2005). The residuals for the Kothari model after inserting the sampled firms' data was used to represent earnings management in the second regression model specified for the study. However, the residual determines the accrual quality; the larger the residuals, the higher the earnings management and the lower the earnings quality. For robustness purposes, the regression analysis was conducted using the panel multiple regression technique. The analysis was conducted using Stata 13.

3.6 Robustness Tests

A series of preceding robustness tests such as the multicolinearity test, heteroscedasticity test, hausman specification test, langrange multiplier test, and normality test were conducted on the data. Normality test was conducted using the skewness and kurtosis to check for outlayer.

The multi colinearity test was used to check the correlation among independent variable using the tolerance value and the variance inflation factor (VIF), since the study employs a linear-multiple regression model, the association between the independent variables is unavoidable, where the association is highly correlated, multi Colinearity exists, this is tested to see the possibility of its existence or otherwise.

Since the study deals with observations that constitute different sizes, some in units while others in ratios, and heteroscedasticity often occur when there is a large difference among the sizes of the observations, Breusch–Pagan test/Cook–Weisberg test was used to test the presence or absence of heterogeneity.

The hausman specification test was used to decide a more effective model between the fixed and random effect. The langrange multiplier test was also estimated to check the panel effect, and the random effect result was interpreted for the analysis. These series of tests enable the researcher ascertain the validity of the results for the study.

3.7 Variable measurement

3.7.1 Earnings management

This study employed the use of discretionary accruals to measure earnings management (EM) as the dependent variable, since accruals includes a wide range of management techniques available to managers when preparing financial statements (Farouk, 2014). The practice of using

discretionary accruals to proxy for EM is consistent with the extant EM literature (for example, Johnston & Rock, 2005; Abd- Nasser, 2012; Okolie, 2014; Bala, 2014; Okoh, 2015). In order to estimate discretionary accruals, this study adopts the Performance Matched Discretionary Accruals by Kothari (2005), which is shown below;

$EM_{it}=TAC_{it}/TA_{it-1} – [\alpha_1 (1/TA_{it}-1) + \alpha_2(\Delta REV_{it} - \Delta REC_{it})/TA_{it-1} + \alpha_3(PPE_{it}/TA_{it-1}) + \alpha_4(ROA_{it-1})]$

Where;

EM_{it} = discretionary accruals of firm i at time t

TAC_{it}= total accruals of firm I at time t

Where TAC= Earnings – cash flow from operations

TA_{it-1} = the book value of total asset of firm I at the end of year t-1,

$\Delta REV_{it}/TA_{it-1}$ = sales revenuesof firm i in year t less revenues in year t-1 scaled by TA_{it-1}

$\Delta REC_{it}/TA_{it-1}$=sales receivables of firm i in year t less receivables in year t-1 scaled by TAit-1

PPE_{it}/TA_{it-1} = gross property, plant and Equipmentof firm I at the end of year t scaled by TA_{it-1}

ROA_{it-1} = return on asset of firm I at the end of year t-1

ε_{it}= the residual or error term.

The study used the absolute measure of discretionary accruals as a proxy for the extent of earnings management.

3.7.2 Explanatory Variables

With regards to the independent variables, because there is no agreed-upon metric for the audit quality construct, it was measured using four different measures (auditor size, auditor independence, auditor industry specialization, and auditor tenure). The moderator variable (audit committee) was also measured using three different measures as follows;

Table 3.1 Measurements of Variables

Type	Variable	Proxies	Symbol	Measurements
Independent Variable	Audit quality	Auditor size	AS	A dummy variable that takes the value of 1 if company is audited by Big4(see Appendix B) and 0 if otherwise.(Okolie, 2014 and Salim, 2012)
		Auditor independence	AI	The natural log of firm's total audit fees. (Okolie, 2014 and Tobi, Osasrere& Emmanuel, 2016)
		Auditor industry specialization	ASP	A dummy variable that takes the value of 1 if market share ≥ 20%, and 0 if otherwise. (Salim, 2012 and Mahdi, Momeni& Ali, 2011)
		Auditor tenure	AT	Length of auditor-client relationship: A dummy variable that takes the value of 1 if 3 years+ and 0 if otherwise. (Okolie, 2014 and Salim, 2012)
Moderator variable	Audit committee (ACC)	Audit committee gender	ACG	The number of women in audit committee divided by the total number of audit committee members.
		Audit committee meetings	ACM	The number of meetings held by the audit committee during the year. (Bala, 2014)
Control variable		Firm size	TA	The natural log of firm's total assets (Okolie, 2014; Salim, 2012 and Zhou & Elder, 2001)
		Leverage	LEV	Ratio of total debt to total assets (Mahdi, Momeni& Ali, 2011)

3.8 Model Specification

A linear multiple regression analysis was used to test the association between the dependent variable of discretionary accruals and the independent variables of audit quality as well as the moderating effect of audit committee on the relationship. The following model was estimated:

$$EM_{it} = \beta_0 + \beta_1 AS_{it} + \beta_2 AI_{it} + \beta_3 ASP_{it} + \beta_4 AT_{it} + \beta_5 AS_{it} * ACC_{it} + \beta_6 AI_{it} * ACC_{it} + \beta_7 ASP_{it} * ACC_{it} + \beta_8 AT_{it} * ACC_{it} + \beta_9 TA_{it} + \beta_{10} LEV_{it} + \varepsilon_{it}$$

Where;

EM = Earnings management

AS = Auditor size

AI = Auditor independence

ASP = Auditor industry specialization

AT = Auditor tenure

ACC = Audit committee = ACG + ACM

ACG = Audit committee gender

ACM = Audit committee meetings

TA = Firm size

LEV = Leverage

CHAPTER FOUR
DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter covers the preliminary analysis of data using descriptive statistics and correlation analysis. This is followed by the presentation, interpretation, analysis and discussion of regression result for the purpose of testing the hypotheses formulated in chapter one. The chapter ends with a discussion of post estimation results conducted in order to validate the result.

4.2 Descriptive Statistics

The sample descriptive was first presented in Table 4.1 where the minimum, maximum, mean, standard deviation, Skewness and kurtosis of the data for the variables used in the study were described.

Table 4.1: Descriptive Statistics

Variables	Min	Max	Mean	Std. Dev.	Skewness	Kurtosis
EM	0.0011	0.753	0.186	0.162	1.338	4.741
AS	0.000	1.000	0.757	0.429	-1.199	2.438
AI	0.015	2.459	0.297	0.515	2.808	10.338
AT	1	3	2.561	0.685	-1.258	3.215
ASP	0	1	0.346	0.477	0.645	1.416
ACG	0	60	9.162	12.647	1.419	4.830
ACM	2	6	3.493	0.703	0.025	3.464

Source: Descriptive Statistic from STATA 13

Table 4.1 show that earnings management has mean a value of 0.186 for all the manufacturing firms within the study period implying that, majority of the firms have less than 20% earnings management in their organization. The minimum value for earnings management stood at 0.0011 implying that there was a firm that the level of earnings management was at its lowest, while the maximum value stood at 0.753. Its standard deviation is lower than the mean which indicate that the mean do represents the true average for the firms. The skewness and kurtosis values were also out of range implying that the data is not normally distributed.

Auditor size has a mean of 0.757 which is closer to one, and this implies that on average, most of the firms use one of the big four as their external auditors. The minimum value for Auditor size

is zero (0) which connotes that there are some firms that do not make use of the big four auditors. while the maximum value is one (1) which represent the value assign to firms that engage the big 4 auditors. The lower value of standard deviation to mean implies that the average value for audit firm size represent the true mean. The skewness value and kurtosis values shows that the data is not normally distributed implying that it is far from being mesokurtic in nature.

The auditor tenure has an average a mean value of 0.297, it recorded a minimum value of 0.015 and a maximum value of 2.459, this result is presented as a natural logarithm of audit fees. However before transformation of the data, the auditor independence, as represented by audit fees, has an average value of about twelve million. This shows that on average all the firms within the manufacturing sectors pay twelve million naira to their auditors. The minimum value of audit fee stood at one million naira and twenty eight thousand naira when converted from the natural logarithm. Meanwhile, the maximum fee paid to auditors within the manufacturing firms was twenty three million naira and eighty hundred and eight thousand, two hundred Naira. The high standard deviation of auditor independence over the mean is an indication that the mean is not good representative of the average. The skewness and kurtosis figures show that the data is not normally distributed.

The auditor tenure stood at an average of 2.561 for all the manufacturing firms within the study period. It however, recorded minimum number of year an auditor spent in an organization to be one, while the highest tenure for an auditor for all the manufacturing firms is three years. This connotes that, none of the firms within the manufacturing sector that exceeded the limit of three years set for an external auditor. The value of standard deviation figure being far less than the mean value implies that the mean for auditor tenure represented the true average. The skewness and kurtosis figure tolerably implies that the data for is normally distributed.

The auditor industry specialization has an average of 0.346, indicating that, on the average, most of the audit firms audit more than 20% of the manufacturing firms in Nigeria. The minimum value for audit industry specialization which is zero for all firms means that some of the audit firms do not audit up to 20% of the entire manufacturing firms, while the highest value for audit industry specialization stood at one implying that some of the audit firms audit up to 20% and more of the manufacturing firms in Nigeria. The higher value of standard deviation over the mean for auditor industry specialization can be said to be an indication that the mean is deviated from its actual. The skewness value implies that the data is not normally distributed except for the Kurtosis value that is out of range.

For audit committee gender, the minimum value is zero which means that within the audit committee there could be certain years in which there are no women on the committee, however, their maximum value stood at 0.60 which implies that in the audit committee within the manufacturing sector, women occupies about 60% of the population of the audit committee in a certain year. The mean value suggest that about 9% of women are represented in the audit committee in manufacturing firms within the study period. Their standard deviation value still depict that the mean value for audit committee gender do not represent the true mean. The skewness and kurtosis value do imply higher than normal. This shows that the data are not normally distributed for audit committee gender.

Consequently, audit committee meetings has a minimum value of two (2) and a maximum value of six (6), which implies that the lowest and highest numbers of times meetings were held is two times and six times respectively. While on average, the entire audit committee members in the manufacturing sectors held meetings for at least four times within the year. The standard deviation value substantiate the fact that the average value as recorded above represent the true

mean for the firms. The skewness and kurtosis conducted for normality indicate that the data is normal.

4.3 Correlation Matrix

Table 4.2 displays the correlation values between dependent and the independent variables and the relationship between the independent variables themselves. The values were obtained from the Spearman correlation of two-tailed significance.

Table 4.2 Correlation Matrix

	EM	AS	AI	AT	ASP	ACG	ACM
EM	1						
AS	-.2191*	1					
AI	.1579*	-.1961*	1				
AT	.0235	.0823	-.0903	1			
ASP	-.0996	.2723*	.2000*	.1674*	1		
ACG	-.3433*	.3391*	-.2660*	.0089	.0689	1	
ACM	-.0444	.1438*	-.2611*	.0149	-.0950	.1711*	1

Source: Correlation Matrix from STATA 13
*. Correlation is significant at 0.01 and 0.05 level (2-tailed)

Table 4.2 indicates that earnings management is about 22% negatively correlated with auditor size. This implies that the relationship between them is inverse and at a reasonable level. However, audit independence is16% positively correlated with earnings management of listed manufacturing firms in Nigeria. This level of relationship can be regarded as not too weak correlation.

The relationship between auditor tenure and earnings management is positive and about 2%. This implies that the level of correlation is weak. Also, auditor industryspecialization recorded about less than 10% negative and weak correlation with earnings management of firms. Furthermore, the magnitude of correlation between audit committee gender and earnings management is negative and just about 34% implying very significant correlation between the two variables. The

correlation between audit committee meetings and earnings management can also be regarded to be weak as it record only 4% negative correlation between the two variables.

Auditor size has negative association with audit independence which is significant. Auditor size is also found to be insignificantly and positively associated with audit tenure to the tune of 8%. This indicates that the two variables move in the same direction but at different magnitude. However, the association between auditor industryspecialization, audit committee gender, audit committee meetings and auditor size are positive and significantly associated. The variables recorded a level of relationship to the tune of 27%, 34%, 14% respectively for auditor industryspecialization, audit committee gender and audit committee meetings against auditor size.

Audit committee gender and audit committee meetings have a significant but negative correlation with auditor independence except for audit tenure which has negative but weak relationship with auditor independence. However, it is documented that auditor industryspecialization has significant but positive association with the auditor independence.

In the record shown by the correlation matrix, it is documented that the association between auditor tenure and auditor industryspecialization is positive and significantly correlate. Meanwhile, the correlation between audit committee gender, audit committee meetings and auditor tenure is found to be positive but weak relationship. The relationship between auditor industryspecialization and audit committee gender and audit committee meetings is weak, but while, audit committee gender is positively related with auditor industryspecialization, audit committee meetings is negatively correlated with auditor specialization.

Also, the relationship between audit committee gender and audit committee meetings is positive and significant. This implies that both variables move in the same direction but at different magnitude of association.

To establish presence of harmful multicollinearity, the variance inflation factor (VIF) and tolerance test was carried out since they are two advanced measures of assessing multicollinearity between the explanatory variables. The variance inflation factor and tolerance estimated were consistently smaller than ten and one respectively, which indicate that multicollinearity is not a threat to the validity and inferences to be made from the result (Cassey& Anderson, 1999).

4.4. Robustness Tests

In order to make better the validity of all statistical inferences to be drawn for the study, this section presents the result of robustness test conducted. The robustness test included multicollinearity, heteroscedasticity and Hausman specification:

a. **Multicolinearity Test:** The mean VIF of 1.69 implies that multicollinearity is not a problem (Cassey& Anderson, 1999).
b. **Heteroscedasticity Test:** The result obtained from the heteroscedasticity test for the models recoded a significant probability value of 0.0000 which indicate that heteroscedasticity was present.
c. **Normality Test of Error Term**: The result obtained from the kdensity test conducted indicates that the error term is tolerably mild even though the unmoderated model residuals were skewed to the left and the moderated model is skewed to the right. The

outcome from this test necessitated the adoption of Robust Ordinary Square Regression Result and subsequently its interpretation.

4.5 Presentation of Regression Results

This section presents the regression result of the dependent variable and the independent variables of the study (auditor size, auditor independence, auditor tenure, and auditor specialization). Also, the moderated variables with audit committee are presented. The presentation was followed with the interpretation, analysis and the discussion of the results. The section also discusses the cumulative results.

Table 4.3: Summary of Regression Result (Robust OLS**)**

	Before moderation			***After Moderation***		
Variables	***Coeff***	***T-Stat***	***Prob***	***Coeff***	***T-Stat***	***Prob***
Constant	*.285*	*4.54*	*0.000*	*.276*	*4.69*	*0.000*
AS	*-.074*	*-2.57*	*0.011*	*.128*	*1.32*	*0.190*
AI	*.059*	*1.94*	*0.054*	*.384*	*3.91*	*0.000*
AT	*.003*	*0.21*	*0.831*	*-.077*	*-2.22*	*0.028*
ASP	*.013*	*0.60*	*0.549*	*-.082*	*-2.40*	*0.017*
ACC	*-.003*	*-4.32*	*0.000*	*-.003*	*-4.32*	*0.000*
ASAC		*-.064*	*-2.14*	*0.034*		
AIAC		*-.104*	*-4.01*	*0.000*		
ATAC	*.025*	*2.77*	*0.006*			
ASPAC	*.034*	*3.44*	*0.001*			
TA	*.011*	*0.59*	*0.555*	*.006*	*0.33*	*0.741*
LEV	*-.001*	*-1.71*	*0.089*	*-.001*	*1.31*	*0.193*
R^2		*0.1516*			*0.2146*	
F-Stat		*7.85*			*7.38*	
F-Prob		*0.0000*			*0.0000*	

Source: Result output from STATA 13

4.6 Discussion of Findings and Implications

The cumulative R^2 of 0.1516 for unmoderated model signified that only 15.16% of the total variation in earnings management of listed manufacturing firms in Nigeria is accounted for by auditor size, auditor independence, auditor tenure and auditor industry specialization, total assets

and leverage used in the study. While under the moderated model, it recorded an R^2 of 0.2146 which implies that the earnings management of manufacturing firms is explained by their auditor size, auditor independence, auditor tenure, auditor industry specialization, and moderated audit qualities with audit committee, total assets and leverage of firms.

Upon comparison between R^2 of unmoderated and moderated models, it indicates that the interaction between audit quality and audit committee accounted for significantly more variance than when they are used as single variables. This is because the R^2 of unmoderated model increased by 6.3% after being moderated with audit committee. This implies that the moderated model explains the behavior of earnings management better in relation to the independent variables of the study when compared with the unmoderated model. On the other hand, the test for significance difference which recorded F- value of 5.60 and p-value of 0.0000 (see Appendix) indicates that there was a significant difference found between the unmoderated and moderated model.

Their F-statistics values of 7.85 and 7.38 for unmoderated and moderated models which are significant at 1% and 1%respectively. This indicates that audit quality, audit committee and earnings management model is fit. It implies that for any change in audit quality and audit committee of listed manufacturing firms in Nigeria; their earnings management is affected directly. The probability values of the F-statistics implies that there is a 99.9 percent probability that the relationship among the variables (dependent and independent) are not due to mere chance and as such the independent variables reliably predict the dependent variable of the study.

i. Auditor Size and Earnings Management

From Table 4.3, it was observed that the t-value for audit firm sizeis -2.57 before the moderation, while the coefficient is -0.074. The variable is statistically significant 1% level.After moderation audit firm size record a t-value of -2.14 and a coefficient of -.064 which is significant at 5%. This result signifies that audit firm size has significant negative effect on earnings management of listed manufacturing firms in Nigeria. The implication of this is that when big four auditor firm is used, the manufacturing firms' earnings management decreases.

This findings documented may be as a result of the fact that big 4 auditor firm have the resources, technical know-how and required expertise to detect any misstatement within an organization. This advantage the big four has over the non-big four is expected to enhance the quality of earnings in listed manufacturing firms in Nigeria.

Following the result on auditor size indicating that the variable is significant in influencing the earnings management of firms, there is, therefore, sufficient evidence of rejecting null hypothesis oneof the study which presumes that auditor size has no significant effect on earnings management of listed manufacturing firms in Nigeria. This is in line with the findings of Okolie (2013) who documented that auditor size exerts significant negative relationship with earnings management. It is also consistent with Lin and Hwang (2010), Charles, Stanley & Charlotte (2010), Krishnan (2004), Krishnan (2003), DeAngelo (1981), and contradicts Kim, Chung & Firth (2003), who find Big4 auditors less effective than the non-Big4.

ii. Auditor Independence and Earnings Management

The regression results revealed that audit independence as shown in Table 4.3 has a t-value of 1.94 and a coefficient value of 0.059 which is significant at 5% in the model before moderation.

However, for the moderated auditor independence, it recorded a t-value of -4.01 and a coefficient value of -0.104 which is also significant at 1% level. This indicates that auditor independence has significant but positive effect on earnings management of listed manufacturing firms in Nigeria. After moderation, auditor independence is found to have negative effect on earnings management of firms.

This implies that for every increase in the level of auditors' independence, their earnings management decreases significantly by the coefficient value if audit committee also increases. But without a commiserate increase in audit committee, an increase in the level of auditors' independence also increases the level of earnings management. This finding is not surprising because an auditor whose independence is guaranteed is expected to carry out his/her audit function without fear or favor. This enables them to make sure that management do not engage in activities that are detrimental to the wealth of the shareholders and thus would mostly likely push management.

The above result provides enough justification for rejecting the second null hypothesis of the study which states that auditor independence has no significant effect on earnings management of listed manufacturing firms in Nigeria. This contradicts the findings of Okolie (2014) and Jibril (2014) who showed that higher audit fees may result in impairment of auditor independence and hence create greater opportunities for accruals manipulation.

iii. Auditor Tenure and Earnings Management

Auditor tenure before moderation has a t-value of 0.21, and a coefficient value of 0.003 for firms but it is neither significant at 1%, 5% nor 10% level. This shows that audit tenure has insignificant positive effect on earnings management before moderation, while after moderation,

it was documented that auditor tenure have significant positive effect on earnings management of listed manufacturing firms in Nigeria. This is substantiated with the values recorded from the regression result, where the t-value is 2.77 and coefficient value of 0.025 with a significant value of 1%. This connote that an increase in tenure of auditors in manufacturing firms in Nigeria, result to significant increase in the level of earnings management. This result may be as a result of the fact that when external auditors stay longer in an organization, they may become more familiar and tend to compromise standard which may eventually lead to poor financial reporting quality.

The above result serve as a basis of rejecting the forth hypothesis formulated which states that auditor tenure has no significant effect on earnings management of manufacturing firms in Nigeria. This is consistent with Okolie (2014)(a), Jibril (2014), David, Soo& Trumpeter (2000) who found that auditor tenure exert significant positive effect on earnings management. That is, as auditor tenure increases, the greater possibility of not detecting earnings management. This result contradict Mohammed and Wan-Hussin (2015), Li and Guo (2015), Myers, Myers & Omer (2003), and Okoh (2015) who document that auditor tenure does not have any significant impact on earnings management.

iv. Auditor Industry Specialization and Earnings Management

The result in respect of audit specialization as shown on Table 4.3 for both unmoderated and moderated models have a t-values of 0.60 and 3.44, and a coefficient values of 0.013 and0.034respectively; the variable is insignificant before the moderation but however significant at 1% level. This indicates that auditor industry specialization has positive effect on earnings management but is significant after moderation. This implies that for every increase in the specialization of auditors, there will be significant increase in the level of earnings management

of listed manufacturing firms in Nigeria. This output is not surprising because the morespecialized an auditor becomes, the more they get use to the various techniques through which earnings management could be perpetrated and as such could assist the firms in covering those anomalies.

This also provides basis for rejecting the null hypothesis which states that auditor industry specialization has no significant effect on earnings management of listed manufacturing firms in Nigeria. This is in line with Chi et al (2011) who find that auditor industry expertise is associated with greater earnings management. This result is not consistent with the findings of Chen, Wu & Zhou (2016), Balsam et al (2013), Krishnan (2003) who found that industry specialist auditors constrain earnings management. It also contradicts Okoh (2015) who suggest that auditor industry specialization has no significant impact on earnings management.

v. Audit Committee and Earnings Management

From the Table above, it was observed that the t-value for audit committee before and after the moderation has negative and significant effect on earnings management of listed manufacturing firms in Nigeria. This implies that a point increase in the level of audit committee in manufacturing firms bring about a point decrease in the level of earnings management. This is substantiated by the same figure produced under the moderated and moderated model where t-value is -4.32 and coefficient is -0.003 and significant at 1% for both. This is result corroborate the function expected of an audit committee in ensuring credibility and transparency of the financial reports devoid of misstatement.This is consistent with the results of Ku and Shamsul (2013) which shows a negative correlation between earnings management and audit committee. This result is also in line with Mohammed and Aiman (2014), Collier and Gregory (1999), and

contradicts Bala (2014), Chandrasegaram et al (2013) who reveal that audit committee characteristics are not a sufficient deterrent to the practice of earnings management.

Arguing based on the R^2 from the model before moderation and the model after moderation. The differences between the two R2 is 6.3% which shows an increment from the model before moderation. This implies that the model after moderation explain the earnings management of the manufacturing firms better than the model before moderation. This also further indicates that audit committee serves as a good moderator on the relationship between audit quality and earnings management. In addition, to substantiate the significant role of the audit committee as a good moderator, the test of significance difference show that there is a significant difference between the unmoderated model and moderated models as shown by significance value of 1%. Following this, the study reject the null hypothesis which state that audit committee has no significant effect on the relationship between audit quality and earnings management of listed manufacturing firms in Nigeria.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study investigates the moderating effect of audit committee on the relationship between audit quality attributes and earnings management of listed manufacturing firms in Nigeria. The explanatory variables used in the study are auditor size, auditor independence, auditor industry specialization, and auditor tenure, while audit committee is used as a moderator in the study.

The study is based on the fact that previous empirical investigation on the relationship between audit qualities attributes and earnings management only examines their direct relationship without considering other factors that could moderate the relationship between the two extreme variables. Also, over the years, most studies in this area were focused on the banking and other sectors of the economy and none has specifically covered the listed manufacturing firms in Nigeria despite the diversity of the firms in this sector and the role they play in the economic development of Nigeria. It was based on this that five objectives were examined and null hypotheses were formulated and tested in chapter four of the study.

The chapter two covers the conceptual issues relating to the major concepts used in the work, which include earnings management, audit quality attributes, and audit committee. This was followed with the empirical review of literature where studies relating to the study were carefully reviewed and gaps created. The chapter ends with review of theoretical framework which forms the basis upon which the study was conducted.

Chapter three discusses the ex-post facto design adopted for the study due to its relevance in addressing cause and effect relationship. The population of the study consists of the thirty

eightlisted manufacturing firms in the Nigeria Stock Exchange as at 31 December, 2007 which is not delisted as at 31 December, 2016, and the sample size is 28 firms that qualified the filtering criteria used due to data availability. The data collected covers the period from 2007 – 2016. The secondary source of data was employed and was extracted from the annual reports and accounts of the firms. Multiple regression technique was used with the aim of explaining and predicting empirically effect of audit quality attributes on earnings management. Post estimation tests were carried out in order to validate the result.

The results revealed that all the explanatory variables are significant in explaining earnings management in manufacturing firms in different direction and at different magnitude. Among the significant explanatory variables, auditor size and moderated auditor independence have significant negative effect on earnings management in manufacturing firms. While moderated auditor tenure and moderated auditor industry specialization has positive and significant effect on earnings management in manufacturing firms. Also the audit committee used as moderator proves that it is a better moderator of the relationship between audit quality and earnings management because of the increase in the coefficient of determination (R^2).

5.2 Conclusions

As a result of the foregoing discussion and analysis in chapter four, this study concludes as follows;

i. Firms that employ the service of the big4 audit firms engage less in earnings management because of their size and the reputation they have built over the years.
ii. Every increase in the level of auditor independence leads to a decrease in the firms' earnings management if audit committee also increases.

iii. An increase in the tenure of auditors in the listed manufacturing firms in Nigeria, results in increase in their level of earnings management.

iv. When auditor industry specialization is moderated with audit committee, every increase leads to a significant increase in the level of earnings management of listed manufacturing firms in Nigeria.

v. The regression result shows that audit committee serves as a better moderator and it does moderate the relationship between audit quality attributes and earnings management significantly.

5.3 Recommendations

Base on the findings and conclusion, the study proffer the following recommendations to be implemented by the management of the manufacturing firms, owners and the regulators. They should ensure that:

i. In order to enhance the quality of earnings, the listed manufacturing firms in Nigeria should engage the services of the big4 auditor, because they have the resources, technical know-how and required expertise to detect any misstatement within the organization. However, in order to avoid the Big4 monopoly, joint audit with non-Big4 firms is recommended as this will promote competition and also give the non-Big4 firms a chance.

ii. Audit fee should be increased to guarantee the independence of the auditors in order to carry out their audit function without undue influence. An auditor whose independence is guaranteed will most probably make sure that management does not engage in activities that are detrimental to the wealth of the shareholders. However, audit fees must be determined as a function of balance sheet size and turnover.

iii. In order to avoid familiarity threat, auditor tenure should not be elongated, as long standing auditors may become more familiar with management and tend to compromise standard which may eventually lead to poor financial reporting quality.

iv. Auditors who specialize within that same industry should be engaged to carry the auditing of the organization in order to ensure financial statement free of errors and misstatement.

5.4 Limitations of the Study

i. The study concentrated on listed manufacturing firms in Nigerian Stock Exchange. Therefore, the outcome of the research may differ and not be applicable to other sectors of the economy.

ii. The data for non-audit fees (as used by some researchers to measure auditor independence), were not available in the financial statement of these firm, this compelled the researcher to measure auditor independence using the audit fees alone.

iii. The study also limits itself to the use of only four proxies of audit quality.

5.5 Suggestions for further studies

Based on the limitation highlighted above, this study has paved way for further researchers in these areas as follows.

i. Other studies should consider the use of the entire companies listed on the Nigerian stock exchange and not just the listed manufacturing firms in Nigeria to make the findings more amenable to generalization.

ii. Others researchers should consider the use of non-audit fees to proxy audit independence in addition to the audit fee used by this study.

iii. Interested researchers should consider the inclusion of audit opinion and timeliness in their audit quality proxies.

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APPENDIX A
POPULATION AND SAMPLE OF THE STUDY

S/N	POPULATION	YEAR OF LISTING	SAMPLE USED
1	7Up Nigeria	1986	Selected
2	African paints Nigeria	1996	
3	Aluminium extrusion	1986	Selected
4	Ashaka cement	1990	Selected
5	Avon crown caps	1994	Selected
6	B.O.C. gases Nigeria	1979	Selected
7	Berger paints Nigeria	1974	Selected
8	Beta glass company	1986	Selected
9	Cadbury Nigeria	1976	Selected
10	Cement company of northern Nigeria	1993	
11	Champion breweries	1983	
12	Chemical and allied	1978	Selected
13	Cutix	1987	Selected
14	Dangote sugar	2007	Selected
15	Dn Meyer	1979	Selected
16	Evans medical	1979	
17	First aluminium Nigeria	1992	Selected
18	Flour mills of Nigeria	1979	Selected
19	Glaxosmithkline Nigeria	1979	Selected
20	Greif Nigeria	1986	
21	Guinness Nigeria	1965	Selected
22	International breweries	1995	
23	Lafarge cement wapco Nigeria	1979	Selected
24	May & bakers Nigeria	1994	Selected
25	Morison industries	1978	
26	Nascon allied	1992	Selected
27	Neimeth international pharm	1979	Selected
28	Nestle Nigeria	1979	Selected
29	Nigeria breweries	1973	Selected
30	Nigeria ropes	1978	
31	Nigerian enamelware	1979	Selected
32	Nigerian northern flour	1978	
33	Nigerian-German chemicals	1979	Selected
34	Pharma-Deko	1979	Selected
35	Premier paints	1999	
36	PZ cussons	1974	Selected
37	Unilever Nigeria	1973	Selected
38	Vita form	1978	Selected

APPENDIX B
BIG4 AUDIT FIRMS

Big4 are the four largest professional services network in the world, offering audit, assurance services, taxation, management consulting, advisory, actuarial, and corporate financial and legal services. They are;

1. Deloitte
2. Ernst & young
3. KPMG
4. Pricewaterhouse coopers

APPENDIX D
STATA 13 RESULTS

```
. xtset id year, yearly
       panel variable:  id (strongly balanced)
        time variable:  year, 2007 to 2016
                delta:  1 year
```

```
. xtsum em as ai at asp acg acm ta lev
```

Variable		Mean	Std. Dev.	Min	Max	Observations
em	overall	.1864921	.1615123	.001145	.752979	N = 280
	between		.1106393	.0461476	.4530183	n = 28
	within		.1193316	-.2435387	.6003325	T = 10
as	overall	.7571429	.4295772	0	1	N = 280
	between		.3447259	0	1	n = 28
	within		.2636931	-.1428571	1.657143	T = 10
ai	overall	.2973924	.5151878	.0149073	2.45867	N = 280
	between		.4363628	.018443	1.765028	n = 28
	within		.2848654	-1.243933	1.648769	T = 10
at	overall	2.560714	.6851415	1	3	N = 280
	between		.2643501	2	3	n = 28
	within		.6338707	.8607143	3.560714	T = 10
asp	overall	.3464286	.4766837	0	1	N = 280
	between		.3824697	0	1	n = 28
	within		.2926826	-.5535714	1.246429	T = 10
acg	overall	9.161994	12.64747	0	60	N = 280
	between		8.568243	0	26.5	n = 28
	within		9.429317	-17.338	61.49533	T = 10
acm	overall	3.492857	.7032585	2	6	N = 280
	between		.4180453	2.3	4	n = 28
	within		.5704805	1.892857	5.592857	T = 10
ta	overall	1.70731	.8626864	-.136064	3.371905	N = 280
	between		.8650966	.0371761	3.06749	n = 28
	within		.1413412	1.276063	2.123645	T = 10
lev	overall	59.09837	17.90442	14.8354	94.6193	N = 280
	between		13.67277	34.52548	76.23721	n = 28
	within		11.81754	7.019213	95.93411	T = 10

```
. su em as ai at asp acg acm ta lev, detail
```

EM

Percentiles		Smallest		
1%	.001145	.001145		
5%	.0134665	.001145		
10%	.018162	.001145	Obs	280
25%	.060194	.005767	Sum of Wgt.	280
50%	.1524004		Mean	.1864921
		Largest	Std. Dev.	.1615123
75%	.261009	.738726		
90%	.3905794	.7505924	Variance	.0260862
95%	.5031658	.752979	Skewness	1.338282
99%	.7505924	.752979	Kurtosis	4.741772

AS

Percentiles		Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	280
25%	1	0	Sum of Wgt.	280
50%	1		Mean	.7571429
		Largest	Std. Dev.	.4295772
75%	1	1		
90%	1	1	Variance	.1845366
95%	1	1	Skewness	-1.199334
99%	1	1	Kurtosis	2.438402

AI

Percentiles		Smallest		
1%	.0158062	.0149073		
5%	.0214847	.0157326		
10%	.026598	.0158062	Obs	280
25%	.0394282	.016277	Sum of Wgt.	280
50%	.1003397		Mean	.2973924
		Largest	Std. Dev.	.5151878
75%	.2858524	2.42106		
90%	.6239554	2.45867	Variance	.2654184
95%	1.77848	2.45867	Skewness	2.808973
99%	2.45867	2.45867	Kurtosis	10.33806

AT

	Percentiles	Smallest		
1%	1	1		
5%	1	1		
10%	1	1	Obs	280
25%	2	1	Sum of Wgt.	280
50%	3		Mean	2.560714
		Largest	Std. Dev.	.6851415
75%	3	3		
90%	3	3	Variance	.4694188
95%	3	3	Skewness	-1.257855
99%	3	3	Kurtosis	3.215217

ASP

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	280
25%	0	0	Sum of Wgt.	280
50%	0		Mean	.3464286
		Largest	Std. Dev.	.4766837
75%	1	1		
90%	1	1	Variance	.2272273
95%	1	1	Skewness	.6454863
99%	1	1	Kurtosis	1.416653

ACG

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	280
25%	0	0	Sum of Wgt.	280
50%	0		Mean	9.161994
		Largest	Std. Dev.	12.64747
75%	16.6667	50		
90%	25	50	Variance	159.9586
95%	33.3333	50	Skewness	1.41973
99%	50	60	Kurtosis	4.830403

ACM

	Percentiles	Smallest		
1%	2	2		
5%	2	2		
10%	3	2	Obs	280
25%	3	2	Sum of Wgt.	280
50%	4		Mean	3.492857
		Largest	Std. Dev.	.7032585
75%	4	5		
90%	4	5	Variance	.4945725
95%	4	6	Skewness	.0253643
99%	5	6	Kurtosis	3.463636

TA

	Percentiles	Smallest		
1%	-.136064	-.136064		
5%	-.084263	-.136064		
10%	.249433	-.136064	Obs	280
25%	1.155012	-.115272	Sum of Wgt.	280
50%	1.704078		Mean	1.70731
		Largest	Std. Dev.	.8626864
75%	2.44429	3.267512		
90%	2.739374	3.267539	Variance	.7442278
95%	2.900166	3.3251	Skewness	-.3402692
99%	3.267539	3.371905	Kurtosis	2.389732

LEV

	Percentiles	Smallest		
1%	14.8354	14.8354		
5%	32.46402	14.8354		
10%	35.0873	14.8354	Obs	280
25%	41.5699	17.55004	Sum of Wgt.	280
50%	62.46197		Mean	59.09837
		Largest	Std. Dev.	17.90442
75%	71.94396	92.419		
90%	81.5737	94.6193	Variance	320.5682
95%	84.0485	94.6193	Skewness	-.298043
99%	94.6193	94.6193	Kurtosis	2.21417

```
. sktest em as ai at asp acg acm ta lev
```

Skewness/Kurtosis tests for Normality

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	joint adj chi2(2)	joint Prob>chi2
em	280	0.0000	0.0002	51.86	0.0000
as	280	0.0000	0.0117	40.77	0.0000
ai	280	0.0000	0.0000	.	0.0000
at	280	0.0000	0.3687	39.10	0.0000
asp	280	0.0000	.	.	.
acg	280	0.0000	0.0001	55.66	0.0000
acm	280	0.8590	0.1182	2.49	0.2881
ta	280	0.0202	0.0042	11.92	0.0026
lev	280	0.0407	0.0000	19.23	0.0001

```
. swilk em as ai at asp acg acm ta lev
```

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
em	280	0.87773	24.507	7.484	0.00000
as	280	0.98888	2.228	1.874	0.03046
ai	280	0.55810	88.569	10.490	0.00000
at	280	0.97086	5.840	4.128	0.00002
asp	280	0.99463	1.077	0.173	0.43121
acg	280	0.91427	17.182	6.653	0.00000
acm	280	0.98943	2.118	1.755	0.03959
ta	280	0.96208	7.600	4.745	0.00000
lev	280	0.96814	6.385	4.337	0.00001

```
. spearman em as ai at asp acg acm ta lev, star (0.05)
(obs=280)
```

	em	as	ai	at	asp	acg	acm	ta
em	1.0000							
as	-0.2191*	1.0000						
ai	0.1579*	-0.1961*	1.0000					
at	0.0235	0.0823	-0.0903	1.0000				
asp	-0.0996	0.2723*	0.2000*	0.1674*	1.0000			
acg	-0.3433*	0.3391*	-0.2660*	0.0089	0.0689	1.0000		
acm	-0.0444	0.1438*	-0.2611*	0.0149	-0.0950	0.1711*	1.0000	
ta	-0.1653*	0.4276*	-0.8553*	0.1496*	-0.0380	0.3060*	0.3529*	1.0000
lev	-0.0673	0.0635	0.0524	-0.1518*	-0.0220	0.1543*	-0.1584*	-0.1029

	lev
lev	1.0000

```
. reg em as ai at asp acc ta lev
```

Source	SS	df	MS		
Model	1.10340867	7	.15762981	Number of obs	= 280
Residual	6.17464732	272	.022700909	F(7, 272)	= 6.94
				Prob > F	= 0.0000
Total	7.27805598	279	.026086222	R-squared	= 0.1516
				Adj R-squared	= 0.1298
				Root MSE	= .15067

em	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
as	-.0742948	.0276093	-2.69	0.008	-.1286498	-.0199398
ai	.059642	.0281199	2.12	0.035	.0042817	.1150023
at	.0030404	.0137717	0.22	0.825	-.0240722	.0301531
asp	.0125361	.0210445	0.60	0.552	-.0288948	.053967
acc	-.0028406	.000793	-3.58	0.000	-.0044019	-.0012793
ta	.0110191	.0174394	0.63	0.528	-.0233143	.0453525
lev	-.0009295	.0005403	-1.72	0.087	-.0019932	.0001342
_cons	.2849444	.0553948	5.14	0.000	.1758873	.3940016

```
. hettest

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

         chi2(1)      =    39.16
         Prob > chi2  =   0.0000
```

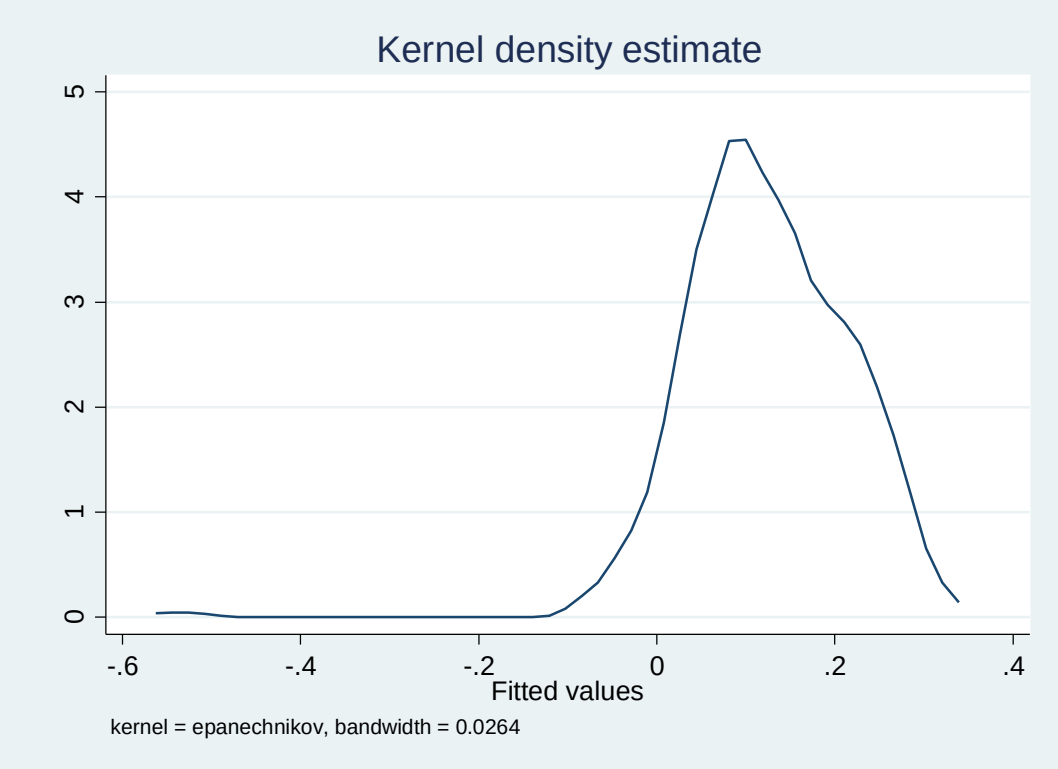
```
. vif
```

Variable	VIF	1/VIF
ta	2.78	0.359475
ai	2.58	0.387687
as	1.73	0.578425
acc	1.26	0.795343
asp	1.24	0.808536
lev	1.15	0.869478
at	1.09	0.913912
Mean VIF	1.69	

```
. reg em as ai at asp acc ta lev, robust

Linear regression                               Number of obs =     280
                                                F(  7,   272) =    7.85
                                                Prob > F      =  0.0000
                                                R-squared     =  0.1516
                                                Root MSE      =  .15067
```

em	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
as	-.0742948	.0288631	-2.57	0.011	-.1311183	-.0174713
ai	.059642	.0307733	1.94	0.054	-.0009421	.1202261
at	.0030404	.014209	0.21	0.831	-.0249332	.0310141
asp	.0125361	.0209153	0.60	0.549	-.0286404	.0537126
acc	-.0028406	.000657	-4.32	0.000	-.004134	-.0015471
ta	.0110191	.0186226	0.59	0.555	-.0256436	.0476819
lev	-.0009295	.0005444	-1.71	0.089	-.0020012	.0001422
_cons	.2849444	.0627229	4.54	0.000	.1614604	.4084285




```
. reg em as ai at asp asac aiac atac aspac acc ta lev
```

Source	SS	df	MS		
Model	1.56216793	11	.142015266	Number of obs	= 280
Residual	5.71588806	268	.021327941	F(11, 268)	= 6.66
				Prob > F	= 0.0000
				R-squared	= 0.2146
				Adj R-squared	= 0.1824
Total	7.27805598	279	.026086222	Root MSE	= .14604

em	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
as	.1284887	.0940073	1.37	0.173	-.0565981	.3135754
ai	.3841493	.1113773	3.45	0.001	.1648634	.6034351
at	-.0765751	.031657	-2.42	0.016	-.1389032	-.0142471
asp	-.0821555	.0460896	-1.78	0.076	-.1728993	.0085882
asac	-.0638664	.0277951	-2.30	0.022	-.1185909	-.0091419
aiac	-.1042131	.0341088	-3.06	0.002	-.1713683	-.0370578
atac	.0257031	.0085138	3.02	0.003	.0089407	.0424654
aspac	.0343605	.0130278	2.64	0.009	.0087107	.0600103
acc	-.002915	.0007879	-3.70	0.000	-.0044663	-.0013637
ta	.0062655	.0177328	0.35	0.724	-.0286478	.0411789
lev	-.0006994	.000531	-1.32	0.189	-.0017448	.000346
_cons	.2760103	.0538621	5.12	0.000	.1699636	.3820569

```
. hettest

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

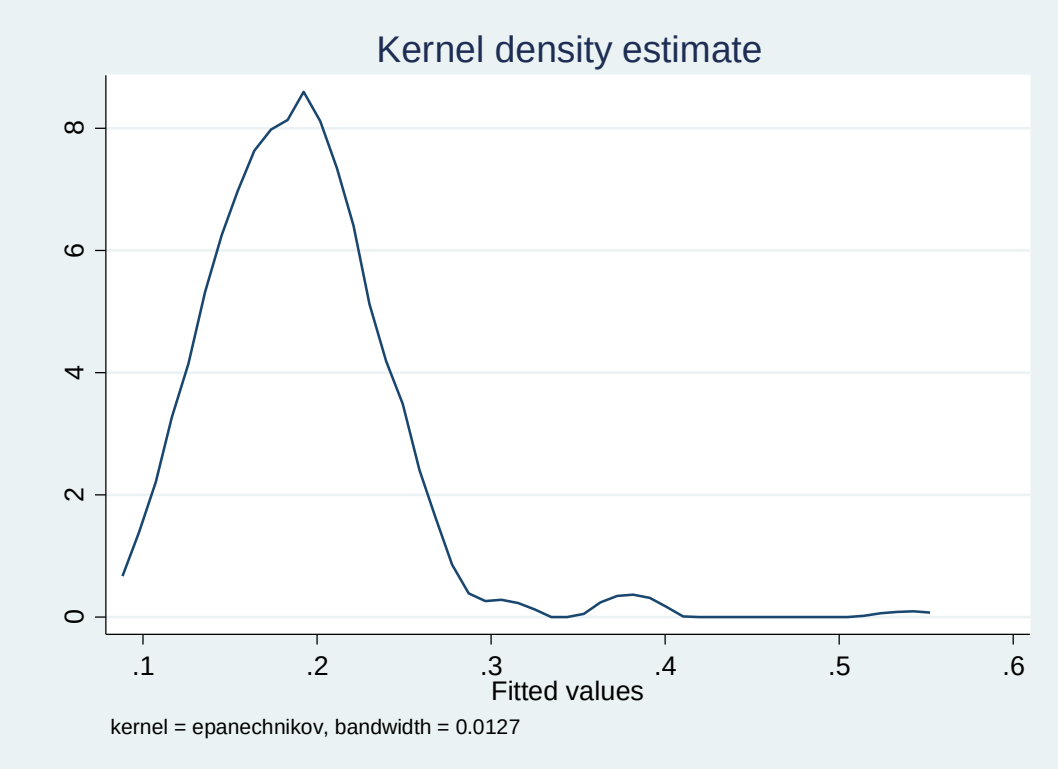
         chi2(1)      =    43.22
         Prob > chi2  =   0.0000

. reg em as ai at asp asac aiac atac aspac acc ta lev, robust

Linear regression                                      Number of obs =     280
                                                       F( 11,   268) =    7.38
                                                       Prob > F      =  0.0000
                                                       R-squared     =  0.2146
                                                       Root MSE      =  .14604
```

em	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
as	.1284887	.0976876	1.32	0.190	-.063844	.3208214
ai	.3841493	.0982282	3.91	0.000	.1907522	.5775464
at	-.0765751	.0345616	-2.22	0.028	-.144622	-.0085283
asp	-.0821555	.0341683	-2.40	0.017	-.1494281	-.014883
asac	-.0638664	.029893	-2.14	0.034	-.1227214	-.0050114
aiac	-.1042131	.0259704	-4.01	0.000	-.155345	-.0530811
atac	.0257031	.0092869	2.77	0.006	.0074186	.0439876
aspac	.0343605	.0100026	3.44	0.001	.0146667	.0540542
acc	-.002915	.0006751	-4.32	0.000	-.0042441	-.0015859
ta	.0062655	.0189077	0.33	0.741	-.0309609	.043492
lev	-.0006994	.0005354	-1.31	0.193	-.0017535	.0003547
_cons	.2760103	.0588686	4.69	0.000	.1601066	.391914

```
.
```




```
. testparm as ai at asp asac aiac atac aspac, equal

 ( 1)  - as + ai = 0
 ( 2)  - as + at = 0
 ( 3)  - as + asp = 0
 ( 4)  - as + asac = 0
 ( 5)  - as + aiac = 0
 ( 6)  - as + atac = 0
 ( 7)  - as + aspac = 0

       F(  7,   268) =    5.60
            Prob > F =    0.0000
```