AUDIT QUALITY AND EARNINGS MANAGEMENT OF LISTED CHEMICAL AND PAINTS FIRMS IN NIGRERIA

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BEING A RESEARCH DISSERTATION SUBMITTEDTO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTERS OF SCIENCE DEGREE (M.Sc) IN ACCOUNTING AND FINANCE

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DECLARATION

I hereby declare that this dissertationentitled “Audit Quality and Earnings Management of Listed Chemical and Paints Firms in Nigeria”is a product of my research effort under the supervision of Professor A.U. Sanda and Dr. Ahmad Bello. All works and articles consulted have been duly acknowledged in the bibliography. In addition, I take responsibility for any error found in the work. No part of this work has been previously submitted for the award of higher degree in any institution of learning in Nigeria

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CERTIFICATION

Thisdissertationentitled "Audit Quality and Earnings Management of Listed Chemical and Paints Firms in Nigeria" written by Vivian Ngozi OKOH meets the regulations governing the award of the degree of Masterof Science in Accounting and Finance, Ahmadu Bello University, Zaria, Nigeria. It is therefore approved for its contribution to knowledge and literary presentation.

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DEDICATION

This research work is dedicated specially to Almighty God for Hisabundantblessings and protection.

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ABSTRACT

This study examines the relationship between audit quality and earnings management in the Nigerian chemical and paints sector over a period of seven years (2006-2012).The management of earnings was measured using Discretionary Accruals (a modified Jones model). Generalized Least squares technique was used to estimate the regression coefficients of the data obtained from the eight (8) listed chemical and paints firms using STATA 10. The results show that, audit firm size has a significant negative impact on the earnings management of the firms. The study also found that chemical and paints firms that engage the services of big-4 auditors engage less in earnings management, which implies that the bigger the audit firms, the lower these chemical and paints firms engage in earnings management. The results also suggested that audit firm sizehelps in constraining earnings management in chemical and paints firms, in the sense that it has significant effect on earnings management. The study recommends among others that, Nigerian chemical and paints sector in conjunction with audit firms, professional accounting bodies and standard setters should continue to improve on the quality of their audits, by setting effective quality control, standards and policies that will help enhance audit quality; reduce the audit firm tenure and engage only the audit firms that have the appropriate expertise in an industry, as these may have significant impact on reducing earnings management in the Nigerian chemical and paints sector.

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CHAPTER ONE
INTRODUCTION

1.1 Background to the Study

The last decade has witnessed several accounting scandals and corporate failures that were blamed onearnings management practices of firms globally, which audit function was not able to detect. Earnings management involves managers' manipulation of the external reporting process and structuring transactions to alterfinancial reports to either mislead some shareholders about the underlyingeconomic performance of the company or to influence contractual outcomes thatdepend on reported accounting numbers (Healy & Wahlen, 1999). As a result of this practice, which went undetected or unreported by external auditors, the United Statesalone recorded ten largest bankruptcies in 2002, including the two largest in world history, namely WorldComand Enron (Albrecht, Albrecht & Albrecht, 2004). In Nigeria, Cadbury Nig. Plc and African Petroleum areexemplar cases. The increasing incidence of corporate scandals or failures associated with earnings managementhas led to loss of public confidence in the quality of reported accounting earnings and the audit functiongenerally. Accordingly, earnings management has become a matter of great concern to regulators, practitionersas well as accounting researchers (Okolie, 2014) due to the perverse consequences it has on corporate survival.

Hlioui and Zehri (2012), Cohen and Zarowin (2010), Zang (2007) and Roychowdhury (2006)explainthat managers exercise their discretion not only via choice of accounting estimates and methods (accrual-based earnings management) but also through operational decisions (real activities manipulation). Real activities manipulation is an alternative tool of earnings management through changing operating activities and decisions (opportunistic reduction of discretionary expenses, overproduction, and offering price discounts to boost current-period

sales). Separately, Graham, Harvey and Rajgopal (2005) suggested that given the stigma associated with accrual management, earnings manipulations are now more likely to be achieved through real economic actions because accrual-based earnings management is more likely to draw auditor or regulatory scrutiny than real decisions such as those related to product pricing, production, and expenditures on research and development or advertising.

It is argued that if shareholders have perfect informationabout managers' actions, there would be no information asymmetry between thetwo parties. Information asymmetry exists when perfect information is absent,which is the assumption of agency theory and since informationasymmetry exists, stockholders have difficulty detecting earnings management (Fama, 1980). Though, it is argued that businesses adopt some level of discretion in their decision because no firm adopts a hundred percent rule based accounting systems when reporting their economic performances and financial position. In fact, Bello (2002) is of the opinion that itisunimaginable to have accounting systems that are totally rule based without room for occasional judgments.

A considerable number of studies that include Okolie (2014), Okolie, Izedonmi and Enofe (2013), Zgarni, Hlioui and Zehri (2012),Chi; Mehmet and Emin (2012),Ahmadzade, Hassanzadeh, Pooryegane and Ebrahimi (2012), Lisic and Pevzner(2011), Francis and Yu (2009), Rusmin (2010),Roger, Frank, Erik and Ann (2003), Zhou and Elder (2003), and Gaver and Paterson(2001)have found that quality of audit is one of the constraining factors that limit managements' manipulation of accounting numbers. Watts and Zimmerman (1986) show that auditing is a valuable form of monitoring used by firms to reduce agency costs. The value of auditing arises, because auditing reduces the misreporting of financial information. The value of auditing on constraining managerial discretion, however, is expected to vary with the quality of

the auditor. Becker, DeFond Jiambalvo and Subramanyam(1998) and Heninger (2001) report evidence consistent with the external auditor acting as a constraint on earnings management, with the effectiveness of the constraint depending on audit quality.

The demand for auditing arises from the auditor's monitoring role in theprincipal-agent relationship (Eilifsen & Messier, 2000). The performance quality of this monitoring function may vary. Audit qualitydescribes how well an audit detects and reports material misstatements of financialstatements, reduces the effect of information asymmetry between management and shareholdersand therefore helps protect the interests of stockholders. High audit quality shouldbe associated with high information quality of financial statements becausefinancial statements audited by high quality auditors may be less likely to contain material misstatements. From an agency theory perspective, audit is a monitoringmechanism that provides reasonable assurance that financial statements are free ofmaterial misstatements and therefore protects the interests of shareholders. Whenthe interests of management conflict with the interests of shareholders,management may not act in the best interests of shareholders. A high level of audit quality is therefore expected to result in lower levels of earnings management.

Literature has documented a number of attributes that explain audit quality and how the combined effect of the attributes could help checkmate managers' excessive earnings management practice. Of the numerous attributes identified in the literature, size of audit firm, independence and specialization of auditors seemed to stand out. Size of an audit firm is considered critical to its ability to assemble well qualified and highly experienced auditors to engage in different aspects of audit functions. Such a firm is more likely to engage in a wide range of audit assignments for different companies in view of its economies scope and scale. In line with these postulations, Francis, Maydew and Spales (1999) have documented evidence

showing that the Big-4 audit firms provide a more significant constrain on earnings management than other audit firms. Thus, the size of an audit firm affects the extent to which it constraints earnings management practice.

In theory, a company's auditors are appointed independently by its shareholders, to whom they report. In practice however, auditors are chosen by the company's bosses, to whom they all too often become beholden (The Economist, 2002). Hence, auditors might be more inclined to allow aggressive and opportunistic reporting of accruals, resulting in lower quality audits and thus increase in earnings management. This places a question mark on the independence of an auditor.In addition to auditor size and auditor independence, auditors' industry specialization is considered to be an important attribute of auditquality as it impacts the earnings management of firms. Studieshaveshown that client firms with industry specialists are associated with higherquality of financial reporting (Balsam, Krishnan and Yand,2003; Krishnan, 2003).Like large auditors such as the Big 4 invest in brand name capital, industry specialists to make investments in industry specific accounting technology to differentiate themselves from other auditors (Craswell, Franci& Taylor1995)

The high-profile corporate scandals of 2008 through to 2009 in Nigeria has continued to raise a lot of concern about the integrity of financial and auditing reporting systems in the country. Some corporate organizations in the banking and manufacturing sub-sectors that were never suspected to have problem were found to be living in past glory due to excessive earnings management practices. The ugly practices which were later discovered to have been on for sometime went undetected or unreported by auditors. The experience hassince left its perils in the mind of shareholders, prospective investors,regulators and financial analysts.

The chemical and paints industry in Nigeria is considered one of the most susceptible sub-sectors of the country to earnings management. This is due to the ongoing effort by both government and industrialists to develop the industry as priority area of industrial investment and a support toward government housing policy for Nigerians. The sub-sector has undergone various levels of transformation from themanual based processes to more technologically advanced production methods. In view of the renewed interest in the industry owing to its recent impressive performance and high level of activities, it is imperative to examine its earnings management practices and how it is affected by audit quality.

1.2 Statement of problem

In the wake of corporate accounting scandals and unethical behaviours despite the existence of the code of best practice for corporate governance, earnings management has become a focal point of business strategists and academic research. The interestfeatures numerous corporate governance components like audit committee characteristics, board monitoring, corporate governance characteristics, institutional monitoring) and accounting standards, as well as the role they play in reducing earnings management. This is because unethical behaviour in reporting the earnings of firms negates the rudiments of agency relationship and misrepresents the organizations financial status.

Many studies have been conducted in the area of earnings management and audit quality most of which recognized the audit quality mechanisms as effective factors that restrain excessive opportunistic behavior amongst corporate management. Most of the studies focused on developed countries, and reported mixed findings (Krishnan, 2003; Balsam, Krishnan & Yand, 2003,DeFond, Raghunandan & Subramanyam, 2002; Beasley & Petroni, 2001; Abbott & Parker,

2000; Craswell, 1999).Some of the studies documented that Big 8, Big 6,Big 5 and Big 4 audit firmsprovide higher audit quality thannon-Big 8, Big 6, Big 5 and Big 4 audit firms (Davidson & Neu, 1993; Teoh & Wong, 1993). The studies of Kim, Chung and Firth(2003) and Lam and Chang (1994) indicate that Big 8, Big 6, Big 5 and Big 4audit firms might not always provide higher quality audit service than the others. This gave rise to the issue of inconclusiveness of findings. Given that the developed markets offer different institutional settings and litigation environments from those in the developing markets, the generalizability of their findings is limited.

Few studies have been conducted in emerging economies like Nigeria. The studies also documented mixed and inconclusiveness findings (Okolie, et. al.2013; Okolie, 2014; Gabriel & Ioraver, 2015).While these studies have covered some important aspects of audit quality, none of them used auditor tenure in measuring the independence of audit firms despite the strong relationship that exist between auditor tenure and quality of audit.

In addition, the studies used ordinary least square procedure with pooled data (which tends to be biased,to generate serial correlation, cross-sectional correlation and differing variances)instead of extracting panel data to test for cross-sectional effect in line with best practice in earnings management and audit quality studies.This study therefore represents a modest effort to fill the gaps identified in the literature. The study extends its analysis to cover variables that are often neglected in audit quality. The study also extends to a sub-sector that has attracted little attention with regard to earnings management despite its strategic importance to the economy of Nigeria.

1.3 Research questions

This study sets to provide answers to the following questions:

i. To what extent does audit firm size affect earnings management in the listed chemical and paints firms in Nigeria?

ii. What is the effect of auditor independence on earnings management in the listed chemical and paints firms in Nigeria?

iii. How does industry specialist auditor affect earnings management in the listed chemical and paints firms in Nigeria?

1.4 Objectives of the study

The main objective of this study is to examine the impact of audit quality on earnings management of listed chemical and paints firms in Nigeria. The specific objectives of the study are to:

i. examine the impact of audit firm size on earnings management in listed chemical and paints firms in Nigeria;

ii. assessthe impact of auditor independence on earnings management in listed chemical and paints firms in Nigeria; and

iii. examine the impact of industry specialist auditor on earnings management in listed chemical and paints firms in Nigeria.

1.5 Hypotheses of the Study

Based on the objectives of the study, the following hypotheses were formulated:

HO_1: Audit firm size has no significant effect on earnings management of listed chemical and paints firms in Nigeria.

HO_2: Auditor independence has no significant impact on earnings management of listed chemical and paints firms in Nigeria.

HO_3:Industry specialist auditorhas no significant impact on earnings management of listed chemical and paints firms in Nigeria.

1.6 Scope of the Study

The study covers the period of seven (7) years, from 2006 to 2012.The periodwas consideredadequate because prior studies on this subject matter used maximum of five(5) years. Extending the study to cover seven(7) years would enhance the robustness of the analysis. The period also covers2007 and 2008 when the global economic crisis that exposed many world corporate scandals started. The justification for the choice ofthe domainis that chemical and paints sector has received little attention from researchers in Nigeria despite the important role it plays in the country and its contribution to the country's economy.

1.7 Significance of the Study

Apart from contributing to the existing literature on the subject matter, the findings of this study will be of interest to policy makers, audit firms and professional accounting bodies, as well as existing and potential investors.Policy makers may use the findings of the study regarding the auditor independence to consider the potential benefits of regulating the minimum length of audit firm tenure, in years, that same auditor should audit the financial statements of a

company. It has been posited that as the auditor tenure increases, theauditor is better at assessing risk of materialmisstatements by gaining experience and betterinsights into the client's operations and businessstrategies as well as internal controls over financialreporting (Arens, Elder&Beasley,2003). Therefore, this study will provide a yardstick whichprofessional accounting bodies will use in establishing policies, procedures to guide members onimproving the quality of their audit in order to reduce the way and manner earnings are being manipulated by firms.

Financial analysts may also use the findings of this study to understand how the market interprets higher audit quality in constraining earnings management effect on capital market decisions. If the market sees the firms with industry specialization, longer audit tenure and audited by a big-4 auditor as being associated with higher financial reporting quality, the reported financial statements may be viewed as more reliable for investment decision and credit assessment.Also, both existing and potential investors may be educated on earnings management's indicators, patterns and how well to monitor and make good out of their investments. In addition, the study will contribute to increasing the available studies on audit quality and earnings management, especially in this sector.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter reviewsrelevant literature on audit quality and earnings management. It first reviews some theoretical literature on earningsmanagement; particularly those related to the different definitions of earnings management, motivation for earningsmanagement, measurement of earnings management, and definitions of audit quality and how it is measured. In addition, the chapter reviews empirical studies on the relationship between audit quality and earnings management and presents the theoretical underpinning of the study.

2.2 Conceptual Framework

This section presents some conceptual issues relating to the subject matter of this study. The main theoretical issues covered relate to the concept of earnings management and audit quality.

2.2.1 Concept of Earnings Management

Financial statementsare expected to provide a comprehensive and unambiguous picture of the economic performance and financial position and its changes of a business entity. The information contents are both qualitative and quantitative in nature. The quantitative information reveals the financial position, performance, and changes in the financial position as reflected in statement of financial position, statement of comprehensive income and statement of cash flow respectively(Bello, 2005).The qualitative information helps to determine the intangible impact of different transactions and if the activities you are spending money on are worth the opportunity costs they incur. Example, sales report.

Earnings management occurs whenmanagers use judgment in financial reporting and in structuring transactions to alter financial reports to eithermislead some shareholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers (Healy & Wahlen, 1999). Earnings management is therefore the opportunistic behaviour of managers with regard to the financial reporting of the firms under their watch. It represents a purposeful intervention in the external reporting process with the intent of obtaining some private gains (Schipper, 1989).

According to Fields, Lys and Vincent (2001) and Watt and Zimmerman (1990), earnings management may be derived from the flexibility of accounting choices that are given by Accounting Principles. The Accounting Principles allow managers to choose the appropriate reporting procedures and to make estimations, guessestimations and assumptions according to their business environment. Thus, with an alternative on offer, the manager may choose the reporting procedure that best suits him in order to maximize their wealth by exhibiting opportunistic behaviour (Watt & Zimmerman, 1990). As a result, accounting discretionary power may create the problem of management manipulating earnings.Such a problem, for example, causes shareholders, investors and debt holders to be unable to distinguish the true net worth and economic value of a firm because their reports do not accurately reflect the actual performance of the firm.

Managers engage in opportunistic earnings manipulation for several reasons. The reasons include; bonus compensation (Gaver, Gaver & Austin, 1995; Holthausen, Larkers,& Sloan, 1995; and Healy, 1985), avoidance of debt-covenant violation (Sweeney, 1994; DeFond & Jiambalvo, 1994) and prevention of earnings decreases and losses (Barth, Elliott & Finn, 1999; Bugstahler & Dichev, 1997). Another reason for earnings management practice among

firms is compensating for regulatory or political costs (Han & Wang, 1998;Cahan, 1992;Jones, 1991).

Researchers usually use accruals as measures of earnings management, measured by the absolute value of discretionary accruals. In accordance with Becker et al. (1998), the absolute value of discretionary accruals measures the level of opportunistic earnings management activities and extreme reporting decision exercises by managers.The total accruals are identified in order to estimate the discretionary accruals. There are two methods in computing the total accrual accruals. The first is the traditional balance sheet approach (Healy, 1985; Dechow et al., 1995), and the second is the cash flow approach (Becker et al., 1998; Subramaniam, 1996; Xie et al., 2003).

Under the balance sheet approach, the accruals are measured as the change in current assets during a particular year minus the change in current liabilities during that year minus the change in cash and cash equivalent during the period plus the change in debt included in current liabilities during the period minus depreciation and amortization expenses during the period, all variables scaled by lagged total assets (Hribar & Collins, 2002:107).The cash flow approach, on the other hand, measures the accruals as the difference between earningsbefore extraordinary items and earnings before discontinued operation, less the operating cash flow (Hribar & Collin, 2002).Both approaches are extensively used in the prior literature. However, Hribar and Collins (2002) suggested that the cash flow approach is better than the balance sheet approach when estimating the accruals for earnings management. They argue that the balance sheet approach contains error measurement, which can lead to erroneous conclusion of the existence of earnings management when no such earnings management was detected (Hribar & Collins, 2002).

The discretionary accruals are estimated using a cross-sectional variation of the Jones (1991), the modified Jones (1991) by Dechow et al. (1995) and the performance adjustedmodel by Kothari et al (2005). Two steps are involved in the estimation of discretionary accruals. First is the estimation of non-discretionary accruals byestimating on the coefficients of each industry in each year (at least 6firms in each industry) by using OLS regression. The second step is to estimate the error term in the model, which represents the discretionary component of accrual.The error term is the difference between the total accruals and the non-discretionary accruals. The model for estimating discretionary accruals is given as:

$$DACC = TAC_{it}/TA_{it-1} - [\alpha_1 (1/TA_{it-1}) + \alpha_2 [(\Delta REV_{it}/TA_{it-1}) + \alpha_3 (PPE_{it}/TA_{it-1})] + e_{it}$$

Where:

DACC = discretionary accruals

TAC_{it} = total accruals for sample firm i for year t;

TA_{it-1}= the book value of total assets for sample firm i for year t-1;

ΔREV_{it} = change in revenues for sample firm i for year t;

PPE_{it} = gross property plant and equipment for sample firm i for year t;

e_{it} = error term (discretionary accruals) for sample firm i for year t.

The estimation of discretionary accruals under the modified Jones (1991) model is relatively similar to the original Jones model, except that it takes into account the changes in accounts receivables. Kothari et al. (2005) suggest that there are two ways to control the firms' performancein the estimated accruals. The first is by matching each firm-year observation with another from a similar industry and year with the closest *ROA* in the current. Alternatively,

firm performance, including *ROA*, can be included in the discretionary accruals regression as an additional variable.

2.2.2 Concept of Audit Quality

DeAngelo(1981: 186) defined audit quality as "the market assessed joint probability that a given auditorwill both (a) discover a breach in the client's accounting system and (b) report thebreach." This definition is interpreted by the market as the ability of an auditor to detectaccounting misstatements and then to express them in appropriate audit opinion. Watts and Zimmerman (1986) simplified DeAngelo's definition. They indicated that the first part refers to auditor's competence and the quantity of inputs devoted to the audit, whilethe second part refers to auditor's independence. In other words, according to Watts and Zimmerman, any factors that are associated with a lack of auditorcompetence or a lack of auditor independence are able to compromise the quality ofaudit. 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 (infact and in appearance) of the auditors in reporting such errors.

Palmrose (1988) described audit quality in terms of levels of assurances. Higher levelsof assurances (i.e. possibility that financial statements contain fewer errors ormisstatements) are associated with a higher audit quality and *vice-versa*. According to Francis (2004), audit failure can be classified as extremely low auditquality (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 byadequate audit evidence, the regulator assumes that such auditors have performed aquality auditing service.

Despite the fact that technical qualities, such as an auditor's ability to detect andreport errors, have been argued as the defining aspects of audit quality; Duff (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 ofreputation, 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.

Wooten (2003) explains that auditfirms, audit teams and the professional judgment or auditor independence are theprincipal contributors to audit quality. An audit firm andaudit team factors (e.g. human resources, audit processes, industry expertise,supervision, audit planning, and professionalism) directly contribute to the skill andcompetence of auditors in detecting errors and misstatements. The factors of audittenure, audit fees and NAS not only directly impair auditor independence, but theyalso implicitly support auditor effectiveness.To sum up, therefore audit quality is seen as the ability of an auditor to provide anindependent audit which results in a financial statement that is free frommisstatement, error and fraud.

2.2.3 Approaches to Measuring Audit Quality

The measurement of audit quality is complex and problematic (Payne& Jensen, 2005; Niemi, 2004;Wooten, 2003). However, Public Company Accounting Oversight Board - PCAOB (2008), Bailey and Grambling (2005) andFrancis, (2004) have identified several potential measures for auditquality in both academic literature and in practice. These measures are perceived asfactors, indicators, behaviours or perceptions that have a direct and an indirect link

withaudit quality.Bailey and Grambling (2005) and PCOB (2008) discussed the potential measures of auditquality based on the audit process that is adhered to in completing an auditengagement. These measures are associated with the audit procedures, thedocumentation of audit evidence and compliance with auditing standards. Theyclassified them as input and output-based measures.

Bailey and Grambling (2005)suggest that the inputs of audit processes are relevant to the quality control system of an audit firm. These include; how audit firms put an effort into promoting andemphasizing desirable qualities of independence and objectivity; internal control (an audit firm's internal review); human resources (professionalismcompetence and independence of staff); and audit methodologies (auditpolicies and procedures). In respect of human resources, Bailey and Grambling (2005) suggest that the skills and competencies of auditors should beviewed in a broader context which goes beyond technical accounting and auditingskills. They argue that the level of professional skepticism of auditors may affect theirability to act independently when executing auditing work. Thus, the attribute ofindependence" is desirable for every auditor and audit team member when it comes toachieving a higher audit quality.The outputbasedmeasures specifically relate to the audit opinion and whether that audit opinionreflects the "accuracy of management's assertions", and it includes the issuance ofgoing-concern audit opinion and restatements (Bailey & Grambling, 2005).As an alternative to this, the output-based measures as the outcomeor evidences that an auditor produces from work that has been undertaken. Suchoutcomes, for instance, can be measured by the number of frauds discovered andnumbers of errors or misstatements detected.

In general, the potential measures of input and output given by Bailey and Grambling(2005) and PCOB (2008) are limited to the factors that are associated with the

auditprocess that was adhered to in completing an audit engagement. These factors of auditquality are beyond the audit process itself. A user's perception of audit quality isclaimed to be one of the alternative measures for audit quality (e.g. audit fees, NASfees and industry specialist auditor). Khurana and Raman, (2006) claim that a user's perception of audit quality is important because it reflects public trust and confidence in a firm's reported financial information. Despite the various measures of input-based and output-based audit quality thatexist in the literature, PCOB (2008) observes that the two approaches suffered some limitations. For example, withregard to the input-based measure, how to ensure that the consistency of the input's attributes has not been diminished during the process of the audit engagement is still an issue. This is because often, information about the key drivers of audit quality, such as the education,experience and competency of the auditors is not publicly available and difficult toobtain. By using output-based measures, the result of an audit is not necessarilyobservable just after work has been undertaken because the quality of auditinformation usually emerges over a certain period during which restatement orbusiness failure or the identification of misstatements can occur.

De Angelo (1981a) mentions that the quality of auditors may be divided into two parts. First is to detect anything misleading in the financial statements of the client and secondly is to report the misleading. The first quality relates to the competence and skills of the auditors to detect any fraud while the second one is concerned with the auditors' independence. In the case of long time auditor, it is argued that the auditor's independence will be reduced due to the fact that the auditor feels comfortable with the clients whether in terms of revenue or their expertise on the clients' system. Subsequently they will not report any misleading information to ensure there is no any change of auditors. In that case, an unqualified report (clean report) will be

issued. From the point of view of regulators, long association between a corporation and an accounting firm may lead to impairing their independence (Geiger & Raghunandan, 2002).

Studies on auditor tenure could not be separated from the auditor switching studies. Many studies found that financially distressed firms were more likely to switch auditors than non distressed companies due to the reason that these types of companies need to hire a new quality of auditor compared to the previous one (Krishnan, 1994; Krishnan & Stephens, 1995). Sinason *et al.* (2001) found that auditor tenure is longer for clients who received unqualified or unqualified-modified opinions. Interestingly, Hashanah (1998) found in Malaysia that such behaviour is less apparent using data from 1975-1995. In one extreme case, the auditor was not even replaced after issuing five consecutive times of a disclaimer opinion to a client. But, the results are statistically equivalent, meaning that no evidence exists to indicate that auditor tenure is longer for clients with unqualified opinions.

Audit quality proxies such as audit firm size, auditor independence,audit firm tenure and industry specialist auditor are mostly used in literature to depict the level of audit quality exhibited by audit firms.The studies of Che, et. al.(2005); Zhou and Elder(2003); Krishnan(2003); Heninger (2001); Gul and Tsui(2001); Bartov, Gul and Tsui(2001); Bradsha, et. al., (2001); Gaver and Paterson (2001); Francis et. al.(1999); Francis and Krishnan(1999); Becker et. al.(1998); Hirst(1994) and Phillips(1999), used different combinations of the proxies to examine the relationship between audit quality and the level of discretionary accrualsof firms.

Mautz and Sharaf (1961) developed a concept of independence with two components:practitioner‘sindependence and professional independence. According to them, practitioner‘s independence, on the one hand, is a state of mind and equates the notion of integrity and objectivity of the individual auditor. Professional independence on the other hand,

is apparent independence of auditors, as a professional group, to the public. This implies that an auditor should avoid undue influence. In this regard, an auditor must not be interested in running the affairs of the company covertly or overtly (Izedonmi, 2000). Auditor's independence in its most general form allows external auditors to reduce agency cost between corporate managers and shareholders (Watts & Zimmerman, 1983).In Nigeria, the independence of auditors is associated with a lot of questions. The way auditors secure their audit assignments and the rate at which the lobby for auditing jobs have put their independence in jeopardy.

Audit-firm tenure is the length of the audit-firm-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. There is strong evidence to suggest that as the auditor's tenure increases, the benefit of the greater experience and better insight into the clients' operations and businessstrategies seem to outweigh the potential independence impairment.

Audit quality studies have also focused on the role of auditor industry specialization. Hogan and Jeter (1999) found that measures of specialization have increased in both regulated and unregulated industries, consistent with returns to specialization. Craswell et al. (1995) argue that audit firms market themselves in terms of both a general reputation and industry expertise and experience gained in the industry. Balsam*et al*.(2003) argue that anindustry specialist auditor offers a higher level of assurance than does non-specialist because of thespecialist auditor's knowledge of the industry andits accounting systems. Thus, the use of an auditor withindustry specialization is expected to help curb earningsmanagement. In this regard, Balsam *et al*. (2003)

and Krishnan(2003a) reported a negative association, but Chen*et al*. (2005) found a positive relationship. Empirical evidence to datehas suggested the positive benefit of using a specialistauditor in reducing earnings manipulations. This assertion is consistent withthe argument that auditors specialize in various industries to achieve product differentiation and providehigher quality audits (Simunic & Stein, 1987; Dunn & Mayhew, 2004). Higher quality of audits byindustry specialists is also attributed to the fact that they invest heavily in technologies, physicalfacilities, personnel, and organizational control systems that enable them to detect irregularities andmisrepresentations more easily (Simunic & Stein, 1987). Their ability to provide higher quality auditscomes from their experience in serving other clients in the same industry and learning and sharing bestpractices across the industry (Dunn & Mayhew, 2004).

2.3 Review of Empirical Studies

This section covers the review of empirical studies on the relationship between earnings management and the various proxies of audit quality used in this study. The objective is to critically examine the contribution of earlier researchers in the subject matter.

2.3.1 Audit firm size and earnings management

Teoh and Wong (1993) argued that Big8 clients are associated with higher earnings response coefficients (ERCs). TheERC is the coefficient on earnings resulting from regressing stock returns onreported earnings. It measures the extent to which the market responds to earnings. They found lower earnings management for clients audited by Big4 firms compared to those audited by non-Big4 firms. They also suggested that managers respond to debt contracting and income-smoothing incentives by strategically reporting discretionary accruals. In addition,

companies with incentives to smooth earnings upwards (downwards) report significantly greater income-increasing (decreasing) discretionary accruals when they have non-Big5 auditors.

Francis, Maydew and Sparks(1999) argue that high-accrual firms have greater opportunity for opportunistic management and have an incentive to hire a Big5 auditor to provide assurance that earnings are credible. In addition, they found that high accrual firms are more likely to hire a Big5 auditor, but report lower discretionary accruals, consistent with Big5 auditors constraining opportunistic reporting of accruals.Krishnan (2003) demonstrates that Big4 auditors are better at constraining client earnings management compared to non-Big4 auditors. They found that clients of non-Big4 auditors have higher levels of discretionary accruals. Zhou and Elder, (2003) and Chen et. al. (2005) found that Big 4 auditors are associated with less earnings management in the firms.Francis and Wang (2008) report that the decrease of the magnitude of accruals earnings management is restricted to the clients of Big 4 auditors in the U.S. (in which legal regime is the strongest in the world) and those of non-Big 4 auditors are not affected by the legal regime change

Similarly, Francis and Yu (2009) and Choi et al. (2010) argues 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 Big 4 firms than for clients of smaller offices. Clients served by larger offices have lower absolute discretionary accruals, are less likely to report small positive earnings or small increases in earnings from the prior year, and larger offices are more likely to issue a modified audit report. Norman and Aida(2009)employ the modified Jones model of 1995 to study IPO firms in Malaysia for the selected two years of 2007 and 2008.Linear regression technique was used and the findings reveal that auditor size does not have any significant

relationship with earnings management for IPO companies in Malaysia. The study may be criticized forusing small data over a period of only two years.

Mehmet and Emin (2012) investigate the relationship between earnings management-audit quality and earnings management-legal system quality by using 1507 firms' observations from listed companies in private firms across different 8 emerging countries. This study used audit firm size and differentiated between Big 4 and non-Big 4 audit firms to proxy audit quality and used discretionary accruals to measure earnings management. The result of the OLS regression show that for Brazilian and Mexican companies, there is significant relationship between discretionary accruals and audit quality. For the other countries, there is no significant relationship. The study used only 2008 and 2009 periods which have been overtaken by time and the estimation of the coefficients with OLS regression is inappropriate because of the presence of endogenity considering the different sizes of the firms used and peculiarities in the different environments in the data.

Following DeAngelo's (1981) argument that size of audit firms is positivelyassociated with audit quality, many studies use size (Big 8/6/5/4 vs. non-Big 8/6/5/4) asthe audit quality proxy (Nichols & Smith, 1983; Firth & Smith, 1992; Clarkson & Simunic, 1994; Hogan, 1997; Becker et al., 1998; Bauwhed, Willekens & Gaeremynck, 2000; Zhou & Elder, 2001; Krishnan, 2003). In using discretionary accruals as the measure for earningsmanagement, Becker et al. (1998) found that audit quality, proxied with audit firm size, is negatively related toincome-increasing discretionary accruals, which indicates that high audit quality isassociated with low information asymmetry.

Therefore, the growing number of studies (Becker et. al., 1998; Francis et. al., 1999; Francis & Krishnan, 1999;Heninger, 2001; Gul&Tsui 2001; Bartov, Gul & Tsui, 2001;

Bradshaw, et. al., 2001; Gaver & Paterson, 2001; Zhou & Elder, 2003; Krishnan, 2003; Chen, et. al.2005) examine the relationship between audit quality and the level of accruals. Evidence from these studies seems to suggest that: (a) high accrual companies engage Big auditors; (b) Big auditors have a lower threshold than the non-Big for issuing modified audit reports; (c) Big auditors are associated with lower client abnormal accruals; and (d) auditors are sensitive to managers' incentives to manage accruals. This evidence can be interpreted in two ways, alone or in combination: (a) quality auditors constrain earnings management and/or (b) clients hiring big auditors themselves constrain earnings management regardless of audit quality.

However, distinguishing between these two interpretations is extremely difficult. The fact that pre-audited data is not available, presents a limitation in the investigation of the propensity and or ability of auditors to constrain earnings management. Whilst acknowledging this problem, this study cannot attempt to disentangle these interpretations, but assumes that auditors play at least a role in any restraint in accruals management demonstrated by their clients.

In line with the previous researchers, this study considers the four international audit firms (PriceWaterhouseCoopers, Deloitte & Akintola Williams, KPMG and Ernst and Young) in Nigeria as big and the others small. As high quality audits are equated with the big firms, the sequences were of interest as they enabled to test the best one in terms of constraints on earnings management and management incentives. The design should be of special interest to the industry regulator who partly relies on the external auditor's contributions to the statutory financial reports in executing its regulatory duties; to test the effectiveness of the audit function in this regard.

2.3.2 Auditor Independence and Earnings Management

External auditors play important roles in the capital markets by providing services to protect the interests of the investing public. These public watchdogs' functions require that accounting firms remain independent of the audit client and act on behalf of the shareholders. However, thecontrol over hiring and firing of auditors by client's management, combined with managers strong motivation to attain or exceed stated goals and objectives, imposes a heavy burden upon the auditors to stand firm. Managers may try to actively use auditor-switching to avoid qualified reports, and may also use switch-threat to obtain a more favorable report from an incumbent auditor.

Prior researches suggest that auditor independencedecreases as the length of auditor tenure increases(Beck *et al*., 1988; Lys & Watts, 1994), as a result of familiarity threats. The impairedindependence results in poor audit quality andallows for greater earnings management. On the other hand,others claimed that as auditor tenure increases, theauditor is better at assessing risk of materialmisstatements by gaining experience and betterinsights into the client's operations and businessstrategies, internal controls and financialreporting systems (Arens *et al*., 2003). Of the existing studies reviewed in this study, only few (Myers *etal*., 2003; Yang & Krishnan, 2005) reported asignificant negative relationship between auditorindependence and earnings management. The remainingstudies reported the relationship to be negative butnot significant.

Hence, there is strong evidence to suggest thatas the auditor's tenure increases, the benefit ofthe greater experience and better insight into theclient's operations and business strategies seem tooutweigh the potential independence impairment. The prolonged association between an audit firm and company-client could lead to the closeness of the audit firm with its

company-client's management which in turn makes it difficult for the auditor to freely express his professional opinion (Larvin, 1976 & 1977).

Previous studies done by Barkess and Simnett (1994); Defond et al. (2002); Geiger and Ragunandan (2002); Carcello and Nagy (2004) and Bamber and Iyer (2007) have shown that lengthy audit firm tenure leads to a reduced propensity of issuing a qualified audit report. Complacency, lack of innovation, less rigorous audit procedures, and a learned confidence may arise after long association with the company-client (Shockley, 1982). Professional accounting bodies also expressed concerns that the length of audit client relationship may impair audit quality which in turn affects the auditors' independence.

In contrast, Petty and Cuganesan (1996) argue that when mandatory auditor rotation is regulated, clients might be forced to accept a lower quality of service from an auditor.Louwers (1998) and Johnson *et al.* (2002) found no evidence of reduced financial quality for longer audit firm's tenures. Geiger and Raghunandan (2002) studied a sample of 117 bankrupt companies and suggested that auditors may be more influenced by their newly obtained clients in the earlier years of the engagement. Thus, audit independence issue or audit competence issue is at stake in early years of engagement and not in later years and would result in lesser going concern opinion to be issued by short time auditors.

Thus, the attribute of "independence" is desirable for every auditor and audit team member when it comes to achieving a higher audit quality. The impaired independence results in poor audit quality and allows for greater earnings management. So many measures have been used by previous researches to proxy for auditor independence, among them are; total audit fees, auditor rotation, audit firm tenure, non-audit services (NAS), or fee ratio.

This study adopted audit firm tenure in measuring the independence of an auditor. This is the length of time an audit firm audits a particular company, in years. It is in an argument that, the longer an audit firm audits a company, the more it gets familiar and loses its independence.

2.3.3 Industry Specialist Auditor and Earnings Management

In addition to auditor size, auditors' industry specialization is considered to be another proxy for audit quality. Industry specialist auditors are audit firms that have the required knowledge and expertise in a particular industry/sector. Several prior studies show that client firms with industry specialists are associated with higher quality of financial reporting.

Jaggi et al. (2012) show anegative association between industry specialist auditors and earnings quality. Furthermore, Lawrence et al. (2011) found 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. Chi et al. (2011) found that auditor industry expertise is associated with greater earnings management.

However, Ahsen (2011) has shown that firms audited by industry specialist auditors are associated with higher earnings quality, hence lower earnings management. In the same context, Rusmin (2010) argue that the discretionary accruals of industry specialist auditor clients are lower than discretionary accruals of non-industry specialist clients. Like large auditors (Big 4) investing in brand name capital, industry specialists to make investments in industry specific accounting technology to differentiate themselves from other auditors. Gul et al. (2010)

found that industry expertise partially mitigates the effects of short auditor tenure on earnings quality, as measured by discretionary accruals.

Lim and Tan (2009) reveal that firms audited by specialists (vs. non-specialists) have relatively higher audit quality. In addition, Kwon et al. (2007) extended evaluation of the impact of specialist auditors on earnings quality of firms across countries and they documented that audit by industry specialists is especially effective in improving earnings quality in countries with weak legal environment. However, Chen *et al*. (2005) found a positive relationship, which implies that the more audit firms become industry specialist, the higher the earnings management. Dunn and Mayhew (2004) confirm that the use of an auditor with industry specialization will help curb earnings management. These findings are consistent with the theory that auditors specialize in various industries to achieve product differentiation and provide higher audit quality.

Dunn and Mayhew (2004) found a positive relationship between industry specialist auditors and disclosure quality. Their findings suggested that auditors with specific industry knowledge are more able to assist their clients in developing industry specific disclosure strategies. Therefore, Krishnan (2003) found that clients of firm-level industry experts report earnings more conservatively. Krishnan (2003); Johnson et al., (2002) found that measures of specialization have increased in both regulated and unregulated industries, consistent with returns to specialization. Craswell et al. (1995) posit that audit firms market themselves in terms of both a general reputation and industry expertise. In addition to auditor brand name, some recent studies (e.g., Balsam *et al*., 2003) argue that an industry specialist auditor offers a higher level of assurance than does non-specialist because of the specialist auditor's knowledge of the industry and its accounting systems. Therefore, the use of an auditor with industry specialization will help reduce the effect of earnings management. Balsam *et al*. (2003) and Krishnan (2003a) report a negative association, which implies that as audit firms become specialist in an industry,

the higher they report earnings management. 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.

In view of these studies, the positive benefit of using a specialist auditor in reducing earnings management. Therefore, the use of an auditor with industry specialization will help reduce the effect of earnings management has been argued. These findings are consistent with the theory that auditors specialize in various industries to achieve product differentiation and provide higher quality audits (Simunic & Stein, 1987; Dunn & Mayhew, 2004). Higher quality of audits by industry specialists is also attributed to the fact that they invest heavily in technologies, physical facilities, personnel, and organizational control systems that enable them to detect irregularities and misrepresentations more easily (Simunic & Stein, 1987). Their ability to provide higher quality audits comes from their experience in serving other clients in the same industry and learning and sharing best practices across the industry (Dunn & Mayhew, 2004).

PricewaterhouseCoopers (2002) argues 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. These arguments thus suggested 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.

The theoretical foundation for the use of industry specialist auditors is derived from the reputation capital theory as it applies to big-size auditors. Economic theories of product differentiation suggest that sellers expend their resources to build a reputation (Klein & Leffler,

1981; Shapiro, 1983). In the audit market, there are two levels of reputation development. The first level requires audit firms to invest in their brand name's reputation in order to differentiate the quality of their products. The second level requires big-size auditors to actually differentiate the quality of their products among them. Due to the complexity and unique features of certain industries, buyers demand industry specialist auditors in order to deal with specific accounting rules and reporting requirements (Craswell et al., 1995). Such demands encourage big-size auditors to invest resources in a particular industry in order to gain industry specific knowledge and competency.

There is a strong evidence to suggest that specific knowledge, task-specific experience and training increase an auditor's competenceand results in auditors seizing increasing numbers of established audit clients in specific industries(Boner & Lewis, 1990; Ashton, 1991). The auditor market share rises as the number of their audit clients increases. The larger an auditor's market share is, the more likely clients are to perceive that the auditor would supply a higher quality audit. This notion is consistent with the studies that show that a firm's market shares signals their product's quality (Smallwood & Conlisk, 1979; Shockley & Holt, 1983; Caminal & Vives, 1996).

The industry specific knowledge and competency that is possessed by an auditor represents the main component of their audit quality. Taylor (2000) and Low (2004) claim that an auditor's knowledge of a clients' specific industry affects the level of audit risk assessment and other audit-planning decisions. They further posited that, when auditors have a higher knowledge and a better understanding of the clients' industries, they are able to assess appropriately the levels of audit risk and to plan their audit strategies, and this can help them to anticipate the potential for misstatements.

Also, studies have it that the possession of industry specialist knowledge improves auditor performance. Owhoso et al. (2002) examine the effectiveness of industry specialist auditors in detecting errors during the audit review process for two specific industries, namely banking and health care. Their findings suggest that the auditors' experience in the specific industry enables them to detect error more effectively than non-specialist auditors. Auditors without specific industry experience perform below the nominal benchmark for error detection. Similarly, Bédard and Biggs (1991) argue that the auditors who have greater manufacturing experience are better at detecting errors than the auditors who have less manufacturing experience. O‟ Keefe at al. (1994) explain that industry specialist auditors are associated with a higher compliance with accounting reporting standards than non-specialist auditors. Carcello and Nagy (2004) report a negative relationship between industry specialist auditors and the incidence of fraudulent of financial reporting, and this indicates that industry specialist auditors are less likely to be associated with financial fraud.

Beside the theoretical justification and empirical evidence for the connection between industry specialist auditors and audit quality, regulators and authoritative guidance have also emphasized the importance of an auditor being able to understand the client's industry environment before proceeding with auditing work (Knechel et al., 2007). Studies have shown that the industry specialization of auditors can be measured using several approaches, such as the market share approach (Dunn et al., 2000;Krishnan, 2003; Balsam et al., 2003; Velury et al., 2003; Chen et al., 2005) and the portfolio approach (Krishnan, 2003), as well as a complementary approach set out by Neal and Riley (2004). Despite the limitations of each approach, they are recognized as the most appropriate measures for auditor industry specialization.

The market share approach interprets the industry specialist auditor as an auditor that can make a distinction among their opponents within a particular industry in terms of market shares (Neal & Riley, 2004). Market shares can be estimated for a specific industry using client sales, the audit fees, the total fees and the number of clients that an audit firm audits in a particular industry, in that year. The auditor(s) with the largest market share(s) in a particular industry (within-industry) are assumed to have the largest industry specific knowledge and expertise, hence an industry specialist in the industry.

In summary, most of the prior studies indicate that an auditor's industry knowledge is a crucial component in the efficiency and effectiveness of audit processes and that it increases the quality of auditing services. The use of an industry specialist auditor not only improves the quality of auditing work but is also reduces earnings management.

2.4. Control Variables

Control variables were used by some of the prior researchers. The control variables used were firm size, leverage, cashflow from operations, among others. But for the purpose of this research only leverage and firm size were used.

2.4.1. Leverage (LEV)

Leverage was used as a proxy for debt covenants violation. Press and Weintrop (1990) and Duke and Hunt (1990) found that a firm with higher leverage is more likely to be associated with the debt covenants violation. This is because as the level of debt increases, the firm may experience tighter accounting constraints, which in turn increases the higher possibility of debt covenant violations. Several studies suggest that in order to avoid violating restrictive debt

covenants, the higher leveraged firms are more likely to choose accounting procedures and methods that support income increasing discretionary accruals (Bowen, Noreen & Lacey 1981; Dhaliwal, Salamon & Smith (1982). In particular, DeFond and Jiambalvo (1994) found that the highly leveraged firms have a greater incentive to make income increasing discretionary accruals in order to avoid debt covenants violation. This may suggest a positive relationship between leverage and earnings management.

DeAngelo et al. (1994) found that in a time of financial distress, firms might engage in contractual renegotiations with lenders in order to deliberately reduce reported earnings. Such a situation may suggest a negative relationship between leverage and earnings management.However, Park and Shin (2004) reported a negative relationship between leverage and earnings management for different reasons. They argue that highly leveraged firms might be less likely to manage their earnings because they are under the close scrutiny of their lenders. If the lender has closely monitored the earnings management activities of such a firm, then their earnings management will decrease with financial leverage.

In line with Matsumoto (2002) view, managers want to avoid earnings surprises. The study argues that there are two ways, they can do that: firstly, to manage earnings to beat or reach analysts' target. Secondly, to low analysts expectations, so they will lower their predictions.It is important to highlight that in some cases manager may want to manage earnings down. Studies evaluated the incentives managers have to forecast lower profits in order to influence analyst's target. They further argue that this might occur because market values firms whose reported earnings exceed managers' forecast (Bayer, 2009).

Leverage increases constrain the opportunistic behavior of managers due to following reasons: Required debt repayments decrease the amount of cash available to managers for

investing in non-value increasing projects. When a firm is highly leveraged, it has to face the strict scrutiny of lenders and its spending are often restricted due to scrutiny of lenders. Prior researches are consistent with the control hypothesis prediction that leverage increases reduce opportunistic behavior of managers. Beatty and Weber (2003) claim that leveraged firms engage in earnings management to avoid debt covenant default.

Nevertheless, Jelinek (2007) studied the effect of leverage increase on accrual earnings management and concluded that increased leverage is associated with reduced accrual earnings management. Ujah and Brusa (2011 posit that both financial leverage and cash flow volatility impact the degrees to whichearnings management is been carried out. That business cycle and not bond or debt ratings affect firm´s earnings management. Furthermore, they claim that depending on the economic group or industry a firm belongs to, their degree and extent at which they engage in earnings management vary. Burgstahler and Dichev (1997); DeGeorge, Patel, and Zechhauser (1999), suggest that investor's would like to observe a positive earning. In view of this, we expect that firms with higher leverage ratios have higher incentives to engage in earnings management since they must present to their lenders good results.

2.4.2 Firm Size

Natural log of total assets was used as a proxy for firm size, in relation to earnings management. Argument have it that thelarger the firm size, the higher the likelihood that the managers will engage in earnings management .Watt and Zimmerman (1990) found that larger firms are associated with higher political costs, and that there is thus a higher incentive t o manipulate reported earnings in order to mitigate potentiallyadverse politicalactions. Evidence

from other prior studies also suggested a positive relationship between firm size and earnings management (Becker et al., 1998; DeFond & Park, 1997).

However, Park and Shin(2004) provided an alternative argument. They found that larger firms are followed by the external capital market, therefore engage less in earnings manipulations because they are closely monitored by the press and financial analysts. Smaller firms areless scrutinized by authorities and are therefore more inclined to engage in earnings management (Becker *et al.* 1998; Chen *et al.* 2005; Abdul, Rahman & Fairuzana2006). They suggested a negative relationship between firm sizeand discretionary accruals. The mixed arguments propose no clear direction regarding the association between firm size and discretionary accruals, hence the inclusion of this variable.

2.5 Theoretical Framework

There are several theories upon which researches on this subject matter can be underpinned. The following are the theories and their extensive considerations:

2.5.1 Information Theory

Wallace (1980) posits that investors demand audited financial statements because the quality of financial information is improved through an independent audit. He further claimsthat audited financial information is able to (1) reduce market-related (systematic) and firm-specific (unsystematic) risks, (2) improve decision making and (3) provide access to new information for investors. As argued by Wallace (1980), a risk-averse investor may demand a higher rate of return for the higher levels of risk or pay a higher risk premium to reduce the levels of uncertainty or investment risk. It is assumed that the risk premium is associated with an individual investor's assessment of an audit service; through audit, uncertainty about the accuracy of financial information provided by management can be reduced (Shakun, 1978). If

the sum of risk premium for each investor mutually exceeds the cost of audit, the audited financial information is beneficial to all parties since all parties enjoy less uncertain information. According to Wallace (1980), some investors may also reduce their investment risk by developing a portfolio of both audited and unaudited investment opportunities. Any reduction in the risk premium that is linked to the audited information will be compensated through a specific firm's audit cost.

However, the unaudited investment portfolio may cause an increase in the variability of the market and thus the cost of audits could be balanced against the demand on the unverifiable market risk premium. Moreover, the barriers concerning the portfolio diversification can create larger risk premium to offset the firm-specific risk of unaudited financial information. In summary, it is through audits that investors reduce both market-related risk and firm-specific risk Shakun, 1978; Wallace 1980).Wallace (1980) explaines that the monitoring theory seems to overlap with the information hypothesis since the part of the audited information that is valuable to agents and principals is also applicable to investors for their investment decisions.

He further suggests that the monitoring theory provides support for the practice of furnishing principals with an audited financial statement only within the period of the contract agreement (i.e. within the duration of the agent-principal relationship). According to the information theory, financial information determines market value. Investors require financial information in order to make a rational investment decision even though they are on the outside of a contract of agent and principal relationships. In other words, in order to make investment decisions, investors need financial information from firms on a continuous basis and without time limits.

2.5.2 Signaling or Reputation Theory

Wallace (1980) posits that "signaling is a kind of implicit guarantee". In an agency relationship in which information asymmetry problems arise, the preparers of financial statements are assumed to be dishonest in reporting financial information.As such, the users of financial statements are incapable of distinguishing between honest and dishonest information. In this case, the demand for independent audits can be seen to result in the financial statement users receiving honest reports (Wallace, 1980). Audit services inform the market that the financial statements that are provided by management are also free from material errors. Such assurance provides the confidence to investors and other users of financial statement that the reported accounting numbers are reliable. As pointed out by Wallace (1980), "specifically, an audit can signal less noise or error in the financial report, greater fineness in the reporting methods (including with GAAP), and unbiased performance measures."

Furthermore, the signaling theory offers an explanation for the demand for different levels of audit quality. Moizer (1992) positsthat, in a market where sellers are unable to build a reputation, two major agency problems (moral hazard and adverse selection problems) collaborate to diminish the quality of the product. If buyers fail to make a distinction between the different levels of audit quality, they may view all audit services as being of average quality and will only be willing to pay for them at the same price. The audit providers do not, therefore, have any way of influencing a buyer to acquire their services in preference to any others. As a result, the moral hazard problem will arise because providers are likely to sell low quality and low cost services in order to maximize their profits and the profits that would come from providing good quality services are now accumulated among providers regardless of the quality of an individual provider (Moizer, 1992).

Similarly, the adverse selection problem could also arise because of the possibility that the market will become driven by low quality providers and good quality providers will be forced to desist from the market (Moizer, 1992). The consequence of these on trades of average quality services is that the market becomes smaller, consequently leading to the potential for market collapse (Akerlof, 1970). The signaling framework provides a cure for market collapse because it explains the sellers' ability to provide a signal to uninformed buyers about the quality of their products or services where there is an assumption that the seller knows the quality of their product and the buyer does not (Bar-Yosef & Livnat, 1984).

In view of the inability of buyers to determine the quality of a product in advance, several models of reputation capital suggested that the seller needs to expend resources in order to establish a reputation (Klein & Leffler, 1981; Shapiro, 1983; Rogerson, 1983; Allen, 1984). Klein & Leffler (1981) argue that higher quality sellers invest in non-salvageable firm-specific assets (e.g. advertising or marketing investment) in order to prevent their competitors from entering the market and thus they provide direct value to buyers. In the same vein, Shapiro (1983) suggests that sellers can establish their reputation by initially charging for a higher quality product at a minimum quality price that is equivalent to the cost of production because they are new entrants to the market. In the early period the sellers may suffer economic losses, but later they recover the price premium, provided that they maintain the production of higher quality products. As pointed out by Shapiro (1983): "… the premium for a high quality product represents only a fair rate of return on the investment in reputation.

Allen (1984) disagrees with the models proposed by Klein and Leffler (1981) and Shapiro (1983) by saying that investments in non-salvageable firm-specific assets are not practical in some industries and that sellers should probably not charge for a higher quality

product at a minimum quality price and thus suffer losses in the initial period of investment. Allen (1984) argues that sellers that produce a higher quality product should price it at a higher price which can be above the marginal cost. He claims that buyers "reassure themselves about high quality of each firm's output by verifying that the price charged and quantity produced are consistent with high quality's being more profitable than low quality".

Klein and Leffler (1981) suggest that firms with an established reputation are less likely to produce a low quality product because once the buyers are aware that they have purchased such a product, this information will quickly be disseminated to other buyers. Once their reputation is damaged, sellers may fail to secure an adequate return on their quality product (Klein& Leffler, 1981; Shapiro, 1982 & 1983; Rogerson, 1983). In relation to the audit market, Moizer (1997) claims that the signaling theory does not necessarily entail a higher quality audit because it simply leads the market users to believe that the more expensive auditing firms offer a higher quality of service. Consistent with this is DeAngelo's (1981) assertion that since audit quality is unobservable and costly to measure, the market tends to use good reputation, derived from large auditors, as a signal of a higher quality audit.

The reputation theory is also applicable to auditors. A highly reputable auditor has an incentive not to produce a low quality audit because, once their clients discover that they provide a low quality audit, their reputation will be damaged and they will be unable to secure their clients and they will lose quasi rents (DeAngelo, 1981).Wilson and Grimlund (1990) provided evidence of the consequences that auditors may suffer if their reputations are damaged. They examined the effect of SEC disciplinary actions on audit firms and their findings suggest that the auditors tend to lose their market share and that they experience difficulty in retaining clients. In general, the auditors are likely to constrain earnings management because of the possibility of

being sued or subjected to regulatory actions. These may be due to negligence in identifying misleading information in the audited financial statement. Evidence suggests that auditor litigation has positive relationship with earnings management (Lys & Watts, 1994; Heninger, 2001)and a failure to fulfill their role effectively or a neglect of their duties may increase an auditor's potential for future legal exposure (Lennox, 1999).

2.5.3 Insurance Theory

The insurance theory differs from the agency relationship theory and it applies when auditors are involved in litigation. It suggests that audit services provide investors with a form of protection in the event of an audit failure (Wallace, 1980; Menon & William, 1994; Stice, 1991). In other words, the legal system allows the investors to recover their investment losses from the auditor if the audited financial statements contain a misrepresentation or a low quality audit. The probability of recovering such claims increases if the auditors are among the larger audit firms or those known as "deeper pockets" (Schwartz & Menon, 1985).

Wallace (1980) provides four explanations of why managers choose auditors as insurance in preference to insurance companies. Firstly, society assumes that managers who fail to guarantee that they are fully independent of their actions, without the auditors" attestation, are committing fraud or are involved in negligence. Secondly, the improvement in accounting and auditing firms that employ legal staff, legal services and in-house counsels, suggests that they are more efficient compared with insurance companies.Thirdly, the insurance companies use the cost-benefit approach when deciding whether to enter a legal defense or to decide on an out of court settlement. However, both the auditors and the firms that are involved in litigation will consider the effect on their reputation and thus, with a similar common interest, they will ensure

that they protect their reputations. Fourthly, if investors suffer from losses because of an audited financial statement, the courts are likely to hold the auditors responsible and to require them to bear the losses. An auditor's contributions to an investor's losses are viewed by the court as 'socializing risk'.

Baber, Kumar and Verghese (1995) suggest that financially distressed auditors are more likely to perform low quality audits because they are more concerned with their current position than with their competence and independent judgment. In order to retain their clients and minimize their audit cost, financially distressed auditors may less likely report an error or a misstatement that they discover during the audit work or they may reduce audit tests in order to cut down the audit cost. They argue that if the investors were aware and if they perceived that L&H was incompetent and independent, and then such a perception may have forced the stock prices to decline. However, Lai and Gul (2008) provide contradictory evidence to Baber et al. (1995). Using the likelihood of issuing modified audit opinion, the provision of discretionary accruals and the predictability of discretionary accruals for future earnings suggested that the audit quality of auditors was not substandard.

In another study, O'Reilly,Leitch , and Tuttle (2006) examined the interaction of signaling and insurance theories through studying audit opinion in an experimental setting. They argue that a going-concern audit opinion; (1) provides signals to the market that the firm is no longer feasible, thus affecting stock prices; (2) offers the auditor legal protection, although there is a possibility that investors are able to recover part of their investment‟ losses and (3) increases the value to investors because of the increased need for insurance coverage. Their findings claimed that the going-concern audit opinion reduces analysts' estimation of stock price because market participants consider the auditors' role as an insurance protector. In sum, the

insurance theory provides the most consistent support for the view that auditors are perceived by investors as the guarantors of their investment and investors appear to be willing to pay a premium for the right to recover potential investment losses from auditors through litigation" (Menon & William, 1994). As well as increasing the direct costs that auditors need to charge for in order to cover for investors' losses, such lawsuits also have an indirect impact on their reputation and perceived audit quality (Palmrose, 1991).

The findings of Chaney and Philip (2002) are consistent with those of Menon and Williams (1994) and Baber et al. (1995). They investigated the impact of the Enron audit failure on Arthur Andersen's (A&A) reputation as one of the big-five auditors. They examined the A&A clients' share prices on the three days after A&A admited they shredded a significant number of audit documents related to the Enron engagement. Such an unexpected event results in a significant negative market reaction on the A&A clients'share prices, suggesting that investors acted on the perceived low quality of the audit performed by A&A similarly, Hillison et al. (2004) examine the audit clients' share price reaction related to Ernst & Young's (EY) rumours of bankruptcy in late November and early December 1990. Their findings claim that the insurance theory and the audit quality explanation account for the negative share price reaction. Even though the big 4 auditors may provide a higher quality audit, market participants still react according to newly published information. When market participants lose their confidence in the credibility of audited financial statements, it effects a reduction in clients' share price.

Lennox (1999) explains the insurance theory and reputation exposure (under the signaling theory) using UK data between the periods of 1987 and 1994. According to the reputation theory, the big-size auditors signal their audit quality by assuming that they are more likely to lose their client-specific rent when they provide a low quality audit. In order to avoid

such loss, they have more incentive to provide a higher audit quality (DeAngelo, 1981). In other words, the wealthy auditors or big-size auditors are associated with higher litigation risk (Dye, 1993) and in order to prevent such larger litigation claims (e.g. because of low quality audit) from the investors, the big-size auditors offer a more credible and higher audit quality.

Lennox (1999) posited that the lower the audit quality undertaken by the auditors, the higher the potential of such auditors to be sued they argued that, in the case of the big-size auditors that gain their "quality" from reputation they have built. However, the insurance theory considers the auditor's litigation to be a poor indicator because the auditors are likely to be sued if they are insufficiently conservative, but they will not be sued if they are too conservative. Although the big-size auditors provide higher audit quality than a smaller size auditor,for not been sufficiently conservative. Lennox's findings suggest that the big-size auditors are more likely to be sued because they are more fearful of a potential litigation claim than of losing their client-specific rent or reputation capital.

2.5.4 Monitoring Theory

The monitoring theory is based on the agency relationship. Agency theory suggests that agency cost is a potential solution to agent-principal conflicts and that one of the answers to the problem is provided by an independent audit (Jensen & Meckling, 1976). According to Wilson (1983), the monitoring role of audit minimizes the moral hazard and adverse selection problems that arise from the information asymmetries problem. Wilson (1983)explainsthe case of a moral hazard problem, the managers responsible for protecting a firm's assets may misuse the assets or fail to maintain them, in which case such actions are not directly observable by the owner and potential investors. In the case of an adverse selection problem, such assets have their own fixed

values. The managers have more information about these values and they are able to manipulate information for their own personal gain.

Consequently, owners need to adopt an effective way to monitor managers‟ opportunistic behaviour and the credibility of the information provided by managers as well as considering how to improve the investors' opportunities to observe such assets.One possibility of achieving this is through independent audits. Auditors provide managers and potential investors with reliable verification and information on the value of assets. In other words, the independent audit provides an assurance to the owners and potential investors that the information provided by managers is reliable.

The independent audit can be generated by the principal (monitoring cost) or the agent (bonding cost). Humphrey (1997) argue that agents can demand an independent audit because principals normally tend to neglect monitoring activity as they are able to safeguard themselves from the risk of loss by paying lower wages to an agent. The presumption is that principals will pay more to agents for work that has been verified by an independent audit than that which has not been so verified. As pointed out by Wallace (1980), the stewardship (monitoring) theory states that when one party is delegated decision making power, he has an incentive to agree to be checked if the benefits from such monitoring activities exceed the related cost.

Wallace (1980) posits that an independent audit provides an assurance that the financial reports that are provided by the managements have been carefully prepared and they are free from material errors. Thus, the market participants including the potential investors can use the audited financial statements without any hesitation. Moreover, an independent audit also mitigates financial statement fraud and illegal reporting and improves the internal control and operational efficiency of a firm (Wallace, 1980; Chow, 1982). For instance, when managers

know that their financial reports will be examined by auditors, fraud and illegal behaviour can be minimized indirectly because they are worried that such actions will be discovered by the auditors. In addition, when auditors perform an audit review or audit testing on the internal - control system of a firm, they will discover if certain internal control procedures are missing or have not been performed properly. Thus, auditors typically provide recommendations to improve existing internal control systems. Such restrictions and recommendations are able to improve the effectiveness and efficiency of a firm's operation.

In summary, these observations suggest that audit services not only provide a monitoring tool for owners, managers and potential investors, but also for the whole organization including its employees and creditors. We therefore, adopted monitoring/agency theory to underpin this research.

2.6 Agency Theory and Information Asymmetries

Addressing the preposition of agency theory, the concept agency theory was introduced, Jenson and Mecklin (1976). They applied the concept of agencycost to explain issues associated with the separation of ownership and control in alarge corporation, consistent with Berle and Means (1932) propositions.Theultimate element in agency theory is the conflict of interest between principalsand agents. A principal (shareholder) assigns the power of the decision maker to anagent (manager) who executes their duties on behalf of the principal (Jensen & Meckling, 1976). Conflicts and dissimilar interests lead to informationasymmetries between the two parties. The existence of information asymmetriesresults in two major agency problems, namely, moral hazard and adverse selectionproblems.

Moral hazard problems are associated with the problem of hidden actions when agentshave the incentive to pursue self-interested behaviour. They arise when principals areunable to observe actions that are undertaken by the agents. Formally, an agent isexpected to maximize the principal's wealth through their actions and decisions.However, agents tend to pursue their own interests. By contrast, adverse selectionproblems are associated with hidden information, where the agent has moreinformation than the principal. Both problems may createthephenomenon of earnings management that, in turn, may cause shareholders, debt holders to be unable to distinguish the true economic value of a firm.

According to agency theory, since the managers or agents are inspired by extrinsic motivations (Sundaramurthy & Lewis, 2003), the principals had to identify ways tomotivate the agents and to ensure that they act in the best interest of the principals.Jensen and Meckling (1976) suggest that agency cost can be an alternative way toreduce agency conflict and they define agency cost as consisting of monitoring cost,bonding cost and residual loss. Monitoring costs are the costs that are associated withthe appointment of appropriate agents, such as external auditors, and withmechanisms that control the agents' behaviour, such as the roles played by the board. Bonding cost is the cost that is associated with contracting in order toensure that agents always make decisions that support the principal's wealth. Thesecosts include those that are related to the agent's compensation system. Residual lossis the agency loss that is associated with the imbalance between monitoring andbonding costs or, in other words, it is the reduction in principals' welfare that arises from an imperfect alignment of interest between agents and principals (Jensen &Meckling, 1976).

In this research work, the monitoring roles of auditors are studied as mechanism that mitigates agency conflicts. Zahra and Pearce (1989) argue that agency theory is the

mostcomprehensive theory that clarifies the auditors' functions and highlights the importance of their controlling role.Similarly, Hung (1998) also argues that agency theory is a convincing theory for explaining the auditor's monitoring role.Solomon (2007) claimsthat the external audit represents a crucial element of a firm's internal controlsystem and that it provides a check and balance system that helps shareholders tomonitor and control the managements' activities. As pointed out by the Cadbury Report (1992),the annual audit is one of the cornerstones of corporate governance.Given the separation of ownership from management, the directors arerequired to report on their stewardship by means of the annual reports andfinancial statements sent to the shareholders. The audit provides anexternal and objective check on the way in which the financial statementshave been prepared and presented, and it is an essential part of the checks and balances required.

Therefore, it can be argued that agency theory is essential to the present study since itrecognizes the monitoring role of an external audit as mechanism to control management behaviors. Hence, the theory that underpins this study,the agency theory.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology used to test the hypotheses outlined in chapter one. The first part explained the population of the study and justified the sample firms selected and the period the investigation covers, the sources of data and the data analyses tools, techniques and procedures. The chapter then outlines the measurements of the variables (i.e. audit quality proxies and earnings management), the model specifications and related control variables. Finally, a summary of the chapter's contents was provided.

3.2 Research Design

Based on the research purpose, this systematic approach concerning generalization on the issue of audit quality and earnings management adopted ex-post facto research design. This is because the design is a quasi-experimental technique in which preexisting groups are compared on the dependent variable. The assignment of participants to the levels of independent variable is based on events that occurred in the past, this is where the name is derived from. It explains how a regressor affects the regressand.One variable is hypothesized tobe influencing another, and also compares two or more groups of individuals with similar backgrounds who were exposed to different conditions as a result of their natural histories.The design is considered the most appropriate in determining the impact of audit quality and earnings management in the chemical and paints firms in Nigeria.

3.3 Population, SampleSize and SamplingTechnique

The population of this study coversthe entire eight (8) chemical and paints firms listed on the floor of the Nigerian Stock Exchange as at December 2012. These firms are; African Paints (Nigeria) Plc, Berger Paints Plc, Chemical and Allied Products Plc, DN Meyer Plc, IPWA Plc, Nigeria-German Chemicals Plc, . Portland Paints and Products Nigeria Plc and Premier Paints Plc. This sector comprises the companies that produce industrial and household chemicals. It converts raw materials (oil, natural gas, air, water, metals and minerals) into more than 70,000 different products.

Census sampling technique was used. The entire population is taken into account in view of the fact that the size is relatively small. In addition, all the data needed for the study are available.

3.5 Sources and Methods of Data Collection

This study used secondary data. The data were obtained from the annual reports and prospectuses of the firms. The choice of the data was informed by the global economic crisis suffered by the Nigerian financial system within the period of the study, which made firms to rush to the capital market to raise fund competitively, thereby engaging in earnings smoothing to report good of their financial statements.

3.6 Technique of Data Analysis

Multiple regressions was used to estimate the relationship between the independent variables; audit firm size, auditor independence and industry specialist auditor and the dependent variable; discretionary accruals, as the measure of listed chemical and paint firms' earnings

management. Generalized Least squares technique (to control for endogenity in the data), was used to estimate the regression coefficients, using STATA 10 as the tool of analysis.

The choice of the technique was based on the fact that both the technique and tool are more informative (i.e. more variability, less collinearity; and more degree of freedom), as estimates were more efficient. Also, the techniques allow the study of individual dynamics. As they give information on the time ordering of events, the techniques also allow for individual unobserved heterogeneity. GLS regressions are able to reweight the error variance and thus to correct heteroscedasticity and autocorrelation (Adkins & Hill, 2007: 196; Gujarati, 2003: 387). A diagnostic/robustness test was carried out to provide adequate assurance that the research findings are robust to the model specification.

3.7 Variable Measurement

Below is how the variables were measured individually;

3.7.1 Earnings Management

Prior studies have used accruals as measures for earnings management.In order to analyze the effect of audit quality on the earnings management, the modified Jones model 1995 is used for the purpose of this research. This model proposed a modification in Jones (1991) by subtracting change in accounts receivables from change in revenue. This allows for capturing the possibility of management to manage revenues related to accounts receivables in between reporting periods.

The practice of using discretionary accruals to proxy for earnings management is consistent with the extant earnings management literatures (for example, Johnston & Rock, 2005; Hall & Stammerjohan, 1997). While there are many ways to estimate discretionary

accruals, this study employs the Modified-Jones Model (Dechow et al, 1995). The Modified-Jones Model has been shown to outperform other discretionary accrual models in detecting EM (Dechow et al, 1995) and is frequently used in the accounting literature (DeFond &Subramanyam, 1998 and Wasimullah, et. al., 2010). It has been found to measure discretionary accruals with less error compared with prior models. Even the model after it i.e. Dechow, Richardson and Tuna (2002) has not yet been widely confirmed as to its reliability. (Shehu & Yero, 2012).

We first estimated total accruals. There are two ways to get the total accruals: you can use the either of the statement of financial position or the statement cash flow approach to pull out the total accruals buried in the reported earnings amount. Calculating total net accruals from the statement of cash flow is a bit more straightforward.

Therefore in order to measure total accruals in a given accounting period, take the reported earnings produced with the accrual accounting during the period and subtract the cash earnings during the period. Thus,

TAC = EARN – NCFO

Where,

TAC = total accruals;

EARN = earnings;

NCFO = net cash flow from operations.

We then estimated the regression of the impact of non-discretionary accruals proxies on total accruals. The residual from the regression represent the discretionary portion of the accruals (Bugshan, 2005). It is therefore pertinent to note that; the higher the residuals, the more the earnings management, vice versa.

Therefore, Dechow, et al. (1995) model is measured thus;

$DACC = TAC_{it}/TA_{it-1} - [\alpha_1 (1/TA_{it-1}) + \alpha_2 [(\Delta REV_{it} - \Delta REC_{it}/TA_{it-1}) + \alpha_3 (PPE_{it}/TA_{it-1})] + e_{it}$

Where;

DACC = discretionary accruals

TAC_{it} = total accruals for sample firm i for year t;

TA_{it-1} = the book value of total assets for sample firm i for year t-1;

ΔREV_{it} = change in revenues for sample firm i for year t;

ΔREC_{it} = change in account receivable for sample firm i for year t;

PPE_{it} = gross property plant and equipment for sample firm i for year t;

e_{it} = error term (discretionary accruals) for sample firm i for year t.

The estimates i.e. $\alpha_1, \alpha_2, \alpha_3$ are industry specific rather than firm specific.

3.7.2 Audit Firm Size

For audit quality, the measurement is using the size of theaudit firms which comprise of Big four and non-Big four. This is consistent withother prior studies that used the same measurement for the audit qualityvariables (Becker *et al.* 1998; Chen *et al.* 2005; Tomezyk, 1996). Overall, these studies suggested that audit quality is likely to be positively related to audit firm size. We set Auditor size equal to 1 if the company is audited by Big 4 audit firm, otherwise, 0.Big 4 audit firms are the four international audit firms (PriceWaterhouseCoopers, Deloitte & Akintola Williams, KPMG and Ernst and Young);while the others are the non-Big 4.

3.7.3 Auditor Independence

In this study, because the data related to non-audit fees are unavailable, the audit firm tenure wasused as the criterion for auditor independence.Auditor tenure is measured by the length of years which auditors audit their clients (Louwers, 1998 and Vanstraelen, 2000). Dichotomized 1, if the audit firm tenure isless than five (5) years and 0, if the audit firm tenure is five (5) years and above (Anandarajan, 2001). It is assumed that audit firm tenure that is more than five (5) years could pose a familiarity threat on the auditor thus, impairing his independence in reporting any error, irregularity or misstatements.

3.7.4 Industry Specialist Auditor

The market share approach interprets the industry specialist auditor as an auditor thatcan make a distinction among their opponents within a particular industry in terms ofmarket shares (Neal & Riley, 2004). Market shares can be estimated for a specificindustry using client sales, the audit fees, the total fees and the number of audit clientsthat are assigned to the particular auditor. The auditor(s) with the largest marketshare(s) in a particular industry (within-industry) are assumed to have the largestindustry specific knowledge and a significant investment contribution towards theimprovement of audit quality and economy of scales as compared to other competitors.

Industry specialistis defined as a dichotomous variable, which takes the value of 1 if the firm isaudited by an industry specialist, 15% of the firms in the sector as at that year (Krishnan,2003a; Dunn et al., 2000; Balsam et al., 2003; Velury et al., 2003; Chen et al., 2005)and 0 if it is audited by a non-industryspecialist. Therefore, an inverse relationship is expected between industry specialist auditor and earnings management.

3.7.5 Control Variables

Control variables were used in this study to increase the fitness of the model and to avoid omitted variables biasness. The control variables are discussed below;

3.7.5.1 Leverage

Leverage is defined as the proportion of debts to total assets and measures the clients' financial condition. Leverage was used as a proxy for debt covenants violation.

3.7.5.2Firm Size

Natural log of total assets was used as a proxy for firm size. The larger the firm size, the higher the likelihood that the manager will manipulate the firm's earnings.

3.8 Model Specification

The model specified for the study is given as:

$$EMGT_{it} = \beta_0 + \beta_1 AudSIZE_{it} + \beta_2 AudIND_{it} + \beta_{3A}\ IndSpec_{it} + \beta_4 LEV_{it} + \beta_5 FirmSize_{it} + e_{it}$$

Where;
EMGT = earnings management;
β = coefficient;
0 = intercept;
AudFSIZE = Audit Firm Size;
AudIND = Auditor Independence;
IndSpec = Industry Specialist Auditor;
LEV = Leverage;
FirmSize = Natural logarithm of firm's total assets(Ln_TA);
i = company
t = period t; and
e = error term.

CHAPTER FOUR
DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter covers data analysis and interpretation. The results were obtained from regression presented based on the requirements of the research methods. Tests were performed with the aim of achieving the setobjectives of investigating the impact of audit quality on earnings management in the listed chemical and paints firms in Nigeria. The chapter began with the descriptive statistics which include summary statistics, correlation matrix, and various robustness tests adopted to ensure both internal and external validity. The results were also interpreted and discussed extensively pointing out their policy implication.

4.2 Descriptive Results

Descriptive statistics describes the sample data on a single variable in an organized form. It includes the mean, median, standard deviation, minimum and maximum. The mean, median, and standard deviation measure the central tendency of the variable.

Table 1 shows the descriptive statistics

Table4.1: Summary Statistics of Audit Quality andEarnings Managemeent Variables

	Dacc	***AudSize***	***AudInd***	***IndSpec***	***Lev***	***Ln_Ta***
Mean	3.203036	.6428571	.5892857	.4821429	.5151786	13.88304
Std.Deviation	6.601789	.4834938	.4964157	.5042031	.2310843	2.44415
Minimum	-10.22	0	0	0	.13	9
Maximum	30.55	1	1	1	.99	20.39
Obs.	56	56	56	56	56	56

Summary statistics
Source: author's computation using STATA 10

From table 4.1, the mean and standard deviation of audit firm size are 0.64 and 0.48, respectively. The mean and standard deviation of auditor independence is 0.59 and 0.50. Under the industry specialist auditor 49% of the firms are audited by specialist auditors. The mean and

standard deviation of total assets is 13.88 and 2.44 million, in natural logarithm form.The mean and standard deviation) for leverage is 52% and 23% respectively. In terms of earnings management by these firms, the mean and standard deviation of *DACC* is 3.20 and 6.60.

4.3 Correlation Results

The correlation among the variables is shown by pair wise correlation matrix as per table 4.2. This explains the degree of linear association between variables and ranges from +1 to -1, where a correlation of ±1 means that there is a perfect linear relationship between the variables. However, according to Gujarati (2004), a higher degree of intercorrelation among the independent variables may cause problems of multicollinearity when the correlation coefficient is above ±0.80. Multicolinearity may substantially affect the predictive ability of the regression model as well as the estimation of the regression coefficients, if there is serious correlation between two or more predictors. High correlation is expected between the regressand and the regressors as this portrays how well fitted the model of the study is. The higher the correlation, between the dependent and independent, the more the predictors are explaining the regressand and more fitted the model will be.

Table 4.2: Correlation Matrix

	DACC	***AUDFSIZE***	***AUDIND***	***INDSPEC***	***LEV***	***Ln_TA***
DACC	**1.0000**					
AUDFSIZE	-0.4575	**1.0000**				
AUDIND	0.3313	-0.4708	**1.0000**			
INDSPEC	-0.3406	0.7192	-0.3567	**1.0000**		
LEV	-0.0324	0.6141	-0.2474	0.5306	**1.0000**	
Ln_TA	-0.4434	-0.0092	0.1065	0.0094	0.0332	**1.0000**

Summary Correlation matrix
Source: author's computation using STATA 10

In general, the overall correlation matrix in table 4.2 shows that each of the audit quality measures with the control variables have negative correlation with discretionary accruals, except for auditor independence. All variables that have correlation coefficient less than 0.80 are considered safe and can therefore be included in the same regression model (Gujarati, 2004).The correlation coefficient between AudFSize and IndSpec is positive and strong (0.72). Therefore, as the AudFSize increases, the more the firm becomes an industry specialist.

4.4 Robustness Tests

This research adopts further test for excessive correlation using the variance inflation factor (VIF). The purpose of additional investigation is to provide adequate assurance that the research findings are robust to the model specification.

Table 4.3: Test for Multicolinearity

	VIF	**Tolerance**
AudFSize	2.768	0.361
AudInd	1.313	0.762
IndSpec	2.131	0.469
Lev	*1.661*	*0.602*
Ln_Ta	*1.020*	*0.981*

Summary test of multicolinearity
Source: author's computation using SPSS 15

Table 4.3 presents the result of VIF and tolerance value tests for the study to examine the existence or absence of multicolinearity, using the VIF and the tolerance value. As noted by Gujarati (2004), if the variables have VIF above 10 and tolerance values less than 1, there is a strong indication of the existence of excessive correlation. From the table, VIF and Tolerance values of less than 10 and greater than 1 respectively, show the absence of multicollinearity.

4.5 Presentation of Generalized Least Square Results Controlled for Random Effect

The study performed the Hausman specification test to make choice between the fixed and random effect regression models. This test is necessary, considering that there is a trade-off between the efficiency of the random effect and the consistency of the fixed effects approach. The test also determines whether the estimates of the coefficient, taken as a group are significantly different in the two regressions.

The aggregate null hypothesis is that AudFSize, AudInd, IndSpec, Lev and Ln_Ta are exogenous. If the F statistic were significant, then the null hypothesis would be rejected, suggesting the presence of endogenity. A non significant result is obtained from the Hausman specification test which indicates that Chi2= 14.23 and Prob>Chi2= 0.0142, implying that the assumptions of the fixed effect approach are violated and therefore random effect is more suitable for this study. The random effect regression is considered appropriate because it does not take into account both the temporal and spartial nature of the data (Sanda, et.al. 2008). The summary of the random effect is given in table 4.4.

Table4.4. GLS Random Effect Regression Results

Variable	Coefficient	Std. Error	T	P>/T/
Constant	16.1926	5.270992	3.07	0.002*
AudFSize	-10.04978	3.092905	-3.25	0.001*
AudInd	-0.7753238	1.335251	-0.58	0.561
IndSpec	-0.211499	2.402745	-0.01	0.993
Lev	12.62708	4.542986	2.78	0.005*
Ln_Ta	-0.9710322	.3108142	-3.12	0.002*
R^2(within)	0.1952			
R^2(between)	0.6728			
R^2(Overall)	0.5158			
F. stat	26.27			
F. sig	0.0001*			

Summary GLS output (* represents significance at 1%)
Source: author's computation using STATA 10

4.6 Analysis and Discussion of Results

i. Audit Firm Size and Earnings Management

On the audit firm size, table 4.4 reveals the result of the co-efficient to be -10.05 and t-value of -3.25 with a significance value of (0.001). This signifies that auditor size is negatively, significantly and strongly influencing the discretionary accruals of the Nigerian chemical and paints sector. It alsoimplies that as the smaller audit firms become big audit firms, the discretionary accruals become lower,hence lower earnings management.This may be as a result of the quality of audit by the big audit firms built up by standards and reputation in carrying out

their duties, which is in line with the practice.This information argument is consistent with the model in Titman and Trueman (1986), in which earnings management was decreasing with higher quality of the information provided by the firms, in which the quality of the auditor plays a vital role.The finding is in conformity with Chen, et. al. (2005); Zhou and Elder, (2003); Krishnan, (2003); Heninger, (2001); Gul, et. al.(2001); Bartov, Gul and Tsui, (2001); Bradshaw, et. al., (2001); Gaver and Paterson, (2001); Francis et. al., (1999); Francis and Krishnan, (1999); Becker et. al., (1998); Phillips, (1999) and Hirst, (1994). These studies documentedevidence that big auditors are associated with lower discretionary accruals.

Therefore, audit firm size lowers the level of earnings managementin the listed chemical and paints firms in Nigeria. This is in line with the prior expectation that, audit firm size reduces earnings management, via discretionary accruals. The result therefore, provides an evidence to reject the first hypothesis of the study that, audit firm size does not have any significant impact on earnings management.

ii. Auditor Independence and Earnings Management

The second hypothesis states that, auditor independence has no significant impact on earnings management. The result on the table also presents the co-efficient value of -0.78 and t-value, for auditor independence, of -0.58 with a p-value hat is not statistically significant. This shows that, auditor independence has no significant impact on earnings management.It also implies that the independence of an auditor does not significantly reduce earnings management in chemical and paints industry. This result does not conform to Roger, et. al. (2003).

The result is not in line with our prior expectation and does not give a strong support to monitoring/agency theory; upon which this research is been underpinned.The result therefore,

provides an evidence of failing to reject the second hypothesis of the study that auditor independence does not have significant impact on earnings management.

iii. Industry Specialist Auditor and Earnings management

The third hypothesis states that, industry specialist auditor has no significant impact on earnings management. Table 4.4 presents the result of the co-efficient to be -0.21 and t-value to be -0.01 at 0.99, level of significance. this shows that, industry specialist auditor has no significant effect on earnings management. It also implies that higher quality in auditor being an industry specialist does not have any significant impact on reducing discretionary accruals of chemical and paints firms in Nigeria.

The result therefore, provides an evidence of failing to reject the third hypothesis of the study. This result is not in line with our theory and contradicts our prior expectation, that industry specialist auditor has a significant impact on earnings management of listed chemical and paints firms in Nigeria. This may be as a result of audit firms not having adequate knowledge and expertise in the sector.

iv. Leverage and Earnings Management

For Leverage, the table shows a co-efficient of 12.63 and t-value of 2.78 with a p-value that is significant at 0.005. This signifies that leverage has a strong and positive significant impact on earnings management, which implies that an increase in leverage increases earnings management by 2.78. This may be as a result of the debt covenant these firms enter into, because as the level of debt increases, the firm may experience tighter accounting constraints, which in turn increases the possibility of debt covenant violations.As DeFond and Jiambalvo (1994)

suggested the highly leveraged firms have a greater incentive to make income increasing discretionary accruals in order to avoid debt covenants violation. Thereby, suggesting a positive relationship between leverage and earnings management.

v.Firm Size and Earnings Management

From table 4.4, it can be seen thatthe co-efficient value of firm size is -0.97 and t-value is -3.12 with a significant p-value of 0.002. This signifies that, firm size has a significant but negative impact on earningsmanagement, suggesting that an increase in total assets of these firmsreduces earnings management by 3.07.

Cumulatively, it is observed that the coefficient of determination for the regression, expressed as R^2 is 0.52, meaning that about 52 percent of the variation of the explained variable is accounted for by the explanatory variables.This shows that the predictors have significantly explained the regressand.

The wald chi which is also the F-statistics of 26.27 shows that the model of the study is fit and that the variables were well selected. The collective impact of the regressors on the regressand is significant at 1% level of significance. This implies that audit quality has significant impact on the earnings management of listed chemical and paints firms in Nigeria.

4.7 Policy Implication

The international auditing guidelines so far have no provisions as regards the engagement of big audit firms as they differ from small audit firms. However, this research has proven that as the audit firm increases in size, the earnings management tendencies of their client firms reduce. This by implication means that as the size of audit firms increases, the earnings quality of the

client firms invariably increases. This portrays that a rationale firm or organization will engage a large audit firm for its statutory audit. Therefore, the auditing guidelines may be affected if the setters of this guideline accept the findings of this research, to take into consideration that the audited financial statement of firms who engaged big audit firms will be more relied upon as being free of earnings management than those of their counterparts who engaged small audit firms.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

This study examined the impact of audit quality on earnings management which is the use of judgment in financial reporting and structuring transactions to deliberately alter financial reports to either mislead investors on the underlying economic performance of the firms to gain some contractual/compensation benefits that depend largely on the reported earnings. The study was set out with the objective to examine the impact of audit quality as a monitoring mechanism in reducing earnings management in the Nigerian chemical and paints industry. Relevant literatures were reviewed and concepts of earnings management and audit quality were discussed.

In carrying out this study on chemical and paints firms quoted on the Nigerian Stock Exchange, discretionary accruals was used to represent the dependent variable which is earnings management while the independent variables used to proxy audit quality were audit firm size, auditor independence and industry specialist auditor. The study gathered secondary data from the published financial statements of the eight (8) sampled firmsover a period of seven (7) years from 2006 to 2012. The variables were regressed using the random effect generalized least square regression. The study found only audit firm size to be significantly impacting on the earnings management and by further implication earnings quality of the studied firms, while the other two variables which are auditor's independence and industry specialist auditor were found to have an insignificant impact on the earnings management of the studied firms.

5.2 Conclusion

Earnings management is of great concern to corporate stakeholders. Despite the popularity of the topic, empirical evidence on the effect of audit quality on earnings management is rather inconsistent. Our literature uncovered a large number of studies on earnings management. This study examines, whether audit quality, in terms of larger audit firms, high auditor independence and industry specialist auditor, provide a strong constraint on earnings management.

Using data on the Nigerian chemical and paints firms, this study provides evidence that firms that employ the services of big audit firmsengage less in earnings management because of their size and reputation they have built over the years. Consistent with Chen, et. al.2005; Zhou and Elder, 2003; Krishnan, 2003; Heninger, 2001; Gul, et. al., 2001; Bartov, Gul and Tsui, 2001; Bradshaw, et. al., 2001; Gaver and Paterson, 2001; Francis et. al., 1999; Francis and Krishnan, 1999; Becker et. al., 1998; among others. Our major findings show that, chemical and paint firms that engage the services of big auditors engage less in earnings management.

In addition, the results also suggest that auditor independence and industry specialist auditors as measures for audit quality do not show significant impact on earnings management by these firms, since their results are of no significance.

5.3 Recommendations

Based on the findings of this study, the following recommendations are proffered:

The big firm auditors should maintain or consistently increase their size to maintain or improve the quality of audit works they do, as per minimizing the way and manner client firms

report high discretionary accruals, as thiswillboost investors' confidence on reported earnings since investors are the major users of financial statements and provide finance for the business.

Furthermore, the Nigerian chemical and paints industry in collaboration with audit firms and accounting governing bodies should combine efforts tocontinue improving on the quality of audits (by setting effective quality control, standards and policies that will enhance audit quality) by the big auditors, even the non-big ones can improve on the quality of their services by partnering with the big ones, as they have significant effect on reducing earnings management in this Nigerian sub-sector.

5.4 Limitation of the Study

The conclusions of this study are subject to several limitations.

First, the phenomena of earnings management that are indicated in this thesis are related to the opportunistic earnings. Therefore, given that International Financial Reporting Standards (IFRS)allow some flexibility of accounting choices that managers may also use their best judgments over some accounting figures that should be estimated, which could potentially maximize the firm’s value. The auditors may therefore, underestimate the earnings discretion i.e. the estimates, made by management since the earnings management involved a higher degree of managerial judgment.

Second, there is always the possibility that the models employed in this thesis remain a potential for certain omitted variables bias that are correlated both with audit quality and earnings management. However, several steps have been taken to reduce the likelihood of correlated variables, including the tests for additional control variables, endogeneity and fixed or random effects models.

Finally, the data for non-audit fees, measuring auditor's independence as used by some of the prior researches, were not seen in the financial statements of these firms, which posed a little problem on auditor independence measurement, compelling the researchers to measure auditor independence using auditor's tenure.

Although this acknowledgement does not withhold the validity of the results presented, it provides opportunities for further research both in Nigeria and in otheremerging economies where the current service delivery challenges encountered in the provisionof quality audit in Nigeria may resonate hence the need to interpret the findings and implications of the study with caution.

5.5 Suggestion for Further Research

This study has several implications for audit quality research. The results of thisstudy suggest that audit quality proxies especiallyaudit firm size, portrays statistically significant impact on earnings management, and auditor independence and industry specialist auditor which is dependent on the variable measurements and data used, show no significant impact on earnings management.

Therefore, when any defect in terms of variable measurements and data collection occur,the researcher's findings might be seriously undermined or betrayal of confidence in relying on the results. Therefore, in avoidance of these, the following arefurther areas for improvement:

(i) inclusion of most current year on the subject matter as this would go a long way in giving a more acceptable and reliable conclusion upon which a valid policy implication could be drawn for better prediction.

(ii) the audit quality variables may be proxies for something else, in addition to those used in this study. The use of other audit quality measures such as audit fees, non-audit fees, auditor opinion, industry average fees, etc alongside those used in this study may help to measure audit quality holistically, thereby, giving more objective results.

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Appendix A: Population of the Study

1. African Paints (Nigeria) Plc
2. Berger Paints Plc
3 Chemical and Allied Products Plc
4. DN Meyer Plc
5. IPWA Plc
6. Nigeria-German Chemicals Plc
7. Portland Paints and Products Nigeria Plc
8. Premier Paints Plc

Appendix B– Results

```
. xtset id year, yearly
       panel variable:  id (strongly balanced)
        time variable:  year, 2006 to 2012
                delta:  1 year
. su DACC AUDFSIZE AUDIND INDSPEC LEV Ln_TA, detail
```

DACC

Percentiles		Smallest		
1%	-10.22	-10.22		
5%	-4.1	-6.65		
10%	.66	-4.1	Obs	56
25%	1.035	-3.07	Sum of Wgt.	56
50%	1.385		Mean	3.203036
		Largest	Std. Dev.	6.601789
75%	2.2	18.76		
90%	10.37	19.46	Variance	43.58361
95%	19.46	24.66	Skewness	2.253458
99%	30.55	30.55	Kurtosis	9.323524

AUDFSIZE

Percentiles		Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	56
25%	0	0	Sum of Wgt.	56
50%	1		Mean	.6428571
		Largest	Std. Dev.	.4834938
75%	1	1		
90%	1	1	Variance	.2337662
95%	1	1	Skewness	-.5962848
99%	1	1	Kurtosis	1.355556

AUDIND

Percentiles		Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	56
25%	0	0	Sum of Wgt.	56
50%	1		Mean	.5892857
		Largest	Std. Dev.	.4964157
75%	1	1		
90%	1	1	Variance	.2464286
95%	1	1	Skewness	-.362977
99%	1	1	Kurtosis	1.131752

INDSPEC

	Percentiles	Smallest		
1%	0	0		
5%	0	0		
10%	0	0	Obs	56
25%	0	0	Sum of Wgt.	56
50%	0		Mean	.4821429
		Largest	Std. Dev.	.5042031
75%	1	1		
90%	1	1	Variance	.2542208
95%	1	1	Skewness	.0714742
99%	1	1	Kurtosis	1.005109

LEV

	Percentiles	Smallest		
1%	.13	.13		
5%	.17	.17		
10%	.23	.17	Obs	56
25%	.355	.19	Sum of Wgt.	56
50%	.485		Mean	.5151786
		Largest	Std. Dev.	.2310843
75%	.62	.96		
90%	.95	.97	Variance	.0534
95%	.97	.98	Skewness	.5728825
99%	.99	.99	Kurtosis	2.602538

Ln_TA

	Percentiles	Smallest		
1%	9	9		
5%	9.81	9.6		
10%	10.78	9.81	Obs	56
25%	13.045	10.27	Sum of Wgt.	56
50%	13.83		Mean	13.88304
		Largest	Std. Dev.	2.44415
75%	14.325	18.62		
90%	18.17	19.7	Variance	5.973869
95%	19.7	20.1	Skewness	.7285749
99%	20.39	20.39	Kurtosis	4.019198

```
. pwcorr DACC AUDFSIZE AUDIND INDSPEC LEV Ln_TA, star (0.05) sig
```

	DACC	AUDFSIZE	AUDIND	INDSPEC	LEV	Ln_TA
DACC	1.0000					
AUDFSIZE	-0.4575*	1.0000				
	0.0004					
AUDIND	0.3313*	-0.4708*	1.0000			
	0.0126	0.0003				
INDSPEC	-0.3406*	0.7192*	-0.3567*	1.0000		
	0.0102	0.0000	0.0070			
LEV	-0.0324	0.6141*	-0.2474	0.5306*	1.0000	
	0.8126	0.0000	0.0660	0.0000		
Ln_TA	-0.4434*	-0.0092	-0.1065	0.0094	0.0332	1.0000
	0.0006	0.9462	0.4345	0.9451	0.8079	

```
. reg DACC AUDFSIZE AUDIND INDSPEC LEV Ln_TA
```

Source	SS	df	MS		
Model	1270.07042	5	254.014083	Number of obs =	56
Residual	1127.0283	50	22.5405659	F(5, 50) =	11.27
				Prob > F =	0.0000
				R-squared =	0.5298
				Adj R-squared =	0.4828
Total	2397.09871	55	43.5836129	Root MSE =	4.7477

DACC	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
AUDFSIZE	-8.728317	2.203016	-3.96	0.000	-13.1532	-4.303429
AUDIND	.7786397	1.477746	0.53	0.601	-2.189501	3.74678
INDSPEC	-1.13978	1.853488	-0.61	0.541	-4.86262	2.583059
LEV	12.4556	3.57028	3.49	0.001	5.284481	19.62672
Ln_TA	-1.233575	.2644771	-4.66	0.000	-1.764793	-.7023569
_cons	19.6137	4.284687	4.58	0.000	11.00765	28.21974

```
. vif
```

Variable	VIF	1/VIF
AUDFSIZE	2.77	0.361231
INDSPEC	2.13	0.469258
LEV	1.66	0.602083
AUDIND	1.31	0.761573
Ln_TA	1.02	0.980777
Mean VIF	1.78	

```
. hettest

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

         chi2(1)      =    18.51
         Prob > chi2  =   0.0000
```

```
. xtreg DACC AUDFSIZE AUDIND INDSPEC LEV Ln_TA, fe

Fixed-effects (within) regression               Number of obs      =        56
Group variable: id                              Number of groups   =         8

R-sq:  within  = 0.2113                         Obs per group: min =         7
       between = 0.5431                                        avg =       7.0
       overall = 0.4345                                        max =         7

                                                F(5,43)            =      2.30
corr(u_i, Xb)  = 0.0203                         Prob > F           =    0.0611
```

DACC	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
AUDFSIZE	-11.75974	5.099835	-2.31	0.026	-22.04454	-1.47494
AUDIND	.304365	1.445142	0.21	0.834	-2.610041	3.218771
INDSPEC	2.532469	3.507578	0.72	0.474	-4.541236	9.606174
LEV	14.07798	6.771571	2.08	0.044	.4218066	27.73416
Ln_TA	-.6537867	.5042932	-1.30	0.202	-1.670791	.3632174
_cons	11.18637	9.654931	1.16	0.253	-8.284657	30.65739
sigma_u	3.8781031					
sigma_e	3.7942339					
rho	.51093007	(fraction of variance due to u_i)				

```
F test that all u_i=0:     F(7, 43) =     5.04                 Prob > F = 0.0003
```

```
. est store fixed

. xtreg DACC AUDFSIZE AUDIND INDSPEC LEV Ln_TA, re

Random-effects GLS regression                   Number of obs      =        56
Group variable: id                              Number of groups   =         8

R-sq:  within  = 0.1951                         Obs per group: min =         7
       between = 0.6728                                        avg =       7.0
       overall = 0.5158                                        max =         7

Random effects u_i ~ Gaussian                   Wald chi2(5)       =     26.27
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0001
```

DACC	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
AUDFSIZE	-10.04978	3.092905	-3.25	0.001	-16.11177	-3.987802
AUDIND	.7753238	1.335251	0.58	0.561	-1.84172	3.392368
INDSPEC	-.0211499	2.402745	-0.01	0.993	-4.730443	4.688143
LEV	12.62708	4.542986	2.78	0.005	3.72299	21.53117
Ln_TA	-.9710322	.3108142	-3.12	0.002	-1.580217	-.3618476
_cons	16.1926	5.270992	3.07	0.002	5.86164	26.52355
sigma_u	2.6756064					
sigma_e	3.7942339					
rho	.33211982	(fraction of variance due to u_i)				

```
. est store random

. hausman fixed random
```

	Coefficients (b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
AUDFSIZE	-11.75974	-10.04978	-1.709955	4.054906
AUDIND	.304365	.7753238	-.4709589	.5527556
INDSPEC	2.532469	-.0211499	2.553619	2.555371
LEV	14.07798	12.62708	1.450903	5.021499
Ln_TA	-.6537867	-.9710322	.3172455	.3971223

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

  Test:  Ho:  difference in coefficients not systematic

              chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                      =       14.23
            Prob>chi2 =      0.0142
            (V_b-V_B is not positive definite)

.
```