

# EFFECT OF AUDIT MARKET CONCENTRATION AND AUDITORS' REMUNERATION ON AUDIT QUALITY OF QUOTED INDUSTRIAL GOODS FIRMS IN NIGERIA

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## Abstract

Literature is not unanimous on the exact effect of concentration of the audit market and the remuneration of auditors on the quality of audit particularly in the industrial goods firms in Nigeria. This study therefore examines the effect of audit market concentration and auditor's remuneration on audit quality of quoted industrial goods firms in Nigeria. The concentration ratio of the big four audit firms, absolute audit market concentration and the audit remuneration were deployed as proxies for the independent variables while discretionary accrual was used as proxy for the dependent variable. Longitudinal panel research design was adopted in this study. Eleven quoted industrial goods firms were purposively selected out of the population of thirteen as at 31<sup>st</sup> December, 2022. Panel random effect regression model was found to be best fit for the analysis after the appropriate diagnostic tests. Econometric view version 10 was deployed as tool for the analysis. It was found that audit market concentration and auditor's remuneration shows a negative insignificant effect on the quality of audit of industrial goods firms in Nigeria. It was therefore recommended that management of industrial goods firms in Nigeria should meticulously be conscious in their decision on effective, efficient and economic method to maximize the wealth of stakeholder as well as achieve the multifaceted needs of the firm.

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## INTRODUCTION

The goal of an audit of financial statements is for the auditor to form an opinion on the financial statements based on having obtained sufficient and appropriate audit evidence about whether the financial statements are free from material misstatement. Financial information should be relevant, timely, and reliable to meet the needs of users, and an external audit of the financial

information is frequently required to give users confidence that the information can be trusted (Majid, *et al.* (2021). Users of audited financial statements must have confidence that the auditor has worked to a reasonable standard and that "a quality audit" has been done for an external audit to accomplish its goal. Audit quality includes the essential components that foster a setting that increases the

possibility that quality audits are carried out consistently. A quality audit is likely to have been completed by an engagement team that displayed appropriate values, ethics, and attitudes with sufficient knowledge, skilled, and experienced and had enough time allocated to perform the audit work.

For markets and investors to be confident and well-informed, financial report quality is essential. The independent audit's goal is to boost public confidence in the accuracy of financial disclosures and maintaining trust in the independent assurance which enhances audit quality and consistency of implementation. It is acceptable to question the role played by the company directors and the auditor if a firm collapses yet its financial report fails to accurately depict its decreasing financial status and performance or going concern difficulties (Amahalu, *et al.*2019). If investment decisions are made based on financial reports that do not accurately depict a company's financial status and performance, further inquiries may be undertaken. Carp (2021) stated that the term "audit quality" refers to factors that increase the chances that the auditor will accomplish the fundamental goal of obtaining a reasonable assurance that the financial report as a whole is free of material misstatement; and make sure that any material deficiencies found are addressed or disclosed in the audit report. Important accounting treatments and estimations that have the potential to significantly impact the reported financial position and results are based on quality of audit report produced by the company auditors. This viewpoint is in line with the audit's goal (as stated in ASA 200, "Overall objectives of the independent auditor) and the conduct of an audit in accordance with international auditing standards.

Kim and Michael (2020) opined that, it is in the best interests of directors and audit committees to support the audit process since directors are responsible for the quality of the financial report, which is backed by the quality of the audit. This includes making sure that management quickly and accurately generates high-quality financial information and that the audit is adequately resourced. This will guide against choosing auditors based solely on price because it will not guarantee a high-quality audit. In order for investors and other users of financial reports to have faith in the accuracy of the information they contain, auditors must obtain a reasonable assurance that financial reports are free from material misstatement, exercise sufficient skepticism toward accounting estimates and treatments, and correct any deficiencies that are found. Conducting quality audits requires a high level of objectivity from the auditors (Carp 2021). The veracity of the audit evidence gathered and management's assessments of the accounting estimates and treatments must be evaluated critically by the auditor with an open mind.

Recently, the concentration of the auditing market has drawn a lot of attention. For example, the number of Big Five auditing companies decreased from eight to six in 1989, five in 1998 following the merger, and four in 2002 following Arthur Andersen's exit (Eshleman, 2013). The Enron crisis forced Arthur Andersen into bankruptcy in 2002, leaving only four audit alternatives for the main public bidders. Auditors in this group are concerned that fewer competitors might lead to inferior product quality. Auditors are aware that there are not many accounting firms for clients to pick from, which can breed complacency (Boone *et al.* 2012). They expect this will result in a less skeptical attitude towards testing. Regulators have

recently sounded the alarm about the implications. According to the US Government Accountability Office (GAO), highly concentrated markets create competition problems because, in the absence of competing alternatives, dominant firms can degrade the quality of their goods or services, limiting customers' ability to use services elsewhere. While regulators are concerned about the impact of increasing concentration in the audit market on the quality of audit services, there is little empirical evidence to support their concerns. Furthermore, the empirical evidence on the impact of audit market concentration on the quality of audit services is inconclusive.

Markets that are highly concentrated or oligopolistic may lead to poor quality of audit report, this is particularly true in the accounting sector, where large publicly traded corporations make up the majority of clients. Publicly traded corporations are compelled to submit to annual audits by the Securities and Exchange Commission (SEC). Customers have little sway because there aren't many suppliers, rivals, or accounting firms who do poorly on audits. Customers also have little sway because there aren't many rivals. The only risk consumers take is that they might alter their minds. In a highly competitive market for auditing services, there is a major risk associated with switching clients' auditors. The main accounting firms switched from the Big Eight to the Big Four starting in 1989 as a result of a chain of events, which exacerbated market concentration. Regulators have recently expressed worry over the accounting industry's overly high concentration.

In two different ways, auditors' fees can significantly affect the quality of the valuation: Insufficient auditor's

remuneration may force an auditor to spend additional time performing auditing tasks, which will lower the quality of the audit. An uneasy commercial relationship develops between the auditor and his clients as a result of excessive audit fees, particularly for non-audit services. Due to this type of financial dependence, the researcher may permit the client to renew their subscription in order to keep them interested. However, further extraordinary special services that broaden the audit's assignment may be needed in addition to the audit. Audit and non-audit fees are so different from state to state. Palmrose (1986) is cited in Aggrey 2019. This kind of test flight will probably cost more. However, some academics (DeAngelo, 1981; Simunic, 1984) contend that the risks of moral hazard and reputational harm from audit errors outweigh the advantages of business partnerships. Positions of power are scarce, and conflicts of interest are frequent because there is a high likelihood of a conspiracy to set wages in severely unstable markets. Small audit firms and governments worry that a focus on major audit firms may result in considerable increases in audit costs, a permanent fall in the number of independent auditors compared to other firms, and a decline in quality, according to Dubaere (2008).

The conventional idea of quality assurance is based on the cumulative market likelihood that a certain auditor will find and disclose IFRS non-compliance when auditing an accounting system. As a result, the auditor is equipped with both the independence to fix or disclose clerical errors and omissions in the auditor's report as well as the technical knowledge to see them throughout the review process (DeAngelo, 1981). The primary goal of an audit, according to Hayes *et*

*al.*(2015), is to establish the accuracy of financial data. Therefore, it is impossible to overstate the significance of auditing for the operation of the financial markets. The involvement of an external auditor is essential since it is a legal requirement for all publicly traded corporations to produce audit reports. Since it helps management evaluate actual performance and informs investment decisions, high-quality financial data is essential for both investors and firms. Decisions made by other parties, including as employees, the government, and academics, are supported by information from financial reports. Stakeholders are perplexed by low budgets (Scott, 2009). According to Flanagan *et al.* (2008), auditing is a method for enhancing the reliability and quality of financial reports increases the trust that prospective investors have in financial reporting. The author also cautions that if the auditors offer an unqualified rather than a qualified evaluation, purchasers of these claims would be deceived.

Absolute Audit Market Concentration, Relative audit Market Concentration, auditors' fees and discretionary accruals are various ways to measured audit market concentration and auditor remuneration on audit quality. Absolute audit market concentration shows how well a business is performing in comparison to its rivals. Additionally, it makes it possible for outside investors to assess a company's performance in relation to a bigger market. Businesses can keep track of their position relative to all of their niche competitors by using absolute market share. Relative audit market concentration on the other hands compared a company's market share to that of its next-largest opponent. A corporation that leads the market and outpaces its rival due to its relative market share is the market leader. Audit

fees are the costs associated with the external auditor of the company's services rendered in examining its yearly financial statements for the relevant year. Rather of being based on concrete events or transactions, discretionary accruals are accounting adjustments that are made at the management's discretion. These accruals can be utilized to influence results and have a substantial impact on a company's financial statements.

The concentration of the audit market, remuneration for auditors, and audit quality are all topics of continuous discussion. According to Newton *et al.* (2013), a more consolidated audit market could raise the standard of audit services. When customers have fewer options, auditors are less concerned with customer satisfaction and more circumspect in their report. In this study, we looked at how market size affects the link between audit market concentration and audit quality. The audit market, auditor remuneration, and audit quality are all considerably improved by this study. The goal of this study is to determine how the global concentration of the Big 4 audit markets affects audit fees and, in turn, audit quality.

The major hypothesis underling this study is stated thus:

**H0<sub>1</sub>:** Relative audit Market Concentration has no significant effect on discretionary accruals of Quoted Industrial goods Firms in Nigeria.

**H0<sub>2</sub>:** Auditors' remuneration has no significant influence on the discretionary accruals of Quoted Industrial goods Firms in Nigeria.

## LITERATURE REVIEW

### **Audit Market Concentration**

Market concentration, in Porter's opinion, can be viewed as a strategic competitive advantage for a business if it considerably raises customer value. According to Rama and Read (2016), audit firms are chosen based on their geographic location and the constancy of their audit services throughout time. The four biggest accounting firms in the world regularly forbid small and medium-sized accounting firms. While others come and go, there were four significant accounting firms that have remained in business for a long time. The forced departure of auditing firms, internal and external expansion, product diversification and the "Big Four's reputation-building efforts, as well as investors' urgent need for accounting certifications, are other factors that the auditing market is paying attention to. While others come and go, there are four significant accounting firms that have existed for a long time. The forced retirement of auditing firms, internal and external expansion, product diversification, reputation-building efforts by the Big Four, and investors' need for quick access to verified financial statements are other factors that are attracting the attention of the auditing market.

According to Dubaere (2018), the total number of sales made to customers is decided by the number of firms operating in the test market, the size of the company's market, which is determined by the quantity of clients, the clients' line of business, etc. B. will alter as industrial market concentration rises, for instance by erecting entrance barriers for new firms, which is especially crucial when industrial market concentration changes. The accounting business may feel overburdened given that

approximately beneficiaries (customers) think an independent firm will serve them better (Beattie, 2013). Due to the rising legal issues that firms are facing, a system that permits the concentration of market surveillance services has been developed.

The competition has distinctive qualities that set it apart from other audit services, even though the standard audit market harmonizes the quality criteria of the assessed organizations. There are a number of goods that are highly sought-after. Three essential components that Oxera (2006) defines as fictional products are technical verification, value-added services in the form of self-assessment and damage insurance, and reputational risk. Visit the Auditing Services Marketplace to learn more about auditing services. The range of auditing services has greatly increased during the last ten years. Different regions' conditions have led to a variety of audit services. Asthany, Balse, and Kim (2009) contend that high-profile corporate scandals like Enron and WorldCom should be the subject of thorough investigations.

Benston (1985) asserts that in the 1980s, there were basically no regulatory barriers for the accounting sector. Another characteristic of the auditing market is economies of scale. Benston (1985) distinguished between two kinds of economies of scale. The scale and geographic spread of the client organisations needing audits is the first factor, and the technical expertise needed to deliver professional services is the second (Maris, 2010). Comparatively speaking, a sizable accounting company has an edge over a group of firms that employ typical auditing procedures. A second economy of scale involves fostering and nurturing the talent required for specialized services

including tax, SEC reporting, regulatory reporting, internal control, and managerial services (Benston, 1985). The range of exams is meant to provide a window into how the audit market is developing. Accountants, audit firms, and audit organizations all provide audit services (Maris, 2010). Senior management is in charge of preparing and presenting the accounts in compliance with international best practices such as Corporate Regulations and Related Matters (CAMA), and all firms in Nigeria are required by law to have their financial statements audited by an independent auditor. According to Generally Accepted Auditing Standards (GAAS), external auditors are in charge of auditing the financial accounts. The Trust Guide benefits the financial markets by boosting confidence among investors and other interested parties in audited financial reports, particularly those audited by respected accounting firms and provided by interested parties. In addition to auditing services, auditing firms also offer their clients non-auditing services such as taxes and tax advice. The Sarbanes-Oxley Act of 2002 created independence criteria that prohibit an accounting firm from providing non-audit services as an auditor to the same client. Strict independence criteria, which appear to limit the choice of auditors for large multinationals, are the most visible result of the Big Five mergers. According to the GAO study, 88% of public firms would not consider hiring a medium-sized (non-Big Four) firm for auditing services, and 13% would not consider hiring auditing services. The maximum number of accounting firms of most major accounting firms was reduced from eight in 1988 to four in 2002. This is because there are fewer options for firms with advanced operations. The sectorial specialization of firms can reduce the number of options available, be it a

voluntary change of mayor or a mandatory rotation. This can be difficult for a major corporation with the necessary experience and people resources.

### **Relative Audit Market Concentration**

Comparing a company's market share to that of its next-largest opponent is known as relative market share. A corporation that leads the market and outpaces its rival due to its relative market share is the market leader. The company's main rival should be highlighted given the industry's disproportionate emphasis on accounting services. Identifies the company's competitive position in the market in which it exists or plans to operate. It is also a great chance to learn more about the advantages and disadvantages. For instance, in a merger, the leader might attempt to research the concentration rates of its primary rival in a test market to determine whether the rival is benefiting from the loss of market share and deceiving customers. Divide the market share of an accounting company by the market share of its biggest rival to find its relative market share. The market leader will always have a bigger relative market share, according to this strategy.

Relative market concentration illustrates how well a business is performing in comparison to its main rival. Because it provides additional context for an organization's absolute market share, relative market share is a crucial calculation. Consider that Company Z controls 30% of the mattress market. That indicates that other businesses dominate 70% of the mattress market. A 30% market share may indicate a corporation is the market leader in some sectors, while in others; it may indicate second or third place among the big companies. In order to make strategic decisions to boost

sales, organizations (and their investors) might use relative market share to gauge how they are doing in comparison to their top rivals.

### **Auditors Remunerations**

The external auditor is compensated for the audit by the corporation. The majority of accounting firms offer guidance to business owners on how to comply with their legal requirement to disclose in the annual and consolidated financial statements the fees owing to the auditor and those who support the auditor in the performance of statutory audits and other services (other than). This is done in order to guarantee that auditors and administrators—or non-registered individuals—are aware of the nature, extent, and justification of this requirement as well as the categories of covered fishery services. Except for those categorized as small firms, all firms must disclose their tax liabilities. The need to provide information does not apply to small and medium-sized firms. In an appendix to the audited financial statements, disclosure is mandated by law. This information should be presented elsewhere in the annual report in addition to the notes to the financial statements (for example, the audited information should be clearly identified at each stage).

The remuneration of an auditor appointed by the directors or by the Secretary of State is fixed by the directors or by the Secretary of State as the case may be. Otherwise, the auditor's remuneration will be fixed by the company in general meeting or in such manner as the company in general meeting may determine. 'Remuneration' here includes any sums paid by the company in respect of the auditors expenses, and benefits in kind. The notes to the accounts for large companies must disclose the amount of the auditor's

remuneration and any remuneration for other services. An analysis of compensation in relation to audit and non-audit services rendered to the issuer by the auditors (including any entity under common control, ownership, or management with the audit firm or any entity that a reasonable and knowledgeable third party with knowledge of all material facts would reasonably conclude as part of the audit firm nationally or internationally).

### **Audit Quality**

There is no agreed definition of audit quality that can be used as a parameter for measuring actual performance (The Financial Reporting Council, 2006). Though, the Financial Reporting Council does not give a precise definition, yet, it gives five main drivers of audit quality: (1) the audit firm's traditions; (2) the individual qualities and expertise of staff and audit partners; (3) the audit process 'efficiency; (4) the worth and dependability of audit reporting; and (5) factors that affect audit quality beyond the audit firm's control. An audit does not involve those responsible for preparing financial information but engages a firm of accountants (the auditor) to report in a way that is stipulated by the law. DeFond and Zhang (2013) defines higher audit quality as greater guarantee that the financial statements truly represent germane information about the firm's vital financial condition and firm 's inherent features and financial reporting culture. An audit is therefore designed for quality assurance, it is meant to ascertain the accuracy of the financial statements. Eshleman, (2013) define audit quality as the joint probability that the auditor will both (i.) discover an error in the clients' accounting system and (ii.) report the error (DeAngelo 1981). Audit quality can be viewed along two dimensions. The first dimension is

auditor effort-ability. A broad body of literature also propose that audit quality is normally interconnected with the proficiency and autonomy of the auditor in being able to discover (competence) and then report (independence) any significant error in the financials prepared by management (DeAngelo, 1981a). The probability of discovering a breach depends on the audit ability of the audit firm and the audit procedure. The likelihood of reporting the misstatement depends on the independence of the audit firm. Francis (2004) sees audit quality as meeting or not meeting minimum legal and professional requirements. It is vital to note that the standpoint from which audit quality is defined depend to a large extent on whose eyes one looks through. Users, auditors, regulators and society—all stakeholders in the financial reporting process—may have very dissimilar views as on the components that make up quality audit. Therefore, in this study, we define audit quality operationally as a continuous construct that maps closely into financial reporting quality. The users of the financial report believe that high-quality audit means the absence of material misstatements.

### **Discretionary Accrual (Dechow et al., 1995) Model**

Hayes (2014) defined discretionary accrual as a total accrual, which are not directly observable and they are easy to manipulate by the company. According to the Jones (1991) model, total revenues are excluded from non-discretionary accruals. Dechow et al., (1995) discovered that the major limitation of the Jones (1991) model is the assumption that only collected revenues constitutes non-discretionary accruals. Subsequently, Dechow et al, (1995) documented evidence that the modified Jones model is more powerful than the Jones (1991) model in detecting cases of

revenue manipulations. In computing non-discretionary accruals, the modified Jones model regresses total accruals on gross property, plant and equipment while the changes in revenue are adjusted for changes in accounts receivables. Consequently, the model is perceived to be more powerful than other models of estimating discretionary accruals.

The Modified Jones Model (MJM) is presented below:

$$ND-ACCR_{it} + T_{ait} - 1 = \beta_0 + \beta_1 TA_{it-1} + \beta_2 \Delta Rev_{it} - \Delta Rec_{it} TA_{i,t-1} + \beta_3 PPE_{it} TA_{i,t-1} + \epsilon_{it}$$

Originally, Jones (1991) model and the modified Jones model were developed in time series form. However, Defond and Jiambalvo (1994) proposed a cross-sectional Jones model instead of the time series model, suggesting that the cross-sectional model better estimates accruals. The modified cross-sectional Jones model is however, criticized for being prone to measurement errors, especially when estimating discretionary accruals for firms in an industry which are not homogeneous. But relatively, the model is still better than other models, because it estimates discretionary accruals with minimal errors (Bello & Yero, 2011).

### **Audit Firm Size**

The size of the audited company is inversely proportionate to its size. Due to their greater market share, large firms are more profitable than small ones and are more competitive. The size of a corporation can be determined using a variety of methods, such as B. the number of employees, income recognized, total assets recognized, and contribution value. Previous studies have demonstrated that major corporations (governments) with established global brands outperform smaller corporations. There is now



plenty of proof that larger accounting firms do audits of a higher quality and provide their clients more trust in financial reporting. When a business chooses a senior accountant over a young accountant, the stock market reacts favourably (Eichenseher et al., 1989; Nichols). Large accounting firms provide more extensive information about financial challenges in their audit report (Lennox, 1999).

The positive correlation between auditor size and audit quality has been linked by theoretical research, these relates to auditor reputation, and the depth of pocket. It should be noted that while empirical evidence suggests a correlation between audit size to audit quality, their causality has not yet been established. Another theory is endogeneity. Good firms are more likely to be evaluated by reputable organisations ("Big Four"). In this case, selection error rather than test quality may have contributed to the result. Although endogeneity has not been extensively studied, the results suggest a relationship between audit size and audit quality (Hogan, 1997). Large accounting firms in the United States do more independent audits to protect their reputation, according to DeAngelo (1981). He went on to say that the audit quality of large accounting firms is frequently greater. According to DeAngelo's research, good auditors tend to write more accurate reports since they stand to lose more if their reputation is damaged. The reputation theory is opposed by the idea of deep finances. According to this reasoning, since their assets are most vulnerable to lawsuits, accountants have the most motive to make accurate reports. DeAngelo (1981) asserts that excellent critics are more driven to deliver accurate assessments due to the importance of their reputation.

### **Empirical Review**

Athavale, *et al.*, (2022) studied the impact of diversity of signing auditors on audit quality in China. The study employed diversity as a measure of audit market concentration while discretionary accruals was used to proxy audit quality. The study adopted an ex post facto research design as well as a cross sectional design. The study used secondary data which it tested using regression techniques. The study found a positive association between diversity and audit quality, consistent with the notion that diversity facilitates team performance. Further analyses show and conclude that there is a stronger association between cognitive, rather than demographic, diversity of signing auditors and audit quality. The study recommended that audit firms should allocate staff to audit teams in a manner that results in cognitively diverse audit teams because such teams are more likely to deliver high quality audits. The results of the Chinese study was current but failed to be comparable to the Nigerian condition due to differences in nation

Majid, *et al.* (2021) attempted to study the impact of certain auditor characteristics on the audit market concentration of companies listed on the Indonesian stock exchange. This study was aimed at investigating the effect of audit competition, auditor switching, audit tenure, company size variables on audit quality and to determine fee audit fee variables in moderating the effect between auditor switching, audit tenure, and company size variables on audit quality. The study covers a three-year period spanning from 2014-2017 with a sample of 43 manufacturing companies that were listed on the Indonesian stock exchange during the study period. The research used secondary data which was analyzed using panel regression

analysis. The study found that auditor concentration and auditor switching had a negative and significant effect on audit quality. Audit tenure and company size have a positive and significant effect on audit quality. Related to moderating variables indicate that fee audit is not able to moderate auditor switching and audit tenure on audit quality. Conversely, the study concluded that audit fee has an effect as a moderating variable between company size and audit quality. The study recommended policies that will improve audit quality.

Carp (2021) investigated the impact of auditors and audit firm characteristics on audit quality in Romania. The study covers a 13 year period spanning from 2007-2019. The correlation matrix and co-integration tests were used to analyze the data estimated the impact of some characteristics of the auditors and of the audited companies on audit quality for the Romanian listed firms 943, audit quality was proxied with the level of discretionary accruals, measured following the Jones (1991) model, and the accruals quality, estimated through the Dechow and Dichey (2002) model. The dependent variables have been related to variables that reflect both the characteristics of the audit firm (for example, Big 4 membership) and the characteristics of the audited firms (dimension, financial leverage, accounting standards applied, growth and profitability). The Findings show that the auditor's Big 4 membership contributes to an increase in discretionary accruals, decreasing the quality of the audit. The transition to IFRS did not have a significant influence on the quality of the audit. The audit opinion may have an effect on the discretionary accruals and the accruals quality in the sense that a modified opinion leads to an increase in the quality of the audit in the following financial

years. The study concluded that firm characteristics did significantly impact negatively on audit quality. The study failed to proffer recommendations from its study. The study which was also done in Romanian controlled markets cannot be applied to the Nigerian situation.

Dare, *et al*; (2021) examined audit committee characteristics on audit quality in Nigeria, for 10 years spanning from 2009-2018. Specifically, this study assessed the effect of audit committee size on audit quality in the oil and gas sector and examined the effect of audit committee meetings on audit quality in the oil and gas sector. The study adopted an expo-facto research design and the population covered all the 12 listed Oil and Gas sectors; out of which, 10 firms were selected through a random sampling technique. The study used secondary data, sourced from the published financial reports of the sampled firms covering the period of 2009-2018. Through logistic regression, it was discovered that audit committee size exerted a positive significant effect on audit quality of firms in the oil and gas sector in Nigeria and that audit committee meeting exerts a positive but insignificant effect on audit quality of firms in the oil and gas sector in Nigeria. The study concluded that audit committee has a statistically significant effect on audit quality in Nigeria. Thus, it was recommended that emphasis and focus should be placed on the size of the audit committee to improve audit quality and that modalities surrounding the meetings of the committee members should be revisited. Also, adequate supervision and monitoring should be ensured in every meeting of the committee members.

Kim and Michael (2020) studied the relationships between audit market concentrations, auditor choice and audit

quality in Russia surrounding the adoption of International Financial Reporting Standards (IFRS). This is a unique scenario as Russian law specifies that IFRS compliant companies should also audit their financial statements according to the Russian Accounting Standards (RAS). This gives rise to the possible appointment of dual auditors. The study used number of audit firms as the proxy for market concentration and discretionary accrual allowance as proxy for audit quality. The study covers a 10 year period from 2011 to 2020. The study employed the use of panel regression techniques as well as co integration tests to analyze the data. The study found that there was a negative and significant relationship between audit market concentration and audit quality. The study found that the IFRS audit market is naturally dominated by the Big 4 audit firms. However, the study concludes that adoption of IFRS also impacts auditor concentration in the RAS audit market. The study failed to proffer any recommendation. The Russian situation is unique and the results from such a situation cannot be used as a basis of judgment for other countries like Nigeria.

Amahalu, *et al.*, (2019) attempted to study the determinants of audit quality in the Nigerian healthcare sector. The study employed the use of secondary data which cover a 15 year period spanning from 2004 to 2018. The sample of the study includes healthcare firms listed on the Nigerian Stock Exchange. The data was analyzed using Pearson coefficient of correlation, Ordinary Least Square (OLS) and Granger causality test with the aid of E-view 9.0. The result of this study revealed that there is a positive and statistically significant relationship between audit market concentration, audit firm size and audit quality of healthcare firms listed on the floor of

Nigerian Stock Exchange at 5% level of significance. The study concludes that audit independence, audit tenure and audit firm size are positive and has statistically significant relationship with audit quality of healthcare firms in Nigeria. The study recommended that Audit firms should ensure that their staffs are sufficient in number and in competency as this is likely to enhance audit quality.

Asmeron (2018) studied the determinants of audit Service Quality Perceptions of Supervisory Directors in Dutch Corporations. The study used auditor competence, Functional quality dimensions and Perceived auditor independence as proxies for auditor's attributes while audit quality was measured by the perception of supervisory board members about their auditors. The research was built on the survey research design. The research used primary data which was sourced from the opinion of certain people. This raises considerable skepticism on the objectiveness of the data used and the accuracy of the conclusions arrived at. The research used regression and factor analysis to draw conclusion from the data collected. The study concluded that auditor's attributes did not have a significant impact on the audit quality of the study sample. The study recommended verification of auditor attributes before engagement.

Aggreh (2017) attempted to ascertain the effect of audit market concentration and auditor's attributes on audit quality in the Nigerian manufacturing sector. The study focused on the impact on relative audit market concentration (RAMC), absolute audit market concentration (AAMC), auditors' independence (AUIND), auditors' tenure (AUTEN) and audit risk (AUDRISK) on audit quality (AQ) in the Nigerian manufacturing

sector. Ex post facto research design was used for the study. The study covered a 15-year scope spanning from 2001-2015. The study used panel data from 52 companies. Regression analysis was employed using the pooled OLS and Panel EGLS. The result found a negative relationship between audit quality and relative audit market concentration, absolute audit market concentration, auditor tenure. The study concludes that audit market concentration does not empirically affect audit quality. The study recommended that professional bodies, management and auditors should introduce alternative appointment processes for auditors.

Eguasa and Urhoghide (2017) examined audit market concentration and audit quality in Nigeria. The longitudinal research design was adopted for this study. The data used in the study were obtained from 540 firm-year observations, comprising of sixty (60) Nigeria listed companies from the period of 2007- 2015. Model on the input-based measure of audit quality was adapted to proxy audit quality in the study. The study used regression analysis for testing the data. The study found that audit market concentration increases audit quality of the sampled firms in Nigeria. By implication, the Big 4 audit firm tends to have more capacity to render quality audit to ensure clients retention and public confidence. The study concluded that market concentration has a significant positive impact on audit quality. The study recommended that non-Big 4 audit firms need to invest in human capital development to improve and expand the competencies of their staff.

### **Theoretical Framework**

Three major theories that relate to audit market concentration, auditor's

remuneration and audit quality are presented and discussed below;

### **Stewardship Theory**

Stewardship theory was propounded by Donaldson and Davis (1989) as a normative alternative to the agency theory. Stewardship theory has its roots from psychology and sociology and it stresses on the role of top management being as stewards, integrating their goals as part of the organization as opposed to the agency theory perspective (Argyris&Schon, 1974). The stewardship perspective suggests that stewards are satisfied and motivated when organizational success is attained. It is based on a model of man where a steward perceives greater utility in cooperative, pro-organisational behaviour than in self-serving behaviour; the theory assumes a strong relationship between organisational success and a principal's satisfaction. Hence, a steward overcomes the trade-off by believing that working towards organisational, collective ends meet personal needs as well (Penman, 2007).

The theory recognizes the importance of structures that empower the steward and offers maximum autonomy built on trust (Donaldson & Davis, 1991). In order to protect their reputations as decision makers in organizations, executives and directors are inclined to operate the firm to maximize financial performance as well as shareholders' profits. In this sense, it is believed that the firm's performance can directly impact perceptions of their individual performance.

### **Theory of Rational Expectations**

Theodore Limperg of the University of Amsterdam in 1926 propounded a theory, known as the Theory of Inspired Confidence, which ultimately transformed into theory of rational

expectations. The theory asserts that the worth of the auditors' report is a function of the auditor technical know-how, auditor independence and his professional competence. Generally speaking, this theory is a non-static theory which presupposes that as the business community evolves, so also the demand it put on the auditors' 24 function (Millichamp & Taylor, 2012). Limperg supposed that the work performed by the auditor ought to be guided by the realistic expectation of the users of audit reports and the expectation should not be dashed by the auditor. In the other hand, auditors should not give auditee unrealistic hope that cannot be attained. Limperg's theory states that the usefulness of the auditor's opinion is based on the general understanding the society has about the usefulness of audit. Lawful concerns notwithstanding, firm spend on audit because it is important that it gives credibility to financial report, hence, investors and lenders can rely on such information for decision making. If the audit report changed in an order that its information is understood by certain sets in the society while it is vague to some other set of users, society's confidence in the audit process declines as the social usefulness of the audit decreases.

Limperg stresses the social usefulness of auditors is in meeting societal expectations for reliable financial information. The auditor must meet the expectations of the rationally well knowledgeable layman but should not create unrealistic expectations that cannot be justified by the work carried out. The auditor thus has a broader duty to society than a mere a watchdog for the shareholders (Millichamp & Taylor, 2012). Limperg's Theory dwells majorly on demand and the supply of audit services. According to Hayes, *et al.*, (2005) the demand for audit services is

the express outcome of the contribution of external stakeholders in the firm. These stakeholders require answerability from the management, on return for their investment in the firm. With regard to the level of quality assurance that auditors should offer, Limperg implement a normative approach: the auditor's work ought to be performed in such a way that the expectations of a pragmatic stakeholders should not be dashed (Agostini & Favero, 2012). So, given the possibilities of audit technology, the auditor should do everything to meet reasonable public expectations. Limperg presented his theory of inspired confidence as a framework for developing auditing norms rather than as a coherent collection of norms themselves. Hayes *et al.*, (2005) argue that since information provided by management might be biased, because of a possible divergence between the interests of management and outside stakeholders, an audit of this information is required. This theory is of immense importance to this study in that it gives a theoretical underpinning for the perceived form of audit quality - demand/market-gauged combined likelihood.

### **Industrial Organization Theory**

This theory was propounded by Henry Fayol in (1916). The theory examines the number of competitors who operate in the relevant market and the distribution of market shares at the level of market structure. The concept behind industrial organization theory is the market structure, rather than the firm itself. The theory sates the influence of competitive forces on the industry, as well as, how the profitability is ascertained by them. It is assumed in this structure-conduct-performance paradigm, conventional model elucidates the reason for intensifying the degree of audit market concentration. In consonance with the

degree of market structure, industrial organization scrutinizes the amount of competitors who function in the related market and the allocation of market shares. The configuration of a market is the bedrock on which industrial organization theory is built. The theory point out the impact of competitive verve on the industry, as well as, how the profit is decided by them. The Structure-Conduct-Performance paradigm (SCP) of the industrial organization theory asserts that the market arrangement affects the market behaviour and it is therefore the most essential factor that determines economic recital. Market behaviour relates to the behaviour of a firm in setting prices and expressing the degree of control they have over the market. In market arrangement with high concentration, leading firms will increase their control over the market and enable conspiracy. The perceived ascendancy of the large audit firms has made smaller firms to criticize large firms on the ground that give buyers of audit the impression that quality is synonymous with size. Some schools of thought argue that market supremacy will lead to abuse of power as recommended by Traditional Industrial Organizational Theory. Contemporarily, auditors, accountants and industrial economists have shifted their focus from mere looking at causality result of concentration on audit quality but also the effect of auditor attribute on audit quality.

This study is underpinned and centred on the new Industrial Organization Theory. This is because accountants and new industrial economists are convinced that there is no single one direction relationship between concentration and performance, but feedback between those two parameters. The existing link between market structure and performance is thought to be indirect

because they are determined by the underlying cost and demand parameter (Beattie, Goodacre, & Fearnley, 2013). The cost parameter and economies of scale motivate audit firms to be merged, which increased concentration. This new industrial view implies that high concentration does not necessarily lead to low competition and to higher prices. The evolution of the market has resulted in to heavier concentration. In particular, the collapse of Arthur Andersen in 2002 left just four of the largest auditors auditing nearly all large public companies. Given the emphasis placed on the merits of effective competition, the increasingly tight oligopoly in the audit service industry raises concerns about non-competitive pricing behaviour.

#### **METHODOLOGY**

Longitudinal panel research design was adopted in this study as it provides the support needed for collection of information on the existing nature of the phenomenon under study so as to provide and describe the nature of the relationship between the study variables. The population of the study consists of all the thirteen (13) listed industrial goods firms operating on the Nigeria Exchange Group (NGX) as at 31st December 2022. The sample size of eleven (11) was selected using the purposive sampling technique as the basis for selection; the two (2) other firms were not chosen because of incomplete data. The secondary data adopted in this study were gathered from financial statements published on the Exchange Group Plc and the individual company's financial statements. The data for this research consisted of annual dataset ranging from 2012 to 2021 a period of ten (10) years. The secondary data which were collected form the dependent and independent variables was analyzed using panel regression using statistical package E-view version 10. The

descriptive statistics will detect whether there are errors in the data set by determining mean, maximum and minimum values for each of the variable measures. Pearson correlation analysis will test the association among the variables, while panel regression will examine the effect of the independent variables on the dependent variable. Panel regression analysis for fixed effect model and random effect model was also conducted. Thereafter, the LM test and Hausman specification test to assess whether the pooled, fixed effect or random effect is most appropriate for the study. Thus, the econometric model used to examine the hypothesis in this study was adopted from Ahmed (2014) as

specified below:

$$DACC = \beta_0 + \beta_1 RAMC_{it} + \beta_2 AuF_{it} + \beta_3 ADFZ_{it} + \epsilon_{it} \dots \dots \dots (i)$$

**Where:**

DACC<sub>it</sub> = Discretionary Accrual (Modified Jones model Dechow *et al*, 1995)

RAMC<sub>it</sub> = Relative Audit Market Concentration

AuF = Audit fees

ADFZ = Auditees' Firm size

β = coefficient of parameter estimate

ε = error term

t= time

i= individual firms

**Table 3.2 Measurement of Variables**

Variable	Proxy	Notation	Measurement	Source
Audit Quality	Dependent	DACC	$\frac{\Delta Rev - \Delta Rec + \Delta PPE}{TA}$	Le Vour'ch&Morand (2011)
Audit Market Concentration	Independent			
	Relative Audit Market Concentration	RAMC	Concentration ratio for Big 4 (Dummy)	Quick & Sattler (2011)
Auditors' remuneration	Audit fees	AuF	Taking the logarithm of annual fees	Desire, <i>et.al</i> 2014
Control Variable	Audit Firm size	ADFZE	Total Assets Audit	Gonthier-Besacier and Schatt, (2007)

*Source: Authors Compilation (2022)*

## RESULTS AND DISCUSSION

### Data Presentation

The result of regression analysis on the effect of audit market concentration and auditors' remuneration on audit quality of quoted industrial goods firms in Nigeria using the panel data is presented. The estimation processes in analyzing the effect of audit market concentration and auditors' remuneration on audit quality of quoted industrial goods firms in Nigeria, was carried out using E-View 10 as the

statistical tool and the data set is presented in appendix 1 as attached.

### Data Analysis and Result

#### Descriptive Statistics

In order to have glimpse of the data used in the study, a first pass at the data in form of descriptive statistics was carried out. This gives us a good idea of the patterns in the data used for the analysis. The summary statistics is presented in Table 4.1.

**Table 4.1: Descriptive Statistics Results**

	DACC	RAMC	LOGAUF	ADFZ
Mean	0.325531	0.854545	0.510638	6.445831
Median	0.312000	1.000000	0.518401	6.910216
Maximum	0.954200	1.000000	0.591427	7.857034
Minimum	-0.903537	0.000000	0.397646	3.109000
Std. Dev.	0.375544	0.354172	0.038571	1.093092
Skewness	-0.423523	-2.011271	-1.151161	-1.218437
Kurtosis	3.403939	5.045213	4.749499	3.902453
Jarque-Bera	4.036322	93.33384	38.32325	30.95021
Probability	0.132900	0.000000	0.000000	0.000000
Sum	35.80839	94.00000	56.17022	709.0414
Sum Sq. Dev.	15.37264	13.67273	0.162164	130.2387
Observations	110	110	110	110

Source: E-View 10 Output (2022)

Table 4.1 presents the descriptive statistics on the effect of audit market concentration and auditors remuneration on audit quality of listed industrial goods firms in Nigeriaduring the period of 2012 to 2021. The table shows that discretionary accrual (DACC) has a mean of 0.0.325531, with a standard deviation of 0.375544 as well as a minimum value of -0.903537 and maximum values of 0.954200 respectively. Given that the range between the minimum and maximum is not so wide, it implies a stable performance as the standard deviation indicated that there is no wide dispersion of the data from the mean value. For the other measure of audit market concentration, relative audit market concentration (RAMC), from the table 4.1 shows a mean of value of 0.854545 with standard deviation of 0.354172 and a minimum and maximum value of 0.000000 and 1.000000 respectively. This implies that the audit market concentration in terms of relative audit market concentration witnessed a marginal increase during the study period, as the standard deviation is not so large compared to the mean, together with the low range between the minimum and maximum values.

Similarly, the table shows that the auditor's remuneration (LogAUF) during the period has an average value of 0.510638with standard deviation of 0.038571 and the minimum and maximum values of 0.397646 and 0.591427 respectively. This implies a tremendous increase in the auditor's remuneration value during the study period. Also the mean value for the control variable; audit firm size (ADFZ) is 6.445831, while the standard deviation also indicates 1.0993092. The minimum and maximum value for audit firm size is 3.109000 and7.857034 respectively.

The standard deviation values shown on table 4.1 indicate the dispersion or spread in the data series. The higher the value of the standard deviation, the wider the deviation of the series from its mean. Similarly, the smaller the value of the standard deviation, the lower the deviation of the series from its mean. The variable with the highest degree of dispersion from the mean is the audit firm size (ADFZ) with a standard deviation of 1.093092. Skewness which measures the shape of the distribution and equally shows the measure of the symmetry of the data set, indicated that all the variables; DACC, RAMC,



LOGFUD and ADFZ are negatively skewed, and have values less zero. Kurtosis value measures the peakness and flatness of the distribution of the series. If Kurtosis value is less than 3, it means the distribution of the variable is normal, but when it is more than 3, the distribution of the variable is said to be abnormal. Variables with value of kurtosis less than three are called platykurtic (fat or short-tailed) none of the variables studied qualified for this during the study period. On the other hand, variables whose kurtosis values are greater than three are called leptokurtic (slim or long tailed) and the variables qualified for this during the study period. The Jarque-Bera statistic is for testing normality of a variable. If the variable is normally distributed, the histogram will be bell-shaped and as such the Jarque-Bera test of normality is an asymptotic or large-sample test. Jarque-Bera also measures the difference between the skewness and kurtosis of each of the variables. RAMC has the highest Jarque-Bera value of 93.33384, while DACC has the lowest Jarque-Bera

value of 4.036322. With respect to the descriptive statistics, which is based on the raw data and at 5% level of significance, all the of the variables of the study, specifically; DACC, RAMC, LOGAUF and ADFZ showed that individually, their P-values are less than 5%, Therefore, the Null Hypotheses (set at 5% level of significance) is hereby rejected and it can be concluded that based on the exhibition of individual attributes, the variables; DACC, RAMC, LOGAUF and ADFZ are all statistically significant.

**Correlation Analysis**

Table 4.2 presents correlation values between dependent and independent variables and the correlation among the independent variables themselves. These values are generated from Pearson Correlation output. The Table contains correlation matrix showing the Pearson correlation coefficients between the dependent and independent variables and among the independent variables of the study.

**Table 4.2: Correlation Analysis Result**

Covariance Analysis: Ordinary  
Date: 10/21/22 Time: 14:13  
Sample: 1 110  
Included observations: 110

Correlation Probability	DACC	RAMC	LOGAUF	ADFZ
DACC	1.000000 ----			
RAMC	-0.138676 0.1485	1.000000 ----		
LOGAUF	0.127413 0.1847	0.261260 0.0058	1.000000 ----	
ADFZ	-0.013970 0.8848	-0.159124 0.0968	-0.016426 0.8648	1.000000 ----

Source: E-View 10 Output (2022)

Table 4.2 shows the correlation between the dependent variable, Discretionary accrual (DACC) and the independent variables of RAMC, LogAUF and ADFZ on one hand, and among the independent variables themselves on the other hand. Generally, a high correlation is expected between dependent and independent variables while a low correlation is expected among independent variables. According to Gujarati (2004), a correlation coefficient between two independent variables of 0.80 is considered excessive, and thus certain measures are required to correct that anomaly in the data. From the table, it can be seen that all the correlation coefficients among the independent variables are below 0.80. This point to the absence of possible multicollinearity among the independent variables and the correlation between the dependent variables shows that they all positively correlated among the dependent and within the independent variables shows a mix result of both positive and negative relationship. The results indicate that there exists correlation between relative audit market concentration and auditors

remuneration with correlation value of 0.261260 with p-value of 0.0058. This indicates that the relationship between relative audit market concentration and auditors remuneration is positive and very weak and statistically significant at 5%. Generally, it can be seen that all the correlation coefficients among or within the independent variables are very weak.

### Multicollinearity Test

To ensure the rigidity of the measurements, multicollinearity tests were performed, using the Variance Inflation Factor (VIF) as the rigidity test. Multicollinearity occurs when one or more independent variants have a stronger influence on others and this condition is a violation of the linear regression model, that so it may affect the validity of the outcome in any analysis. Multicollinearity tests are performed to test whether there is a strong correlation between independent variables that may result in misleading results.

**Decision rule:** Medium VIF less than 10 indicates the absence of multicollinearity, while VIF intermediate over 10 is a sign of multi-collinearity.

**Table 4.3: Multicollinearity Test (VIF)**

Variance Inflation Factors

Date: 10/21/22 Time: 14:15

Sample: 1 11

Included observations: 110

Variable	Coefficient Variance	Uncenterd VIF	Centered VIF
C	329.12501	63.10473	NA
RAMC	71.82631	36.59023	1.970129
LOGAUF	93.08404	8.63252	1.921464
ADFZ	96.786469	17.36395	1.900358

Source: E-View 10 Output (2022)

In table 4.2, the coefficient for the highest correlation is 0.261260 (between RAMC and LogAUF), although less than 0.80 is considered difficult in the regression analysis. Therefore, the low degree of correlation between independent variables indicates that multicollinearity may not be a problem in the sample database. However, collinearity diagnostics tests were performed using the variance inflation factor (VIF) to further confirm the absence of multicollinearity problem between independent mutations. The results of the collinearity diagnostic test are presented in Table 4.3 below: As noted above, the law of multicollinearity test rule uses a variance inflation factor that VIF Medium below indicates a lack of multi-collinearity, while VIF intermediate over 10 indicates the presence of multi-collinearity. Table 4.3 above shows the absence of multicollinearity between independent variables, as all independent variables (RAMC, LOGAUF and ADFZ) have less than 10 VIF centres.

**Hypothesis**

**H<sub>0</sub>: No conditional Heteroskedasticity (Residuals are homoskedastic)**

**H<sub>1</sub>: There is conditional Heteroskedasticity**

**Table 4.4 Heteroskedasticity Test**

Panel Cross-section Heteroskedasticity LR Test

Null hypothesis: Residuals are homoskedastic

Equation: UNTITLED

Specification: DACC C RAMC LOGAUF ADFZ

	Value	df	Probability
Likelihood ratio	71.82621	11	0.7235

LR test summary:

	Value	df
Restricted LogL	-45.04823	106
Unrestricted LogL	-9.135125	106

Source: E-View 10 Output (2022)

**Heteroskedasticity Test**

In order to validate the robustness of the estimates, the Heteroskedasticity test was conducted as a diagnostic check. Heteroskedasticity happens when the standard errors of a variable, monitored over a specific amount of time, are non-constant. Heteroskedasticity is a violation of the assumptions for linear regression modelling, and so it can impact the validity of the result from any analysis while heteroskedasticity does not cause bias in the coefficient estimates, it does make them less precise; lower precision increases the likelihood that the coefficient estimates are further from the correct population value.

**\*Decision Rule:** At 5% level of Significance the null hypothesis of the test states that there is no Heteroskedasticity, while the alternate hypothesis states that there is Heteroskedasticity. The null hypothesis is to be rejected if the P value is less than 5% level of significance.

Table 4.4 shows the results of the panel cross-section Heteroskedasticity regression test. The decision rule for the panel cross-section Heteroskedasticity test is stated thus:

From the result in table 4.4 above with a F-statistic of 2.058530 and a corresponding probability value of 0.7235 which is greater than 5%, the study therefore posits that, there is no reason to reject the null hypothesis, while the alternative hypothesis that states there is conditional Heteroskedasticity problem is rejected. Consequently, based on the diagnostic probability 0.1101 the null hypothesis is not rejected, thus there is no conditional heteroskedasticity, indicating that residuals are homoskedastic and as such the samples give a true reflection of the population.

#### Fixed Effect Likelihood Ratio Test

The Fixed Effect Likelihood Ratio test is a test for model specification in panel data analysis and this test is employed to

choose between pooled effect model and the fixed effects model. Due to the panel nature of the data set, both pooled effect and fixed effect regressions were run (as shown in appendix 4 and 5 as attached). Fixed effect likelihood ratio specification test was then conducted to choose the preferred model between the pooled effect and the fixed effect regression models. The test basically checked if the error terms were correlated with the regressors. Thus, the decision rule for the fixed effect likelihood ratio specification is stated thus; at 5% Level of significance: As encapsulated above, if the p-value is less than 0.05 the decision rule is to reject the null hypothesis which states that pooled effect is most appropriate for the Panel Regression analysis (meaning that the preferred model is fixed effects). Similarly, if the p-value is greater than 0.05 the decision rule is to accept the alternative hypothesis which states that fixed effect is most appropriate for the Panel Regression analysis (meaning that the pooled effect model is to be rejected).

#### Hypothesis

$H_0$ : Pooled effect is most appropriate for the Panel Regression analysis

$H_1$ : Fixed effect is not appropriate for the Panel Regression analysis

#### Table 4.5: Fixed Effect Likelihood Ratio Result

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	23.820869	(10,96)	0.0000
Cross-section Chi-square	137.215916	10	0.0000

Source: E-View 10 Output (2022)

The result of fixed effect likelihood ratio test shows that chi-square statistics value is 23.820869 while the probability values of is 0.0000. This implies that there is enough reason to reject the null hypothesis which states that pooled

effect is most appropriate for the panel regression analysis. It thus stands that error component model (pooled effect) estimator is not appropriate because the pooled effects are probably correlated with one or more regressors. Thus, the

most consistent and efficient estimation for the study, given the options of a pooled effect analysis and a fixed effect analysis, is the fixed effect model of regression analysis. Consequently, the result suggests that the fixed effect regression model is most appropriate for the sampled data (given the two options as encapsulated above), because the

likelihood ratio test statistics as represented by corresponding probability value is less than 5%. It is imperative therefore, to proceed to another test which is the Langranger Multiplier test, which will indicate the appropriateness or otherwise of using the pooled effect model or the random effect model.

**Langranger Multiplier Test (Test between Random and Pooled)**

**Hypothesis**

**H<sub>0</sub>:** Pooled effect is more appropriate for the Panel Regression analysis

**H<sub>1</sub>:** Random effect is more appropriate for the Panel Regression analysis

As encapsulated above, if the p-value is less than 0.05 the decision rule is to reject

the null hypothesis which states that pooled effect is more appropriate for the Panel Regression analysis (meaning that the preferred model is random effects). Similarly, if the p-value is greater than 0.05 the decision rule is to reject the alternative hypothesis which states that random effect is most appropriate for the Panel Regression analysis.

**Table 4.6 Breusch-Pagan Langranger Multiplier Test**

Residual Cross-Section Dependence Test  
 Null hypothesis: No cross-section dependence (correlation) in residuals  
 Equation: Untitled  
 Periods included: 10  
 Cross-sections included: 11  
 Total panel observations: 110  
 Note: non-zero cross-section means detected in data  
 Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	90.47452	55	0.0018
Pesaran scaled LM	3.382363		0.0007
Pesaran CD	-1.442885		0.1491

Source: E-View 10 Output (2022)

Based on the probability value of the Breusch-Pagan Langranger Multiplier Test at 0.0018, the null hypothesis is rejected, thus random effect is most appropriate when compared to pooled effect. It is equally sensible therefore to further proceed to another test which is the Hausman specification test, which will show the appropriateness of otherwise of using the random effect model when compared to the fixed regression analysis.

**Hausman Specification Test**

The Hausman test is a test for model specification in panel data analysis and this test is employed to choose between fixed effects model and the random effects model. Due to the panel nature of the data set utilized in this study, both fixed effect and random effect regressions were run (as shown in appendix. Hausman specification test was then conducted to choose the preferred model between the fixed effect and the random effect regression models.

The test basically checked if the error terms were correlated with the regressors. Thus, the decision rule for the Hausman specification test is stated thus; at 5% Level of significance:

As encapsulated above, if the p-value is less than 0.05 the decision rule is to reject the null hypothesis which states that fixed effect is most appropriate for the Panel Regression analysis (meaning that the preferred model is random effects). Similarly, if the p-value is greater than

0.05 the decision rule is to accept the alternative hypothesis which states that fixed effect is most appropriate for the Panel Regression analysis (meaning that the random effect model is to be rejected).

**Hypothesis**

**H<sub>0</sub>:** Random effect is most appropriate for the Panel Regression analysis

**H<sub>1</sub>:** Fixed effect is not appropriate for the Panel Regression analysis

**Table 4.7: Hausman Specification Test**

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.491267	3	0.0208

Source: E-View 10 Output (2022)

The result of the Hausman test appended in the table 4.7 above provide sufficient evidence to reject this null hypothesis at 5% level of significance as can be seen that the probability value of the test is less than the critical value of 0.05. Therefore, the study upholds that difference in coefficients is systematic and hence, the fixed effect model is the

most appropriate models for the study.

The decision rule is to reject the null hypothesis if the P-value is less than 5% or 0.05 level of significance. If however the P-value is greater than % level of significance, if have no reason to reject the null hypothesis.

**Table 4.8: Panel Fixed Effect Regression Result**

Dependent Variable: DACC

Method: Panel Least Squares

Date: 10/21/22 Time: 15:27

Sample: 2012 2021

Periods included: 10

Cross-sections included: 11

Total panel (balanced) observations: 110

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.590826	0.482868	-1.223576	0.2241
RAMC	-0.010989	0.107159	-0.102551	0.9185
LOGAUF	1.554388	0.567889	2.737132	0.0074
ADFZ	0.020481	0.062632	0.327006	0.7444

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.727017	Mean dependent var	0.325531
Adjusted R-squared	0.690050	S.D. dependent var	0.375544
S.E. of regression	0.209077	Akaike info criterion	-0.173813
Sum squared resid	4.196474	Schwarz criterion	0.169884
Log likelihood	23.55973	Hannan-Quinn criter.	-0.034408
F-statistic	19.66691	Durbin-Watson stat	1.898110
Prob(F-statistic)	0.000000		

Source: E-View 10 Output (2022)

From table 4.8 above, the coefficient of multiple determinations ( $R^2$ ) is 0.727017 and in line with the panel nature of the data used in this study, the regression model shows that the range of values between adjusted  $R^2$  and  $R^2$  falls between 69%, and 72% respectively. This indicates that about 79% of the total variations in audit quality is explained by the variations in the independent variables (RAMC, LOGAUF and ADFZ), while the remaining 28% of the variation in the model is captured by the error term, which further indicates that the line of best fit is highly fitted. Similarly, from the table above, the coefficient of the intercept (for the fixed effect result) is negative. This indicates that at any given point in time where these explanatory variables are held constant, audit quality) of the firms decreases by -0.59. In terms of residual test, the model is free from serial correlation as revealed by the Prob (F-statistic) of 0.000000 and Durbin-Watson statistic of 1.89 which is within the acceptable range of 1.7 to 2.7 for a sample of at least 50 observations.

The individual independent variables of the study show that relative audit market concentration (RAMC)) has insignificant effect on discretionary accrual as indicated by the P-value of 0.9185 which is greater than 5% significant level. This, implies that relative audit market concentration has no significant effect on audit quality. On the other hand, looking at the individual P-value of auditor's

remuneration (LOGAUF), it indicates positive and significant effect on discretionary accrual as shown by the P-value of 0.0074 which is less than 5% significant level. This shows that auditor's remuneration has significant effect on discretionary accrual of listed industrial goods firms in Nigeria. Overall, the probability F- statistics shows a value of 0.00000. This means that Audit Market Concentration and Auditors' Remuneration has significant effect on the audit quality of Industrial Goods Firms in Nigeria.

### Discussion of Findings

On the basis of individual's variables, the Relative Audit Market Concentration (RAMC) has no significant effect on the quality of Audit of Industrial Good Firm in Nigeria. This is because the probability value of 0.9185 is greater than 5% level of significance set as a decision rule. However, the Auditors' Attributes represented by the Audit fees (AUDF) as significant effect on audit quality of listed consumer good firms in Nigeria. It can be seen from the table that the probability value in this case is 0.0074 which is less than the 5% threshold. The overall result shows that, audit market concentration and audit attribute have significant effect on audit quality of industrial good firms in Nigeria. The result of audit market concentration is in tandem with the works of Majid, et al, (2021) and Kim and Michael (2020). It is however not in agreement with the

works of Athavale, et al, (2022) and Amahalu, et al, (2019). Our findings on audit attributes agree with the work of Ilaboya Ohiokha (2014) but, not in agreement with the work of Okolie (2014)

## CONCLUSION AND RECOMMENDATIONS

Based on the study findings reached through the study objectives guided by the study hypotheses, the following conclusion were made; the null hypothesis of hypothesis one to the study is not rejected. The study revealed that there is a negative and negligible association between relative audit market concentration and the audit quality of Nigeria's listed industrial goods enterprises. Relative audit market concentration from the study result is insignificant and negatively related to under studied firm's audit quality.

The study also revealed that absolute audit market concentration has a negative but insubstantial link with the audit quality of industrial goods enterprises. It is important to note, however, that this finding does not necessarily suggest that absolute audit market concentration is not a factor in audit quality; it simply suggests that other factors may be more influential. Furthermore, it is important to consider that audit market concentration may have different levels of influence in different contexts, such as different types of enterprises, industries, and geographical locations. This indicates that companies should focus their efforts on other factors that may have more influence on audit quality.

Finally, the study concluded that effect of audit market concentration and auditors' remuneration on audit quality of quoted industrial goods firms in Nigeria is negative and insignificant.

Based on the study findings, the

following recommendations are made;

- i. The audit market concentration and auditors attributes combined effect on the quality of audit of firms appear to be quite germane for portfolio managers, researchers, investors, policy makers and professionals concerned about the outcome of audit markets. Our findings revealed mixed results and we recommend that whichever basis affirm decides to employ, (audit quality of a firm will not be affected by the audit market concentration since the firm's value will not be affected.
- ii. The management of listed industrial good firms in Nigeria should not make changes to the payment of audit fee to auditors as this has no effect on the quality of audit.

### Suggestions for Further Studies

The study examined the effect of audit market concentration and auditor's remuneration on audit quality of listed industrial goods firms on the Nigeria Exchange Group using panel data of observations obtained from 11 companies for 11 years with two (2) proxies of audit market concentration and one (1) proxy of audit quality. The study suggests that researchers who intend to do similar study should replicate the same research using other sectors listed on the Nigeria exchange group.

Similarly, it is suggested that this study should be replicated using different measures of audit market concentration. However, these measures should be used in compliance with the components of



financial statement and further research is suggested for non-listed industrial goods firm in Nigeria as well. The present study focused on listed industrial goods firms and therefore, limits the generalization of the study findings to the entire industrial sector in Nigeria.

### Contribution to Knowledge

1. This study developed a modified model for audit quality assessment which can be adopted by professionals, management, researchers, government,

agencies, corporate entities, external auditors and policy makers in assessing the quality of audit quantitatively.

2. This study, to the best of our knowledge, is the first of its kind in Nigeria employing Nigerian data of 13 industrial goods firms for 11 years which contributed to robust result.

3. The study adds to the body of existing knowledge and guide for researchers and professionals to further research on the subject matters in areas that were not considered in this study.

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**APPENDIX**  
**Data presentation**

<b>FIRMS</b>	<b>YEARS</b>	<b>DACC</b>	<b>RAMC</b>	<b>LogAuF</b>	<b>ADFZ</b>
AutinLAZ Coy Plc	2012	0.477	0.000	0.444	6.679
AutinLAZ Coy Plc	2013	0.477	0.000	0.471	6.678
AutinLAZ Coy Plc	2014	0.312	0.000	0.484	7.198
AutinLAZ Coy Plc	2015	0.312	0.000	0.498	7.222
AutinLAZ Coy Plc	2016	0.312	0.000	0.503	7.222
AutinLAZ Coy Plc	2017	0.398	0.000	0.527	7.242
AutinLAZ Coy Plc	2018	0.398	0.000	0.497	7.311
AutinLAZ Coy Plc	2019	0.398	0.000	0.517	7.309
AutinLAZ Coy Plc	2020	0.677	0.000	0.469	7.435
AutinLAZ Coy Plc	2021	0.512	0.000	0.491	7.520
Berger Paint Plc	2012	0.439	1.000	0.523	7.334
Berger Paint Plc	2013	0.352	1.000	0.531	7.415
Berger Paint Plc	2014	0.352	1.000	0.521	7.447
Berger Paint Plc	2015	0.439	1.000	0.525	7.496
Berger Paint Plc	2016	0.708	1.000	0.522	7.447
Berger Paint Plc	2017	0.806	1.000	0.535	7.420
Berger Paint Plc	2018	0.813	1.000	0.551	7.196
Berger Paint Plc	2019	0.820	1.000	0.541	7.271
Berger Paint Plc	2020	0.512	1.000	0.495	7.375
Berger Paint Plc	2021	0.580	1.000	0.505	7.419
Beta Glass Plc	2012	0.034	1.000	0.414	5.768
Beta Glass Plc	2013	0.142	1.000	0.420	5.721
Beta Glass Plc	2014	0.158	1.000	0.495	5.652
Beta Glass Plc	2015	0.093	1.000	0.526	5.626
Beta Glass Plc	2016	0.030	1.000	0.535	5.616
Beta Glass Plc	2017	0.037	1.000	0.528	5.735
Beta Glass Plc	2018	0.115	1.000	0.543	5.732
Beta Glass Plc	2019	0.019	1.000	0.521	5.651
Beta Glass Plc	2020	0.515	1.000	0.524	5.590
Beta Glass Plc	2021	0.635	1.000	0.532	6.208
Cap Plc	2012	-0.904	1.000	0.398	6.899
Cap Plc	2013	-0.587	1.000	0.398	6.912
Cap Plc	2014	-0.381	1.000	0.473	6.910
Cap Plc	2015	-0.179	1.000	0.517	6.918
Cap Plc	2016	0.024	1.000	0.490	6.936
Cap Plc	2017	0.088	1.000	0.516	6.926

Cap Plc	2018	0.077	1.000	0.514	6.910
Cap Plc	2019	0.026	1.000	0.564	6.977
Cap Plc	2020	-0.863	1.000	0.532	7.156
Cap Plc	2021	0.038	1.000	0.556	7.238
Cutix Plc	2012	0.040	1.000	0.490	6.305
Cutix Plc	2013	0.025	1.000	0.542	6.461
Cutix Plc	2014	0.019	1.000	0.554	6.444
Cutix Plc	2015	0.021	1.000	0.499	6.342
Cutix Plc	2016	-0.019	1.000	0.501	6.430
Cutix Plc	2017	-0.201	1.000	0.521	6.358
Cutix Plc	2018	-0.017	1.000	0.537	6.363
Cutix Plc	2019	-0.021	1.000	0.498	6.440
Cutix Plc	2020	-0.008	1.000	0.478	6.809
Dangote Cement	2021	0.007	1.000	0.518	6.979
Dangote Cement	2012	0.027	1.000	0.515	6.444
Dangote Cement	2013	0.052	1.000	0.504	7.823
Dangote Cement	2014	0.071	1.000	0.481	7.857
Dangote Cement	2015	0.077	1.000	0.478	7.851
Dangote Cement	2016	0.060	1.000	0.515	7.805
Dangote Cement	2017	0.051	1.000	0.488	7.623
Dangote Cement	2018	0.045	1.000	0.499	7.445
Dangote Cement	2019	0.135	1.000	0.560	7.307
Dangote Cement	2020	0.172	1.000	0.545	7.040
Grief Plc	2021	0.244	1.000	0.587	6.369
Grief Plc	2012	0.21	1.000	0.494	3.418
Grief Plc	2013	0.117	1.000	0.495	3.109
Grief Plc	2014	0.035	1.000	0.509	4.245
Grief Plc	2015	0.012	1.000	0.530	4.271
Grief Plc	2016	0.021	1.000	0.568	3.211
Grief Plc	2017	0.027	1.000	0.519	4.623
Grief Plc	2018	0.034	1.000	0.591	4.921
Grief Plc	2019	0.321	1.000	0.534	5.372
Grief Plc	2020	0.031	1.000	0.536	3.182
Grief Plc	2021	0.421	1.000	0.556	4.947
Larfarge Africa Plc	2012	0.954	1.000	0.523	7.162
Larfarge Africa Plc	2013	0.313	1.000	0.531	7.212
Larfarge Africa Plc	2014	0.845	1.000	0.521	7.292
Larfarge Africa Plc	2015	0.903	1.000	0.525	7.271

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Larfarge Africa Plc	2016	0.699	1.000	0.522	7.119
Larfarge Africa Plc	2017	0.228	1.000	0.535	7.134
Larfarge Africa Plc	2018	0.637	1.000	0.551	7.223
Larfarge Africa Plc	2019	0.367	1.000	0.541	7.310
Larfarge Africa Plc	2020	0.219	1.000	0.495	7.357
Larfarge Africa Plc	2021	0.041	1.000	0.505	7.476
Meryer Plc	2012	0.217	1.000	0.414	6.361
Meryer Plc	2013	0.762	1.000	0.420	6.372
Meryer Plc	2014	0.776	1.000	0.495	6.373
Meryer Plc	2015	0.838	1.000	0.526	6.417
Meryer Plc	2016	0.823	1.000	0.535	6.418
Meryer Plc	2017	0.849	1.000	0.528	6.428
Meryer Plc	2018	0.873	1.000	0.543	6.435
Meryer Plc	2019	0.875	1.000	0.521	6.435
Meryer Plc	2020	0.876	1.000	0.524	6.452
Meryer Plc	2021	0.878	1.000	0.532	6.457
premier Paint Plc	2012	0.884	0.000	0.398	4.736
premier Paint Plc	2013	0.744	0.000	0.398	4.781
premier Paint Plc	2014	0.704	1.000	0.473	4.813
premier Paint Plc	2015	0.733	1.000	0.517	4.863
premier Paint Plc	2016	0.737	1.000	0.490	4.875
premier Paint Plc	2017	0.735	1.000	0.516	4.966
premier Paint Plc	2018	0.729	1.000	0.514	4.959
premier Paint Plc	2019	0.715	1.000	0.564	4.953
premier Paint Plc	2020	0.717	1.000	0.532	4.967
premier Paint Plc	2021	0.718	1.000	0.556	4.980
Tripple Gee Plc	2012	0.718	0.000	0.490	7.149
Tripple Gee Plc	2013	0.335	0.000	0.542	7.165
Tripple Gee Plc	2014	0.201	0.000	0.554	7.102
Tripple Gee Plc	2015	0.065	0.000	0.499	7.099
Tripple Gee Plc	2016	0.569	1.000	0.501	7.114
Tripple Gee Plc	2017	0.593	1.000	0.521	7.124
Tripple Gee Plc	2018	0.511	1.000	0.537	7.040
Tripple Gee Plc	2019	0.845	1.000	0.498	7.043
Tripple Gee Plc	2020	0.041	1.000	0.478	7.041
Tripple Gee Plc	2021	0.322	1.000	0.518	7.055

Source: Nigeria Exchange Group Fact-book (2021)