

Research Article

Audit Competition and Audit Quality of Deposit Money Banks in Nigeria

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Abstract

The study investigated the impact of audit competition (AC) on audit quality (AQ) of quoted Nigerian Deposit Money Banks (NDMBs). A longitudinal research design was used alongside secondary data sources. Specifically, the study focused on the banking sector. The population consisted of 12 NDMBs listed on the Nigerian Exchange Group (NGX) as of December 31, 2023. A census sampling technique was used to accommodate all listed NDMBs. Data were obtained from audited annual reports, NGX, and Factbooks covering the period from 2011 to 2022, and were analysed using both descriptive and inferential statistics to ensure robustness of the estimates. The empirical findings indicate that AC proxies: market concentration ($t = -8.81$, Prob < 0.05) and client mobility ($t = -12.44$, Prob < 0.05) show a negative and statistically significant relationship with absolute discretionary accruals (ADA), which implies that increased AC is associated with reduced discretionary accruals and leads to improved AQ. Similarly, Big Four ($t = -22.02$, Prob < 0.05) and firm growth ($t = -9.97$, Prob < 0.05) reveal significant negative associations with ADA. The study concludes that AC has a negative and significant effect on AQ among NDMBs. The study suggests that increased competitive pressures within the audit market may compromise the quality of audit services, potentially due to fee competition and reduced audit effort. The study has implications for policymakers and institutional regulators in designing audit market structures that promote both competition and AQ.

Keywords

Audit Competition, Market Concentration, Client Mobility, Big Four and Audit Quality

1. Introduction

The integrity of financial reporting rests heavily on quality of external audits, making the relationship between AC and AQ a matter of critical importance for regulators, investors, and accounting profession. Recent corporate scandals and audit failures across global markets have brought renewed scrutiny to whether AC serve as an incentive for thorough auditing or create problematic economic dependencies [4, 27]. In emerging economies like Nigeria, where capital markets are developing and corporate governance structures continue to

evolve, this relationship takes on added significance yet remains insufficiently explored. Comprehending the intricate relationships between these variables is imperative to ensure precise AQ and uphold public trust in banking industry.

Our investigation focuses specifically on Nigeria's banking sector, which presents a compelling case study for several reasons. First, as the cornerstone of the nation's financial system, NDMBs play an important role in economic stability and

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growth [16]. Second, the sector has experienced notable turbulence in recent years, including the 2022 liquidity crisis that exposed vulnerabilities in financial reporting practices [48]. Third, the unique market dynamics of Nigeria's audit industry, where Big Four firms dominate but face distinct competitive pressures, create an important context for examining how audit competition influences audit quality.

Skinner and Srinivasan (2012) examined two principal factors that motivate auditors to compete: litigation and reputation factor. Their studies finding revealed that AC increases AQ [56]. Audit firms must deliver superior services in highly competitive marketplaces to draw in and keep clients in order to impact AQ positively [42]. However, some researchers contend that more competition may result in reduced audit quality because companies may use aggressive pricing strategies, which may result in lowballing or accepting clients who are not a good fit for their expertise.

This researcher's work proxies AC using market competition and client mobility. Regulators are interested in the relationship between audit market concentration and AQ. Regulators have voiced concern that the audit market's lack of competition may result in low-quality audits and high fees. However, if clients want it, competition may increase auditors' reputation and incentives to deliver high-quality audits. Kallapur, Sankaraguruswamy, and Zang (2010) examined relationship between audit market concentration and AQ, and their findings showed that audit market concentration has a positive impact on AQ [37].

AQ is crucial to guarantee the integrity and dependability of financial accounts. There has been an increase in regulatory scrutiny of the audit profession in Nigeria after the cases of Oando Plc and NITEL, to mention a few, by requiring auditors to adhere strictly to global auditing standards and notify the proper authorities of any suspected financial irregularities. Although regulators curate several regulations to address the issue, it continues to be a problem that can have severe repercussions for organisations and their stakeholders.

The Nigerian banking sector holds immense significance for the nation's economy. However, during the third quarter of 2022, the sector substantially declined. This decline has raised concerns regarding AC and AQ in ensuring high-quality quality. It could be noted from the growing studies of AC and AQ, be it empirically or theoretically, it will always remain inconclusive and at times contradictory [4, 7, 9, 31, 37]. Institutional weakness such as enforcement of regulatory patterns and information asymmetry in capital markets may either moderate connection of AC and AQ in different ways from the developed economies [6]. Also, while many previous studies assessed AC with the proxies of audit fees, audit market concentration and auditor switch, yet there is no agreement on most appropriate measurement method. However, in this study, the use of proxies of client mobility and competition remain underexplored in the existing studies mostly in Nigeria. All these and many more point to the need for empirical investigation into the impact of AC on AQ among quoted NDMBs.

2. Literature Review

2.1. Theoretical Framework

This research is anchored on the Market Structure Theory and Structure Conduct Performance (SCP). The market structure theory states that number of firms and level of competition can affect behaviour and performance of audit firms, while the structure-conduct-performance theory posits that market conditions affect firm behaviour, which in turn affects firm performance. According to this notion, competition among audit companies is predicted to affect price and quality. Both theories discuss impact of market structure and competition on audit companies. However, while both theories agree that market structure and competition may influence audit company behaviour, they place different amounts of emphasis on this dynamic and the outcome arising from this relationship.

2.2. Conceptual Review

2.2.1. Audit Competition

Audit competition refers to the rivalry between audit firms, which has been a topic of significant discussion in the academic community, particularly in aftermath of high-profile accounting scandals. Audit market is often characterised as an oligopoly since only a handful of major audit firms, such as the Big Four, have a significant market share and can affect market dynamics through their actions [19]. Large companies' competitive strategies are shaped by the responses of other large firms operating in the same industry. It implies that the actions of one audit firm can considerably impact the entire market, and the behaviour of other firms can influence the market in turn [24].

One of the primary sources of audit competition is the acquisition of large clients from competitors, which could increase revenue and reputation for the winning audit firm, which is not the case where audit firms compete for smaller clients that have little impact on the overall market share of their firm [49]. Audit market is structured in a way that gives audit firms strong incentives to compete aggressively for big clients. Within an industry, client concentration improves immediate advantages of fierce competition, driving audit firms to compete more ferociously [21]. An audit firm's reputation might suffer from a decline in quality, making it more susceptible to aggressive competition from rival firms. Audit fees may be a basis for competition between audit firms [55].

However, achieving perfect competition in the audit market may be unattainable because factors such as audit fees and market concentration drive competition [28, 29, 33]. Simunic (1980) proposed a neoclassical economics-based model of audit industry competition, which states that the audit marketplace comprises a significant and competitive section of oligopolistic small audit clients [57, 18]. In order to determine whether premium in pricing in oligopolistic section was

caused by market power, product differentiation, or relative product inefficiencies, the small client segment was utilised as a benchmark [15, 20, 49]. Audit firms compete rationally and consider other firms' potential actions when deciding how fiercely to compete with market rivals [24]. Competing with the same audit firms across different industries within a geographical region leads to less competition overall, implying mutual forbearance among rivals [24, 30]. Over the years, significant audit firms have reduced from eight to six in 1989, five in 1998 due to mergers, and four in 2002 after Arthur Andersen's death. Audit market concentration has garnered attention [43].

The Sarbanes Oxley Act of 2002 (SOX) required Government Accountability Office (GAO) to research how consolidation affects competition, client choice, audit fees, and AQ [37, 17]. Dunn *et al.*, (2012) discovered that the most significant four clients in each market would likely share the same auditor, leading to audit concentration because the biggest clients have limited options [25]. Kend *et al.*, (2014) asked users, "Is the competition in the audit market service enough?" None of the interview respondents commented favourably about the sufficiency of market competition [38]. Instead, concerns were expressed regarding insufficient competition between audit firms. One of the interviewers expressed their concern that there needs to be more competition between audit firms, as only a few firms have the depth and capacity to execute extensive client audits. The supplier, the purchaser of the audit service, and the setters are the regulators, as opposed to the view that there is no competition between audit firms. Findings from this study from most people surveyed revealed audit competition between audit firms. They also pointed out that a failure in another big four would be hazardous to the market. Historically, auditors have competed on price and quality, but competition has recently centred on pricing [47]. Mayhew and Wilkins (2003) demonstrate that quality-based rivalry still exists among national market leaders, which can be viewed as a positive development of audit quality [45]. However, audit firms that have not distinguished themselves as market leaders find it challenging to benefit from economies of scale since price competition pushes firms to compete on price [47].

Numan and Wilekens (2012) identified two distinct ways competition can occur: the traditional market concentration and the competition measure derived from spatial competition [49]. Spatial competition is where firms may compete for clients across different geographic regions or markets; it can also be pertinent. In this situation, businesses need to consider each market's distinctive features, such as regional laws, difficulties specific to a given industry, and the level of competition [49]. A company with a significant market share in one area may need to adjust its strategies to compete successfully in another area to provide prompt and effective services. It may also be impacted by a firm's proximity to a potential client, another consideration in the selection process. By comprehending the dynamics of spatial competition in audit market, businesses can create targeted marketing plans and allocate resources

wisely to increase their market share across various geographies [24].

2.2.2. Client Mobility

The investigation of the complex relationship between audit market concentration and audit pricing or quality arises from regulators' concern that increased concentration may increase competition among audit companies [12, 31, 60]. However, a different approach implies that significant market concentration might emerge endogenously when audit companies seek economies of size or scope and maximise resources within the complex audit section of the market [10]. In this setting, an important question arises: can audit companies compete on price or quality even at high levels of audit complexity, where clients require technology- and resource-intensive audits? If this is true, it could assuage the regulators' concerns. To solve this issue, we look at a different, dynamic measure of market structure [51]. Carlton and Perloff (1994) stated in their research that seller concentration is a static measure of market structure and a possible competition driver [14]. However, it does not always reflect actual market rivalry among suppliers. Market dynamics, such as market share mobility, provide a complementary viewpoint and capture the spirit of provider rivalry, resulting in a more accurate picture of market competitiveness [8].

When a handful of similarly sized enterprises share the market but lack substantial chances for differentiation or co-operation, the industrial organisation literature expressly emphasises possibility that even concentrated audit markets can generate competition [51]. Also, earlier research on audit market competition has focused entirely on static measures of market structure, omitting this potentially critical facet of audit market dynamics. However, a notable exception can be found in the work of Buijink *et al.* (1998), who proved that concentrated audit markets can display considerable variations in market shares, indicating the presence of competition [13]. We develop a dynamic measure of competitiveness from the temporal fluctuation in individual audit firms' market shares, which we refer to as "client mobility," following the findings of Buijink *et al.*, (1998) [13]. If client mobility is caused by audit market rivalry, the standard theoretical prediction that competition reduces monopoly rents suggests a negative relationship between client mobility and audit fees. As a result, we use strength of the negative association between customer mobility and audit fees to measure the level of price competition. We previously proposed that the complexity of audits for large clients, driven by their expectations for technology- and resource-intensive evaluations, promotes market share concentration in audit market's large-client segment. If audit complexity does limit price competition by impacting audit needs and market structure, we estimate that it will lessen negative correlation between client mobility and audit fees in large-client sector compared to SME-client segment.

2.2.3. AQ

AQ is a crucial part of the auditing process since it ensures the dependability and accuracy of financial accounts. Audit quality remains a topic of intense debate, with little agreement on its precise definition [39]. AQ is the degree to which an audit report gives assurance that financial statements are free of substantial misstatements and are presented fairly in all material respects [1, 22]. AQ is defined as the market-assessed joint probability that a given auditor will identify a breach in client's accounting system and report that breach [22]. The likelihood of an auditor discovering a breach depends on factors such as their capabilities and the audit procedures employed [59], while conditional probability of reporting a breach hinges on the auditor's independence [41]. AQ encompasses various elements, including inputs, processes, outputs, interactions, and contextual factors. The auditor's values, ethics, attitudes, knowledge, skills, and experience are crucial input factors. AQ is essential since it is carried out meticulously according to rules, regulations, and standards. A valuable and timely audit report that includes the auditor's expert judgment is the primary result of a high-quality audit [52, 53]. For high-quality audits to be produced, auditors and stakeholders must effectively communicate with one another [26]. The environment in which audits are conducted, including elements like corporate governance, audit law, culture, and information systems, influences the quality of the audits [58]. Based on the foregoing discussion, this study empirically investigates the impact of AC on AQ using data from NDMBs.

2.2.4. Critical Analysis and Research Gap

External audits play a significant role in ensuring the integrity of financial reporting, and the linkage of AC and AQ is of critical concern to the regulators, investors, and accounting profession. The recent scandals and auditing failures of corporations in international markets have led to a fresh questioning of the question of whether AC serve to motivate the comprehensive audit or cause a rather problematic dependence on the economy [4, 27]. Although previous studies reveal some evidence of positive or negative impact of AC on AQ, the literature is still theoretically divided and empirically inconclusive, which implies that the interaction is greatly context-dependent. This relationship acquires a new meaning with particular importance in such an emerging economy as Nigeria where the capital markets are emerging and the corporate governance structures have still not been fleshed out. It is critical to understand the complexity of relations between these variables to provide accurate AQ and build trust in banking industry among people. We are specifically investigating the banking industry of Nigeria, an industry that makes an interesting case study due to a number of reasons. First, being at the heart of the financial system of the country, NDMBs factor by its economic stability and growth [16]. Second, the industry has undergone significant turbulence over the past few years, such as the 2022 liquidity crisis which revealed vulnerabilities in

the financial reporting practices [48]. Third, Big Four companies are dominant in the audit industry of Nigeria with unique market dynamics, but with different competitive pressures because of the situation, the audit industry in the country presents a valuable context to study the effect of audit competition on audit quality. Nevertheless, these institutional specifics notwithstanding, the available empirical research has given very little attention to sector specifications of explaining AC and AQ nexus in Nigeria.

Skinner and Srinivasan (2012) analyzed two factors, which contribute to competition among the auditors: litigation and reputation factor. Their research results showed that AQ is increased by AC [56]. To ensure that they have a positive effect on AQ, audit firms have to offer their best services in very competitive markets to attract and retain their customers. Nonetheless, certain scholars argue that highly competitive terms might lead to the decline in quality of auditing services since businesses will resort to aggressive pricing tactics which can lead to lowballing or taking unsuitable clients that are not the ones that their specialization would suit. This difference in result conditioning of a theoretical conflict between reputation competition and price competition in the literature, which cannot be resolved without further investigation. The work of this researcher is a proxy of AC that relies on competition in the market and mobility of clients. Regulators are interested in the relationship between audit market concentration and AQ. Regulators have expressed their concern that the absence of competition among the audit market can lead to low-quality audit and extra charges. Nevertheless, in case clients desire it, competition can elevate the status of auditors and their incentives to provide qualitative audits. Kallapur, Sankaraguruswamy, and Zang (2010) studied relationship between audit market concentration and AQ and their results revealed that audit market concentration positively influences AQ [37]. However, many of the previous research depends largely on fixed measures, including market concentration, which might not be sufficient in capping the dynamic aspect of rivalry in the audit market.

AQ plays a very significant role in ensuring the integrity and reliability of the financial accounts. This is due to the fact that over the years, the audit profession in Nigeria has been subjected to a lot of regulatory scrutiny that has seen auditors strictly abide by international auditing standards and report to the relevant authorities of any suspected financial irregularities. Despite a number of regulations that regulators maintain to deal with the problem, it remains a challenge that may lead to serious consequences to organisations and the stakeholders. This implies that there is a possibility of not having enough regulatory interventions without a relatively better comprehension of market-based mechanisms like AC. Banking industry in Nigeria is very important to the economy of the country. Nevertheless, the industry dropped significantly in the third quarter of 2022. This failure has brought fears about AC and AQ in delivering quality. It would be observed based on the

emergent literature of AC and AQ, whether through their empiricism or their theoreticality, they will never prove conclusive and will in some cases be contradictory [4, 7, 9, 31, 37]. Weaknesses in the institution like implementation of regulatory trends and information asymmetry in capital markets can either moderate affiliation of AC and AQ differently to the developed economies [6]. Furthermore, although a number of the previous studies compared AC and the proxies of audit fee, audit market concentration, and auditor change but remains inconclusive on the most appropriate method of measurement. Nonetheless, the application of the proxies of client mobility and competition have not been fully exploited in the literature of the available research primarily in Nigeria. The main research gap is that dynamic measures of competition doing AC such as client mobility and its relationship with AQ in the Nigerian banking market have only been used sparingly to explain AQ and nobody has agreed on how the various aspects of competition interrelate to lead to AQ in an emerging market setting. This gap is filled by this research by combining the market concentration with client mobility as a complementary proxy of audit competition, thus giving a more overall and context-specific explanation to the AC and AQ relationship among quoted NDMBs.

2.3. Empirical Review

2.3.1. Empirical Evidence Suggesting Competition Is not Improving and Does not Weaken AQ

Heidi and Marleen (2004) studied the effect of audit client differentiation on AQ in Belgium, and audit size was used to proxy AQ. The study used a sample of 1302 firms, and the OLS estimation regression model was used. This result showed that audit competition for private client segment may not significantly impact audit quality [35]. Boone, Khurana and Raman (2012) examined relationship between Audit market concentration, auditor tolerance and earnings management in the USA. The study measured audit concentration using Herfindahl index based on audit fees. The sample used was 4779 observations, and the pooled probit regression was also used. The result suggests that higher concentration is related with higher auditor tolerance for earnings management, showing that higher concentration is related with less higher AQ [11]. Jan and Peter (2014) carried out an empirical investigation on the effect of auditors' identification on AQ. The research employed a sample of 600 questionnaires sent to auditors of the non-big four. The study was anchored on social identity theory and motivated reasoning theory, and the multiple regression model was also employed. They found that auditors identified with their clients and when an auditor identified relatively more with a client, it is more likely to acquiesce to client-preferred treatment and commit to reduce AQ [36]. Raak *et al.*, (2020) examined the effect of audit market structure on audit quality and audit pricing. The study was carried out in Belgium, the study made use of 15575 client-year observations, and the research was anchored on the economic

theory and industrial organisation theory. They studied the concentration of the audit market and client mobility, two conceptually separate market structure variables. They discovered that market concentration reduces price and quality competition in the SME client group. Masoud *et al.*, (2022) studied effect of competition on AQ in Iran. The study used a sample size of 3484 firm-year observations, and the Herfindal Index (HI) was used to measure competition in the audit market. The study was anchored on economic theory. The study concluded that higher levels of competition is associated with lower audit fees and quality in the audit market [44].

2.3.2. Evidence Indicating Competition Improves AQ

Newton, Wang and Wilkins (2012) examined if a lack of choices leads to lower AQ. The study states that the current lack of auditor competition, which has a detrimental effect on AQ, has alarmed policymakers and market participants in the audit industry. The sample used was 36860 firm-year observations, and logistic regression was also used. The study's findings state that lower competition leads to higher AQ [47].

2.3.3. Evidence Supporting the Role of Market Concentration (Big Firms) as a Higher AQ Driver

Kallapur *et al.*, (2010) examined the relationship between audit market concentration and AQ conducted in USA. AQ was proxied with absolute discretionary accruals, and market concentration was with the Herfindahl index. The study employed 27756 client firm-year observations and used cross-sectional regression. The result showed a positive relationship between audit market concentration and AQ [37]. Francis, Michas, and Seavey (2013) studied effect of market concentration on audited earnings. They examined 42 countries in their study, using 116,358 firm-year observations and the fixed-effect model. The study investigated two separate aspects of Big Four dominance: (1) Big Four market concentration as a group relative to non-Big Four auditors and (2) concentration within the Big Four group in which one or more of the Big Four firms is dominant relative to the other Big four firms. The study found that in countries where the Big Four (as a group) conduct more listed company audits, Big Four and non-Big Four clients have higher quality audited earnings than those with smaller Big Four market shares. In contrast, in countries with a greater concentration within the Big Four group, Big Four clients have lower-quality audited earnings compared to countries with more evenly distributed market shares among the Big Four [27]. Defond, Erkens and Zhang (2016) examined effect of client characteristics on AQ. The study investigated if self-selection is a factor in the Big N effect, which states that Big N auditors produce higher-quality audits than non-Big N auditors; the study employed 1500 samples, and the research was anchored on the Big N effect theory. They discov-

ered that client characteristics do not drive Big N quality difference [23].

2.3.4. Indication of Conditional and Heterogenous Effects

Raak *et al.*, (2020) examined the effect of audit market structure on audit quality and audit pricing. The study was carried out in Belgium, the study made use of 15575 client-year observations, and the research was anchored on the economic theory and industrial organisation theory. In the large-client market, where they contend that market concentration is endogenous to audit complexity, market concentration is unrelated to audit quality. Additionally, they discovered that customer mobility encourages price competition in both categories, but only in the large-client group does it increase audit quality [51].

3. Methodology

Data were obtained from secondary sources, and the study used an *ex-post facto* and longitudinal research approach. *Ex-post facto* was used since the relevant data was already available in the listed banks' financial statements before the investigation. The study also uses longitudinal research since it contains cross-sectional units of 12 banks listed on the NGX across 12 years (2011-2022), resulting in 144 firm-year observations. The study's population comprised 12 NDMBs listed on NGX. The non-financial sector was left out of the analysis. These 12 mentioned banks were put through a test that required them to satisfy the following criteria:

- 1) Before 2011, the bank must have been listed on the NGX.
- 2) These banks' annual financial reports for 2011-2022 must be provided.
- 3) The banks must have been operational by 2022.

The census survey techniques were adopted in selecting the 12 banks that met these requirements.

Table 1. Measurement of variable.

S/N	Variables	Description/Measurement	Variable Type	Sources
1	Audit Quality	Absolute discretionary accruals	Dependent	[50]
2	Audit Market Concentration	Herfindahl Index	Independent	[46]
3	Client Mobility	The sum of absolute values of annual percentage-point changes in market share for each auditor	Independent	[13, 51]
4	CFO	Operating cash flow scaled by total assets	Control	[54, 57]
5	Leverage	Book value of total assets to total liabilities	Control	[32]
6	Loss	A dummy control, coded one if net income is negative, zero otherwise	Control	[20]
7	Age	Natural logarithm of years of auditors	Control	[54]
8	Audit Tenure	Logarithm of auditor's tenure in years (+1-)	Control	[5]
9	Size	Natural log of total assets	Control	[32]
10	Growth	Percentage change in total assets	Control	[51]
11	Audit Switch	Indicator variable, where value of 1 is assigned when an audit firm is switched and 0 otherwise	Control	[5]
12	Big Four	Companies audited by the big four are designated as one, while those audited by firms outside are labelled as Zero.	Control	[2]
13	Total Asset	Asset owned by the business	Control	[34]
14	Diversification	Risk Based measures and Weight based measures	Control	[40]
15	Receivables	Account Receivable Turnover	Control	[3]
16	Inventories	Account Inventory Turnover	Control	[3]
17	Lag Loss	One, if a company's net income is below zero in year t-1, and 0 otherwise.	Control	[27]

Source: Authors Compilation 2024

The impact of AC on AQ is measured using regression analysis of Raak, *et al.*, (2019) [51]:

$$ABS_{DD} = \beta_0 + \beta_1 \text{Market Concentration} + \beta_2 \text{Client Mobility}_{kt} + \beta_3 \text{Growth}_{it} + \beta_4 \text{Loss}_{it} + \beta_5 \text{OCF}_{it} + \beta_6 \text{Age}_{it} + \beta_7 \text{Leverage} + \beta_8 \text{Big Four}$$

Table 1 showed that ABS_{DD} represents absolute discretionary accruals, which is used as a proxy for the dependent variable's AQ [50]. Market concentration is calculated using Herfindahl-Hirschman Index. This is the extent of domination of big four in audit market. This is in line with market structure theory that proposes that level of concentration can influence performance of audit firms [5, 7, 11, 51]. Client mobility refers to the ability of clients to change auditors relatively frequently, and it is calculated as the sum of absolute values of annual percentage-point changes in market share for each audit firm. This is in line with the structure conduct performance that suggests a high level of client mobility would influence the audit firms by increasing competition, which could make audit firms resort to offering competitive pricing in order to retain or attract new clients [51]. Size is calculated as natural log of total assets, which aligns with the resource-based theory that proposes large firms might have a more complex financial structure that will require high-quality audits and more competition. Operating cash flow is measured by cash flows derived from operations scaled by total assets [5]. According to the resource-based theory, a company with a high level of operating cash flow is perceived to be less risky, and the company can generate cash. Leverage is measured as book value of total asset to total liabilities [51]. The rationale behind this measurement methodology of AQ is that DeAngelo (1981) pioneering framework conceptualises AQ as the cumulative likelihood of both an auditor and material misstatements being detected, and an auditor reporting. In this context, discretionary accruals can be viewed as a visible consequence of the financial reporting procedure that indicates how much the auditors limit opportunistic managerial behaviour [22].

In line with the structure conduct performance theory, a company with high leverage would raise demand for high-quality audits; due to this, audit firms may engage in more fierce competition for high-leveraged firms (Paelman et al., 2023). Age is measured by logarithm of years that firm has been in operation, as posited by Raak et al., (2019) and Ayoola, et al., (2019) [5, 51]. Older firms inherently value the significance of experience and reputation, and growth is measured as a percentage change in total assets [51]. Notably, renowned Big Four audit firms wield the potential to regulate price fluctuations and potentially deliver superior audits due to their esteemed reputations [51]. Companies audited by big four are designated as one, while those audited by firms outside are labelled 0 [2]. The model mitigates omitted variable bias and improves estimation efficiency with the combination of cross-sectional and a time-series dimensions so to capture dynamic variations in AC and AQ in response to any of the regulatory changes and market developments NDMBs [11, 51]. Absolute discretionary accruals as proxy of AQ is widely used in existing literature and grounded in agency theory and confirmed to be appropriate in Nigeria environment where limited observations are given to market-based measures as a results of incon-

sistency in enforcement mechanisms [27], and control variables identified are theoretically and empirically rooted in the study to mitigate omitted variables biases. The model is aligned to the Market Structure Theory and Structure-Conduct-Performance (SCP) model, which states that variables of market structure like competition and concentration determine firm behaviour and performance outcomes, including audit quality. The model combines structural (market concentration) and behavioural (client mobility) measures, an approach that ensures the multidimensional nature of AC. The high R^2 values observed in the models may be attributed to the use of panel data with firm-specific effects and multiple control variables, which collectively capture a substantial proportion of the variation in audit quality. Similar high explanatory power has been reported in prior panel-based studies in banking and audit research. Nonetheless, diagnostic checks were conducted to ensure that the results are not driven by model misspecification.

4. Results and Discussions

4.1. Descriptive Statistics

Table 2 showed that AQ, a residual value, had a mean of 0.00. The independent variable audit competition is proxied using market concentration and client mobility. The table shows that market concentration had a mean of 0.11, showing that few audit firms hold a reasonable share of the audit market, which would lead to concentration. This might harm banks, causing higher audit fees and, in the process, reducing the bank's profitability. The maximum value of 0.32 shown in the table indicates that few audit firms hold a significant share of audit market. The positive skewness value of 0.6 indicated that the distribution of market concentration is skewed to the right. Client mobility had a mean value of 0.27, which showed a moderate level of audit firm switches between listed deposit banks, resulting in low competition between audit firms. Big Four is also included, as shown in Table 1. It showed a mean value of 0.94, which indicated that about 94 per cent of listed bank sample banks engaged in the services rendered by Big Four audit firms for their audit activities.

In comparison, the remaining 6 per cent opted for the service of Ahmed Zakaria. This independent entity is outside the big four. Table 2 further revealed that KPMG dominantly controls 33 per cent of the audits in the listed bank sample; close was PWC, which controls 28 per cent of the audit for the listed bank sample, acting both as an independent auditor and participating in joint audits with PKF they control 2 per cent, Deloitte also controlled about 14 per cent of the audit market. In comparison, EY was responsible for about 13 per cent as a sole auditor and about 5 per cent in joint audit with PKF. OCF had a mean value of ₦139,000,000, indicating that banks generate a significant amount of cash flow. The maximum and

minimum values ₦1,520,000,000 and -₦450,000,000 indicated variability in banks' operating cash flow. LEV had a mean of 0.91, indicating that most listed deposit banks rely on debt concerning equity. The median value of 0.87 indicated that some banks might have higher leverage than others. The minimum and maximum values of leverage were 0.76 and 2.54, indicating a wide range of leverage among different banks. Table 1 also shows the mean of growth as 0.10, which indicates a positive growth on average, and the median growth rate value of 0.15, which indicates that the median is greater than the mean, which indicates that growth is negatively skewed.

The negatively skewed variables are the Big Four, growth and age (LNAGE), while KPMG, PWC, PKF EY, Deloitte, Ahmed Zakaria, client mobility, market concentration OCF

and leverage are positively skewed. The standard deviation of size and OCF are more significant than one, indicating high volatility, while market concentration, client mobility, various audit firms, leverage, growth and age have a standard deviation of less than one, indicating a low volatility level. For the kurtosis test, market concentration, client mobility, KPMG, and PWC are Platykurtic, which means they had values less than three, while PWC, PKF, EY, Deloitte, Big Four, OCF, leverage, growth and age are leptokurtic which means they have values above three. From the Jarque-beta test, Market concentration, client mobility, various audit firms, OCF, leverage, and growth, LNAGE had probability values less than significance level of 0.05, which indicated that the distribution is normal.

Table 2. Descriptive Analysis.

Variable	Mean	Median	Max	Min	Std. dev	Skewness	Kurtosis	JB	P
AQ	0.00	-0.02	0.81	-0.24	0.12	3.82	21.95	2504.77	0.00
MC	0.111	0.104	0.32	0.00	0.105	0.629	2.042	15.000	0.00
CM	0.274	0.322	0.566	0.015	0.187	0.036	1.619	11.466	0.00
KPMG	0.333	0.00	1.00	0.00	0.473	0.707	1.5.00	25.5	0.00
PWC	0.278	0.00	1.00	0.00	0.449	0.992	1.985	29.817	0.00
PWC/PKF	0.021	0.00	1.00	0.00	0.143	6.71	46.021	12185.5	0.00
EY	0.139	0.00	1.00	0.00	0.347	2.088	5.361	138.125	0.00
EY/PKF	0.049	0.00	1.00	0.00	0.216	4.198	18.623	1887.32	0.00
DEL	0.125	0.00	1.00	0.00	0.332	2.268	6.143	182.694	0.00
AZ	0.056	0.00	1.00	0.00	0.23	3.881	16.059	1384.61	0.00
BIG 4	0.944	1	1.00	0.00	0.23	-3.881	16.059	1384.61	0.00
OCF	1.39E+08	3.97E+04	1.52+09	-4.50E+08	3.00E+08	2.11	8.72	303.88	0.00
LEV	0.913	0.874	2.547	0.762	0.215	5.382	34.286	6567.99	0.00
Growth	0.100	0.150	1.030	-0.970	0.280	-1.730	8.590	259.630	0.00
LNAGE	3.412	3.466	4.344	1.386	0.654	-0.899	3.634	21.828	0.00

(***, * and * indicate significance at 1%, 5%, and 10% levels respectively. All variables are defined in the methodology section)

Source: Authors Compilation, 2024

4.2. Correlation Analysis and Variance Inflation Factor

The correlation analysis in Table 3 is used to test the level of association among the study variables. Market concentration had a positive and significant relationship with client mobility (Pc=0.78, Prob<0.05), indicating banks are willing to

switch audit firms to find better services. Market concentration had a positive correlation with the big four (Pc=0.34, Prob<0.05), suggesting increased market share for the Big Four because of their reputation. Market share had a negative relationship with leverage (Pc=-0.19, Prob<0.05), indicating low financial risk as banks make more informed decisions on how to manage their operations. Client Mobility is also a proxy for the independent variable audit competition. Client Mobility had a positive and significant relationship with Big Four (Pc=0.32, Prob<0.05), indicating that banks that switch

to Big Four audit firms tend to experience increased audit quality, making them attractive to clients. Client Mobility had a positive and significant relationship with OCF ($P_c=0.24$, $\text{Prob}<0.05$), indicating a high level of OCF makes it easy to switch auditors that can provide better services. Client Mobility had a negative and significant relationship with leverage ($P_c=-0.22$, $\text{Prob}<0.05$). Client Mobility had a positive and significant relationship with ROA ($P_c=0.35$, $\text{Prob}<0.05$). Client Mobility had a positive and significant relationship with growth ($P_c=0.19$, $\text{Prob}<0.05$), indicating that banks have more options when selecting their audit firm, which could attract more clients, thereby leading to growth.

Big 4 had a negative and significant relationship with lev-

erage ($P_c=-0.34$, $\text{Prob}<0.05$). This signified that banks that engage the Big Four make more informed decisions on how to manage their debt level effectively. Big Four positively correlated with growth ($P_c=0.18$, $\text{Prob}<0.05$). Big 4 had a positive relationship with age ($P_c=0.48$, $\text{Prob}<0.05$), which signifies that banks that have been in operation for a long tend to employ the services of the big four. Age had a positive and significant relationship with OCF ($P_c=0.17$, $\text{Prob}<0.05$). Leverage had a negative and significant relationship with age ($P_c=-0.19$, $\text{Prob}<0.05$), which signifies that older banks may rely less on borrowed funds.

The objective does not suffer the multicollinearity problem as the VIF test showed that all the variables are below the VIF threshold 10.

Table 3. Correlation Analysis and Variance Inflation Factor.

S/N	Probability	1	2	3	4	5	6	7	8	VIF
1	AQ	1.00								
		0.00								
2	MC	-0.12	1.00							2.70
		0.17	0.00							
3	CM	-0.03	0.78	1.00						3.08
		0.72	0.00	0.00						
4	BIG_FOUR	0.02	0.26	0.32	1.00					1.63
		0.79	0.00	0.00	0.00					
5	OCF	0.60	0.09	0.25	0.12	1.00				1.14
		0.00	0.30	0.00	0.16	0.00				
6	LEV	0.01	-0.18	-0.23	-0.34	-0.07	1.00			1.16
		0.94	0.03	0.01	0.00	0.41	0.00			
7	GROWTH	0.04	0.10	0.20	0.18	0.15	-0.02	1.00		1.09
		0.60	0.23	0.02	0.03	0.08	0.81	0.00		
8	LNAGE	0.27	-0.05	-0.02	0.49	0.18	-0.20	0.15	1.00	1.45
		0.00	0.59	0.84	0.00	0.04	0.02	0.07	0.00	

(***, * and * indicate significance at 1%, 5%, and 10% levels respectively. All variables are defined in the methodology section)

Source: Authors Compilation (2024)

4.3. Regression Estimation and Analysis

Table 4 displays regression results analysing relationship between AQ and AC. The panel fixed, and panel random effect methods were used to estimate regression for AQ and AC. The study selected appropriate method using Hausman test. The panel method, with a probability value ($P>0.05$), is more appropriate model to discuss relationship between AQ and AC.

The result of test shows market concentration had a negative and significant relationship with AQ ($t=-8.81$, $\text{Prob}<0.05$), which depicts that in a highly concentrated audit market where audit firms dominate the marketplace are fewer, competition between audit firms is reduced, leading to a decrease in AQ. This study is consistent with studies conducted by Azizkhani, *et al.*, (2019) and Francis, *et al.*, (2013) [7, 27] and contrary to the studies of Kallapur, *et al.*, (2010) [37]. AC is also proxied using client mobility. Table 3 also shows client mobility has a

negative but significant relationship with AQ ($t=-0.05$, $\text{Prob}<0.05$), which is consistent with a study conducted by [51], which depicts that when auditors frequently switch clients, they may lack familiarity and expertise in the operations of the client, leading to a decline in AQ.

For the control variables, Big Four has a negative and significant relationship with AQ ($t=-0.05$, $\text{Prob}<0.05$), indicates

that the Big Four might have a lower AQ due to their more extensive client base. Growth has a negative and significant relationship with AQ ($t=-9.97$, $\text{Prob}<0.05$). This indicates that growth leads to expansion and the addition of new ventures, which makes it difficult for auditors to access risk efficiently, thereby negatively affecting audit quality.

Table 4. Regression Estimate.

	Pool	FEM	REM	GMM
Audit Quality	1	2	3	4
INDEPENDENT	Coef	Coef	Coef	Coef
VARIABLE	(t-stat)	(t-stat)	(t-stat)	(t-stat)
MC	-0.06*** (-8.81)	-0.07*** (-18.96)	-0.068*** (-26.18)	0.7 (25.2)
CM	-0.05*** (-12.44)	-0.06*** (-16.70)	-0.06*** (-19.00)	0.67 (16.5)
Big Four	-0.05*** (-22.02)	-0.05*** (18.8)	-0.05*** (-22.51)	0.03 (0.94)
OCF	2.46E-10 (84.06)	2.46E-10*** (71.57)	2.46E-10*** (79.34)	0.02 (0.66)
LEV	-0.01*** (9.37)	0.01*** (14.95)	0.01*** (15.98)	8.65E-11 (7.47)
Growth	-0.01*** (-9.97)	-0.01*** (-16.78)	-0.02*** (-18.11)	-2.34 (-9.29)
LNAGE	0.03*** (0.04)	0.04*** (14.7)	0.04*** (14.54)	-0.05 (-21.25)
C	-0.10*** (-10.27)	-0.10*** (-10.20)	-0.10*** (-10.08)	0.98 (-10.08)
R-squared	0.98	0.99	0.99	0.99
Adj R.SQ	0.99	0.99	0.99	0.98
F-Stat	2372	1773.87	1773.87	756.6

(***, * and * indicate significance at 1%, 5%, and 10% levels respectively. All variables are defined in the methodology section)
Authors Compilation, 2024

4.4. Robustness Check

For further robustness checks, an alternate measure of AC was carried out in table 5 and competition was proxied with the number of clients to ensure the robustness of the study.

The result obtained was consistent with the initial proxy (client mobility), which implied that the number of clients had a negative but significant relationship with audit quality ($t=-41.00$, $\text{Prob}<0.05$). This indicates that audit firms with a large number of clients may have limited resources, thereby leading to lower AQ. The result is also consistent with the initial proxy,

which shows market concentration had a negative and significant relationship with audit quality ($t=-73.58$, $Prob<0.05$), which depicts that in a highly concentrated audit market where audit firms dominating the marketplace are fewer, competition between audit firms is reduced leading to a decrease in AQ.

For control variable, the Big Four had a negative but significant relationship with AQ with statistics of ($t=-18.15$, $Prob<0.05$), which indicates that Big Four might have a lower

AQ due to their more extensive client base. OCF had a positive and significant relationship with AQ ($t=214.96$, $Prob<0.05$), which indicates that banks with high operating cash flow have a stable and healthy financial position, which positively impacts AQ. Leverage had a positive and significant relationship with AQ ($t=4.57$, $Prob<0.05$). Growth had a negative but significant relationship with AQ ($t=-31.69$, $Prob<0.05$). Age had a positive but significant relationship with AQ ($t=39.20$, $Prob<0.05$).

Table 5. Regression Estimate.

	Pool	FEM	REM	GMM
Audit Quality	1	2	3	4
INDEPENDENT	Coef	Coef	Coef	Coef
VARIABLE	(t-stat)	(t-stat)	(t-stat)	(t-stat)
MC	-0.22*** (-73.57)	-0.22*** (-108.75)	-0.22*** (-93.20)	-0.22 (-73.57)
No of Clients	0.12*** (41.00)	-0.12*** (88.31)	-0.12*** (50.05)	0.67 (41.00)
Big Four	-0.07*** (-18.16)	-0.07*** (-17.57)	-0.07*** (-20.74)	0.03 (0.94)
OCF	2.46E-10 (214.96)	2.41E-10*** (370.65)	2.41E-10*** (273.84)	0.02 (0.66)
LEV	-0.01*** (4.57)	0.01*** (5.63)	0.01*** (5.82)	8.65E-11 (7.47)
Growth	-0.02*** (-31.69)	-0.02*** (-44.03)	-0.02*** (-39.50)	-2.34 (-9.29)
LNAGE	0.04*** (39.2)	0.04*** (44.7)	0.04*** (35.54)	-0.05 (-21.25)
C	-0.14*** (-23.01)	-0.14*** (-27.58)	-0.13*** (-21.9)	0.98 (-10.08)
R-squared	0.99	0.99	0.99	0.99
Adj R.SQ	0.99	0.99	0.99	0.98
F-Stat	32088	32088	32088.50	756.6

(***, * and * indicate significance at 1%, 5%, and 10% levels respectively. All variables are defined in the methodology section)
 Authors Compilation, 2024

5. Summary and Conclusion

The study examined the relationship between AC and AQ.

The study utilised both descriptive and inferential statistics such as ordinary least square, which includes pooled, fixed effect and random effect methods, and generalised method of moments (GMM). The result showed that audit market com-

petition proxied with the market concentration and client mobility had a negative but significant relationship with AQ. The study concluded that firms should consider important factors such as reputation and resources when engaging the audit firm because these factors have a significant impact on AQ. Audit firms with many clients may also face challenges in ensuring high-quality audits due to resource constraints. In emerging markets like Nigeria, AC have unintended adverse effects on AQ which pave way for sensitive and strong regulatory reforms. The study suggests that increased competitive pressures within the audit market may compromise the quality of audit services, potentially due to fee competition and reduced audit effort. The study has implications for policymakers and institutional regulators in designing audit market structures that promote both competition and AQ.

Abbreviations

AC	Audit Competition
AQ	Audit Quality
NDMBs	Nigerian Deposit Money Banks
NGX	Nigerian Exchange Group
ADA	Absolute Discretionary Accruals
SCP	Structure Conduct Performance
GAO	Government Accountability Office
MC	Market Concentration
CM	Client Mobility
OCF	Operating Cash Flow
LEV	Leverage
VIF	Variance Inflation Factor

Author Contributions

Abiodun Oyebamiji Oladejo: Conceptualization, Formal Analysis, Methodology, Supervision, Validation, Writing – review & editing

Peter Temitope Okedun: Data curation, Investigation, Project administration, Resources, Visualization, Writing – original draft

Conflicts of Interest

No conflict of interest. Both authors have read and agreed to publish this manuscript.

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