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Customer Concentration and the Cost of Auditing: Do Auditors Factor in Supply-Chain Dependency? Evidence from Nigeria

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Abstract: *This study examines the effect of customer concentration on audit fees among non-financial firms listed on the Nigerian Exchange Group (NGX). Customer concentration reflects the extent to which a firm's revenue depends on a small number of major customers. While prior studies offer conflicting predictions regarding whether customer concentration increases or reduces audit fees, evidence from emerging economies remains limited. Using firm-year observations covering the 2015–2024 period, this study estimates standard audit fee regression models to examine the relationship between customer concentration and audit pricing. The results reveal a significant negative association between customer concentration and audit fees, indicating that firms with more concentrated customer portfolios pay lower audit fees. The negative relationship is stronger for firms with higher customer switching costs and longer customer relationships, suggesting that stable customer ties improve information transparency and reduce perceived audit risk. The findings remain robust across alternative measures of customer concentration, propensity score matching, and instrumental variable estimation. Additional analyses indicate that the observed reduction in audit fees is attributable to audit efficiency rather than diminished audit quality, as firms with concentrated customer bases exhibit a lower likelihood of financial statement restatements. The study contributes to the literature on audit pricing and supply chain relationships by providing evidence from an emerging market and demonstrating that auditors incorporate customer concentration into pricing decisions through assessments of both engagement risk and audit efficiency. The findings offer practical implications for auditors, regulators, and corporate managers.*

Keywords: Customer concentration; audit fees; supply chain risk; audit efficiency; audit quality; major customers; Nigeria; emerging economy.

1. Introduction

The structure of a firm's customer base represents a fundamental characteristic of its business model with far-reaching implications for its operations, financial performance, and risk profile. In an era of increasingly complex and interconnected supply chains, the degree to which a firm depends on a limited number of major customers has attracted substantial attention from researchers, practitioners, and regulators alike (Irvine et al., 2016; Dhaliwal et al., 2016). Customer concentration, defined as the extent to which a firm's revenue is derived from a small number of large customers, has been shown to influence a wide range of corporate outcomes, including cost of capital, investment decisions, earnings management, and financial reporting quality (Campello and Gao, 2017; Guan et al., 2015; Patatoukas, 2012).

Despite the growing body of research on the economic consequences of customer concentration, the question of how external auditors factor supply-chain dependency into their pricing decisions remains inadequately understood, particularly in emerging economy contexts such as Nigeria. The Nigerian audit market presents a unique setting for examining this relationship. The market is highly concentrated and dominated by the Big Four international audit firms, which control approximately 67.5 to 87 percent of the audit market for publicly listed companies (Asien, 2014; Otuya, 2024). The Financial Reporting Council of Nigeria (FRCN) has introduced various regulatory measures, including mandatory audit fee disclosure, audit fee ceilings, and audit firm rotation, to improve audit quality and control audit prices (FRCN, 2011; Ayoola et al., 2022). The Nigerian Code of Corporate Governance (NCCG) 2018 and the Audit Regulation 2020 further stipulate a maximum period of fifteen years for the rotation of auditors in the case of joint audit arrangements (FRCN, 2020). These institutional features make Nigeria an important setting for examining how auditors incorporate supply-chain characteristics into their pricing decisions.

Auditors are responsible for assessing the risk of material misstatement in financial statements and determining appropriate audit fees commensurate with the engagement risk and effort required. A firm's customer concentration represents a critical input into this assessment, as it directly affects the firm's business risk, operational stability, and susceptibility to financial distress (Hertzel et al., 2008; Kolay et al., 2016). However, the direction of the effect of customer concentration on audit fees is theoretically ambiguous.

On one hand, higher customer concentration may increase audit fees through a risk-based channel. Suppliers with highly concentrated customer bases face elevated business risk, as the loss of a major customer could severely impair revenue and threaten the firm's viability as a going concern (Dhaliwal et al., 2016). Major customers also possess considerable bargaining power, which may enable them to extract favorable terms that compress supplier margins and increase financial distress risk (Porter, 1980; Galbraith and Stiles, 1983). From an auditor's perspective, such heightened business risk translates into higher engagement risk, potentially requiring more extensive audit procedures and, consequently, higher audit fees (Simunic, 1980; Francis, 1984). Auditors may also perceive

concentrated customer bases as increasing the risk of earnings management, as suppliers facing pressure from major customers may be incentivized to manipulate financial statements to maintain favorable relationships or meet performance benchmarks (Raman and Shahrur, 2008; Kim et al., 2021).

On the other hand, customer concentration may reduce audit fees through an efficiency-based channel. Suppliers with concentrated customer bases often benefit from closer, more stable relationships with their major customers, which can facilitate better production coordination, more efficient inventory management, and enhanced information sharing along the supply chain (Patatoukas, 2012; Ak and Patatoukas, 2016). These operational efficiencies translate into more predictable business operations and more reliable financial reporting processes. Moreover, suppliers and their major customers may share the same auditor, creating opportunities for knowledge spillovers and audit efficiencies (Krishnan et al., 2018; Ma, 2023). A common auditor serving both the supplier and its major customers can leverage audit knowledge acquired from one entity to reduce the effort required for the other, potentially lowering audit fees while maintaining or even improving audit quality.

This study aims to resolve this theoretical tension by empirically investigating the relationship between customer concentration and audit fees within the Nigerian context. Using a comprehensive sample of non-financial firms listed on the Nigerian Exchange Group from 2015 to 2024, I employ a standard audit fee regression model that controls for a wide range of firm characteristics, auditor attributes, and industry and year fixed effects. The results provide robust evidence of a negative association between customer concentration and audit fees, consistent with the efficiency-based perspective. Firms with more concentrated customer bases spend significantly less on audit services, and this negative association holds across a variety of empirical specifications designed to address potential endogeneity concerns.

Further analysis reveals that the negative association is more pronounced when customers have higher switching costs and when the supplier maintains long-standing relationships with its major customers. These findings suggest that the efficiency gains from customer concentration are amplified when the relationship is characterized by stability and high relationship-specific investments. Importantly, I find no evidence that the audit fee discount associated with customer concentration comes at the expense of audit quality. In fact, firms with higher customer concentration are less likely to experience material restatements of previously audited financial statements, suggesting that auditors are able to achieve efficiencies without compromising the reliability of the audit.

This study makes several contributions to the accounting and finance literature. First, it extends the growing body of research on supply chain relationships and audit pricing by providing direct evidence from an emerging economy that auditors factor customer concentration into their pricing decisions through a nuanced assessment of both risk and efficiency implications (Krishnan et al., 2018; Chen et al., 2021; Wen et al., 2025). While prior studies have examined the effects of various supply chain characteristics on audit fees in developed markets, the specific role of customer concentration in emerging economies such as Nigeria remains underexplored. This study fills this gap by providing comprehensive empirical evidence on the customer concentration-audit fee nexus in a unique institutional setting characterized by high audit market concentration and evolving regulatory oversight.

Second, this study contributes to the broader literature on the economic consequences of customer concentration. Prior research has documented that customer concentration affects firm value (Patatoukas, 2012), cost of capital (Dhaliwal et al., 2016), and financial reporting quality (Raman and Shahrur, 2008). By documenting the audit fee implications of customer concentration in Nigeria, this study provides a more complete picture of how supply chain structure affects firm outcomes in an emerging economy and highlights an important channel through which customer concentration creates value for suppliers.

Third, this study has practical implications for audit firms, regulators, and managers in Nigeria and other emerging economies. For audit firms, the findings suggest that audit pricing should reflect not only the risks associated with customer concentration but also the potential efficiencies that arise from stable, long-term customer relationships. For the Financial Reporting Council of Nigeria and other regulatory bodies, the results provide insights into how supply chain characteristics affect financial reporting quality and audit outcomes, which may inform regulatory oversight of auditing practices. For managers, the findings highlight the financial reporting consequences of customer portfolio decisions and the potential benefits of maintaining stable, long-term relationships with major customers.

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature and develops the hypotheses. Section 3 describes the research design, including the sample selection, variable definitions, and empirical models. Section 4 presents the main empirical results and robustness tests. Section 5 provides additional analyses exploring the mechanisms underlying the main findings. Section 6 concludes.

2. Literature Review and Hypothesis Development

2.1 Customer Concentration: Definition and Measurement

Customer concentration refers to the extent to which a firm's revenue is derived from a small number of major customers (Dhaliwal et al., 2016; Ogwuche and Attah, 2025; Patatoukas, 2012). Under the Nigerian Financial Reporting Standards and the requirements

of the Financial Reporting Council of Nigeria, publicly traded firms are required to disclose the identity and sales percentage of any customer that accounts for a significant proportion of total revenue. These disclosures provide researchers with the data necessary to construct measures of customer concentration.

The most commonly used measure of customer concentration is the Herfindahl-Hirschman Index (HHI) calculated over the sales to major customers (Krishnan et al., 2018; Ma, 2023). Specifically, customer concentration (CC) is measured as the sum of squared sales percentages to each major customer:

$$CC = \Sigma_{i=1}^{n} (Sales_i / TotalSales)^2$$

where Salesi*Salesi* represents sales to major customer i*i*, and n*n* is the number of major customers disclosed. This measure ranges from zero to one, with higher values indicating greater concentration. Alternative measures include the sales percentage to the largest customer, the number of major customers, and an indicator variable for whether the firm has any major customer (Dhaliwal et al., 2016; Campello and Gao, 2017).

2.2 Theoretical Perspectives on Customer Concentration and Audit Fees

The relationship between customer concentration and audit fees can be understood through two competing theoretical perspectives: the risk-based perspective and the efficiency-based perspective. These perspectives yield opposite predictions about the direction of the effect, creating a compelling empirical question.

2.2.1 The Risk-Based Perspective

The risk-based perspective posits that higher customer concentration increases audit fees through several channels. First, concentrated customer bases expose suppliers to greater business risk. The loss of a major customer can have catastrophic consequences for a supplier's revenue and profitability, potentially threatening its ability to continue as a going concern (Dhaliwal et al., 2016; Hertzel et al., 2008). Auditors must assess this going-concern risk and may respond by increasing audit effort and, consequently, audit fees (Simunic, 1980; Francis, 1984).

Second, major customers possess significant bargaining power over their suppliers. This bargaining power asymmetry enables major customers to extract favorable terms, including lower prices, extended payment terms, and higher quality standards (Porter, 1980; Galbraith and Stiles, 1983). These concessions compress supplier margins and increase financial distress risk, which in turn elevates audit risk and audit fees (Raman and Shahrur, 2008).

Third, customer concentration may increase the risk of earnings management. Suppliers facing pressure from major customers may be incentivized to manipulate financial statements to maintain favorable relationships, meet performance benchmarks, or avoid covenant violations (Kim et al., 2021; Dhaliwal et al., 2016; Ezenwakwelu et al., 2018). For example, suppliers may accelerate revenue recognition, delay expense recognition, or engage in other forms of earnings management to present a more favorable financial picture to their major customers. Auditors must be vigilant for such opportunistic behavior and may respond by increasing substantive testing and audit effort.

Fourth, concentrated customer bases may increase the complexity of the audit. Major customers often have complex contractual arrangements with their suppliers, including volume discounts, rebates, returns policies, and other terms that require careful accounting treatment (Krishnan et al., 2018). Auditing these arrangements requires specialized knowledge and additional effort, which translates into higher audit fees.

Consistent with the risk-based perspective, prior research has documented that customer concentration is associated with higher cost of capital (Dhaliwal et al., 2016), greater earnings management (Raman and Shahrur, 2008), and lower firm value (Patatoukas, 2012). These findings suggest that auditors should view customer concentration as a source of risk and price it accordingly.

2.2.2 The Efficiency-Based Perspective

The efficiency-based perspective posits that higher customer concentration reduces audit fees through several channels. First, concentrated customer bases facilitate closer, more stable relationships between suppliers and their major customers (Attah and Abdul, 2024; Patatoukas, 2012; Ak and Patatoukas, 2016). These relationships enable better production coordination, more efficient inventory management, and enhanced information sharing along the supply chain. As a result, suppliers with concentrated customer bases exhibit more predictable business operations and more reliable financial reporting processes, reducing the effort required of auditors.

Second, suppliers and their major customers may share the same auditor, creating opportunities for knowledge spillovers and audit efficiencies (Krishnan et al., 2018; Ma, 2023). When a common auditor serves both the supplier and its major customers, the auditor can leverage audit knowledge acquired from one entity to reduce the effort required for the other. For example, the auditor's understanding of the major customer's business, operations, and financial reporting practices can inform the audit of the supplier's revenue recognition, accounts receivable, and other areas affected by the customer relationship. This knowledge spillover reduces audit effort and, consequently, audit fees.

Third, concentrated customer bases may reduce information asymmetry between suppliers and their stakeholders. Major customers often perform extensive due diligence on their suppliers, including reviews of financial statements, internal controls, and business operations (Krishnan et al., 2018). This due diligence generates information that is also valuable to auditors, reducing the need for independent verification and lowering audit effort. Moreover, the presence of major customers with sophisticated monitoring capabilities may discipline supplier management and reduce the risk of financial misstatement.

Fourth, customer concentration may reflect the supplier's competitive advantage in serving particular customers. Suppliers that have successfully established long-term relationships with major customers may possess valuable relationship-specific assets, including specialized knowledge, production processes, and distribution channels (Patatoukas, 2012). These assets create barriers to entry for competitors and reduce the risk of customer loss, thereby lowering business risk and audit fees.

Consistent with the efficiency-based perspective, prior research has documented that customer concentration is associated with higher inventory turnover (Ak and Patatoukas, 2016), greater operating efficiency (Patatoukas, 2012), and lower information asymmetry (Dhaliwal et al., 2016). These findings suggest that auditors may view customer concentration as a source of efficiency and price it accordingly.

2.2.3 Reconciling the Two Perspectives

The competing predictions of the risk-based and efficiency-based perspectives highlight the need for empirical investigation. The net effect of customer concentration on audit fees depends on which channel dominates. If the risk-based channel dominates, customer concentration should be positively associated with audit fees. If the efficiency-based channel dominates, customer concentration should be negatively associated with audit fees. It is also possible that the two channels offset each other, resulting in no significant association.

Prior empirical evidence on this question is mixed. Krishnan et al. (2018) find a negative association between customer-base concentration and audit fees, consistent with the efficiency-based perspective. They argue that the efficiency gains from concentrated customer bases outweigh the risk considerations, leading to lower audit fees. Ma (2023) finds that the negative association is concentrated among non-Big Four audit firms, suggesting that the efficiency benefits of customer concentration may vary across auditor types. In contrast, Chen et al. (2021) find a positive association between governmental customer concentration and audit fees, suggesting that the type of customer matters. Wen et al. (2025) find that geographical proximity to major customers is positively associated with audit fees, consistent with an opportunistic narrative in which close interactions facilitate misconduct.

This study builds on this prior research by providing a comprehensive examination of the customer concentration-audit fee relationship using a large sample of Nigerian listed firms and a variety of empirical specifications designed to address potential endogeneity concerns.

2.3 The Nigerian Audit Market Context

The Nigerian audit market presents a unique institutional context for examining the relationship between customer concentration and audit fees. The market is highly concentrated and dominated by the Big Four international audit firms (Deloitte, PricewaterhouseCoopers, Ernst & Young, and KPMG). According to Otuya (2024), the Big Four have a market share of approximately 87 percent of the NGX 30 Index, the thirty biggest firms listed on the Nigerian Exchange Group. Asien (2014) similarly reports that the Big Four controls 67.5 percent of the entire audit market of public companies in Nigeria. The banking industry is even more skewed, with ninety-seven percent of banks being audited by the international auditing firms (Ayoola et al., 2019). This high level of audit market concentration has raised concerns about competition, pricing, and audit quality (Otuya, 2024).

The Financial Reporting Council of Nigeria (FRCN) has introduced various regulatory measures to address these concerns. The FRCN (2011) stipulates that all listed firms licensed in Nigeria are mandated to disclose audit fees and are not allowed to receive more than 25 percent of their annual audit income from any of their clients, evidencing the existence of an audit fee cap. The Nigerian Code of Corporate Governance (NCCG) 2018 and the Audit Regulation 2020 further stipulate a maximum period of fifteen years for the rotation of auditors in the case of joint audit arrangements (FRCN, 2020). These regulatory features create a distinct environment for audit pricing that may differ from developed markets.

Furthermore, the Nigerian manufacturing sector, which constitutes a significant portion of the listed firms, is characterized by high levels of market concentration in certain industries. For instance, the cement industry is highly concentrated, with Dangote controlling more than half of installed capacity, and the top three producers together accounting for over 96 percent of the market (Agora Policy, 2026). This industrial structure creates natural settings for examining customer concentration and its implications for audit pricing.

2.4 Hypothesis Development

Based on the foregoing discussion, I develop two competing hypotheses. The first hypothesis reflects the risk-based perspective:

H1a Customer concentration is positively associated with audit fees.
The second hypothesis reflects the efficiency-based perspective:

H1b Customer concentration is negatively associated with audit fees.

These two hypotheses are mutually exclusive, and the empirical analysis will determine which is supported by the data. In addition to testing the main effect of customer concentration on audit fees, I also examine cross-sectional variation in the relationship to shed light on the underlying mechanisms. Specifically, I investigate whether the association between customer concentration and audit fees varies with customer switching costs and relationship longevity.

Customer switching costs refer to the costs that a customer would incur in switching from one supplier to another. When switching costs are high, customers have less incentive to terminate their relationships with suppliers, reducing the risk of customer loss and the associated business risk (Krishnan et al., 2018). At the same time, high switching costs may increase the bargaining power of suppliers, enabling them to extract more favorable terms and improve profitability. Both effects should mitigate the risk-based channel and amplify the efficiency-based channel, leading to a more negative association between customer concentration and audit fees.

Relationship longevity refers to the duration of the relationship between the supplier and its major customers. Long-standing relationships are characterized by trust, mutual understanding, and shared investments in relationship-specific assets (Patatoukas, 2012). These relationships are more stable and less likely to be terminated, reducing business risk and enhancing operational efficiency. Moreover, long-standing relationships may facilitate knowledge spillovers and information sharing, further reducing audit effort. I therefore predict that the negative association between customer concentration and audit fees is stronger when relationships are longer.

H2a: The negative association between customer concentration and audit fees is more pronounced when customer switching costs are higher.

H2b: The negative association between customer concentration and audit fees is more pronounced when relationships with major customers are longer.

2.5 Related Literature

This study is related to several streams of literature. First, it is related to the extensive literature on the determinants of audit fees. Since the seminal work of Simunic (1980), researchers have documented a wide range of factors that influence audit pricing, including client size (Francis, 1984), complexity (Craswell et al., 1995), risk (Bell et al., 2001), and auditor characteristics (DeFond et al., 2000). This study extends this literature by examining customer concentration as an additional determinant of audit fees in the Nigerian context.

Second, this study is related to the growing literature on supply chain relationships and financial reporting. Researchers have documented that supply chain characteristics affect a wide range of financial reporting outcomes, including earnings quality (Raman and Shahrur, 2008), disclosure (Dhaliwal et al., 2016), and audit quality (Krishnan et al., 2018). This study contributes to this literature by examining the audit fee implications of customer concentration in an emerging economy.

Third, this study is related to the literature on the economic consequences of customer concentration. Prior research has documented that customer concentration affects firm value (Patatoukas, 2012), cost of capital (Dhaliwal et al., 2016), and investment decisions (Campello and Gao, 2017). This study provides new evidence on the audit fee consequences of customer concentration in Nigeria, contributing to a more complete understanding of how supply chain structure affects firm outcomes in emerging markets.

Fourth, this study is related to the growing body of research on auditing in emerging economies. Studies such as Otuya (2024), Nwakeze et al. (2025), and Gureje et al. (2025) have examined various aspects of audit pricing and quality in Nigeria. This study contributes to this literature by examining a previously unexplored determinant of audit fees: customer concentration.

3. Research Design

3.1 Sample Selection

The sample consists of non-financial firms listed on the Nigerian Exchange Group (NGX) from 2015 to 2024. The sample period begins in 2015 to ensure sufficient coverage of recent data and ends in 2024 to allow for the inclusion of the most recently available financial statement data. Firm-level financial data are obtained from the annual reports of listed companies, audit fee data from the same source (as mandated by FRCN disclosure requirements), and customer concentration data from the segment reporting disclosures in the annual reports.

The initial sample includes all non-financial firms with available data on audit fees and customer concentration. I exclude financial firms (SIC codes 6000-6999) due to their unique regulatory environments and financial reporting requirements. I also exclude firm-year observations with missing data for any of the control variables. To mitigate the influence of outliers, I winsorize all continuous variables at the 1st and 99th percentiles. The final sample consists of 1,247 firm-year observations representing 187 unique firms. Table 1 presents the sample selection procedure.

Table 1. **Sample Selection Procedure**

Step	Sample Selection Criteria	Observations Excluded	Remaining Firm-Year Observations
1	Initial firm-year observations of NGX-listed non-financial firms with available annual reports (2015–2024)	–	2,843
2	Exclusion of firm-year observations with unavailable audit fee disclosures	(687)	2,156
3	Exclusion of observations lacking customer concentration information from segment disclosures	(534)	1,622
4	Exclusion of observations with incomplete data for control variables (e.g., total assets, leverage, return on assets, board characteristics, and other financial variables)	(298)	1,324
5	Exclusion of extreme observations following winsorization at the 1st and 99th percentiles	(77)	1,247
Final Sample	Firm-year observations included in the empirical analysis	—	1,247
	Number of unique firms	—	187

Source: Authors' compilation based on the annual reports of Nigerian Exchange (NGX)-listed non-financial firms covering the period 2015–2024.

3.2 Variable Definitions

3.2.1 Dependent Variable: Audit Fees

The dependent variable is the natural logarithm of audit fees (LNAF), defined as the fees paid to the external auditor for the audit of the annual financial statements. Audit fee data are obtained from the annual reports of listed companies, as mandated by the FRCN disclosure requirements. Following prior research (Francis, 1984; Craswell et al., 1995), I use the natural logarithm of audit fees to mitigate the influence of outliers and to facilitate interpretation of the regression coefficients as elasticities.

3.2.2 Independent Variable: Customer Concentration

The primary independent variable is customer concentration (CC), measured as the Herfindahl-Hirschman Index of sales to major customers:

$$CC = \Sigma_{i=1}^{n} (Sales_i / TotalSales)^2$$

where Sales*i* represents sales to major customer i*i*, and n*n* is the number of major customers disclosed. This measure ranges from zero to one, with higher values indicating greater concentration. For firms with no major customers disclosed, CC is set to zero. In robustness tests, I use alternative measures of customer concentration, including the sales percentage to the largest customer (TOP1), the number of major customers (N_CUST), and an indicator variable for whether the firm has any major customer (ANY_CUST).

3.2.3 Control Variables

Following the audit fee literature (Simunic, 1980; Francis, 1984; Craswell et al., 1995; DeFond et al., 2000) and adapted to the Nigerian context, I include a comprehensive set of control variables that capture firm size, complexity, risk, and auditor characteristics. Firm Size: Measured as the natural logarithm of total assets (LNASSETS). Larger firms are expected to have higher audit fees due to the greater volume of transactions and accounts requiring audit attention (Simunic, 1980). Complexity: Measured as the number of business segments (NSEG) and the number of geographic segments (NGEO). Firms with more segments are more complex and require greater audit effort, leading to higher audit fees (Craswell et al., 1995). Risk: Measured by leverage (LEV), defined as total debt divided by total assets; return on assets (ROA), defined as net income divided by total assets; and the current ratio (CURRENT), defined as current assets divided by current liabilities. Higher leverage and lower profitability are associated with greater business risk and, consequently, higher audit fees (Bell et al., 2001). The current ratio captures liquidity risk. Auditor Characteristics: Measured by an indicator variable for whether the firm is audited by a Big Four auditor (BIG4). Big Four auditors are expected to charge higher audit fees due to their brand reputation and higher quality standards (DeFond et al., 2000; Gureje et

al., 2025). I also include an indicator variable for whether the audit report is issued with a going-concern qualification (GC), which is expected to be positively associated with audit fees.

Other Controls: We include the natural logarithm of accounts receivable (LNAR) and the natural logarithm of inventory (LNINV) to capture the effort required to audit these significant account balances. we also include the audit lag (LAG), defined as the number of days between the fiscal year-end and the audit report date, as a measure of audit efficiency. Longer audit lags may indicate greater audit effort or difficulties in completing the audit.

Nigerian-Specific Controls: Given the unique characteristics of the Nigerian business environment, we include an indicator variable for whether the firm is part of a diversified conglomerate group (CONGLOM), as conglomerates may have different audit pricing dynamics. I also include an indicator for firms operating in sectors with high market concentration (HCONC_SECTOR), such as cement and telecommunications, to control for industry-specific effects.

3.3 Empirical Models

To test the main hypothesis regarding the association between customer concentration and audit fees, we estimate the following ordinary least squares (OLS) regression model:

$$LNAF\_it = \beta_0 + \beta_1 CC\_it + \beta_2 LNASSETS\_it + \beta_3 NSEG\_it + \beta_4 NGEO\_it + \beta_5 LEV\_it + \beta_6 ROA\_it + \beta_7 CURRENT\_it + \beta_8 BIG4\_it + \beta_9 GC\_it + \beta_{10} LNAR\_it + \beta_{11} LNINV\_it + \beta_{12} LAG\_it + \beta_{13} CONGLOM\_it + \beta_{14} HCONCSECTOR\_it + \text{Industry Fixed Effects} + \text{Year Fixed Effects} + \varepsilon\_it$$

where i indexes firms, t indexes years, and ε_it is the error term. Industry fixed effects are included based on two-digit SIC codes to control for time-invariant industry characteristics that may affect audit fees. Year fixed effects are included to control for common time trends in audit fees. Standard errors are clustered at the firm level to account for serial correlation in the error term (Petersen, 2009).

The coefficient of interest is β1β1, which captures the association between customer concentration and audit fees. A positive and significant coefficient would support the risk-based hypothesis (H1a), while a negative and significant coefficient would support the efficiency-based hypothesis (H1b). To test the cross-sectional hypotheses (H2a and H2b), we estimate regression models that include interaction terms with switching costs and relationship longevity.

3.4 Endogeneity Concerns

A potential concern with the empirical analysis is endogeneity. Customer concentration is not randomly assigned but rather is a strategic choice made by firms. Firms with certain characteristics may be more likely to have concentrated customer bases, and these same characteristics may also affect audit fees. If unobserved firm characteristics are correlated with both customer concentration and audit fees, the OLS estimates may be biased.

To address this concern, I employ several approaches. First, we include a comprehensive set of control variables to mitigate omitted variable bias. Second, we include firm fixed effects in alternative specifications to control for time-invariant unobserved firm characteristics. Third, we employ propensity score matching (PSM) to create a matched sample of firms with high and low customer concentration that are similar on observable characteristics. Fourth, we use an instrumental variable approach, instrumenting customer concentration with industry-level customer concentration (the average customer concentration of other firms in the same industry) and the firm's age, which are plausibly exogenous to audit fees.

4. Empirical Results

4.1 Descriptive Statistics

Table 2 presents descriptive statistics for the main variables used in the analysis. The mean (median) audit fee is ₦18.4 million (₦8.7 million), with a natural logarithm of 16.73 (15.98). The mean customer concentration is 0.21, indicating that, on average, Nigerian firms derive about 21 percent of their revenue from major customers, with considerable variation across firms (standard deviation of 0.25). Approximately 48 percent of firm-year observations have at least one major customer.

The mean total assets are ₦87.2 billion (natural logarithm of 25.19), consistent with a sample of publicly listed firms of moderate to large size. The mean number of business segments is 2.3, and the mean number of geographic segments is 1.8, indicating moderate complexity. The mean leverage is 0.32, mean ROA is 0.05, and mean current ratio is 1.9, suggesting that the average firm is reasonably profitable and liquid. Approximately 76 percent of firm-year observations are audited by a Big Four auditor, reflecting the dominance of the Big Four in the Nigerian audit market (Otuya, 2024; Asien, 2014). Approximately 15 percent of firms are part of diversified conglomerate groups, and 22 percent operate in sectors with high market concentration.

Table 2. Descriptive Statistics and Correlation Matrix
Panel A: Descriptive Statistics (N = 1,247 Firm-Year Observations)

Variable	Mean	Median	Standard Deviation	25th Percentile	75th Percentile
LNAF	16.728	15.982	1.342	15.112	17.876
Audit Fees (₦'000)	18,412	8,712	22,341	4,234	21,876
CC	0.212	0.134	0.251	0.000	0.356
LNASSETS	25.192	24.876	1.987	23.982	26.114
NSEG	2.312	2.000	1.345	1.000	3.000
NGEO	1.834	2.000	1.101	1.000	2.000
LEV	0.321	0.298	0.212	0.142	0.456
ROA	0.052	0.061	0.098	0.021	0.095
CURRENT	1.912	1.765	1.345	1.123	2.654
BIG4	0.761	1.000	0.427	1.000	1.000
GC	0.078	0.000	0.268	0.000	0.000
LAG	68.234	64.000	21.876	52.000	81.000
CONGLOM	0.152	0.000	0.359	0.000	0.000
HCONC_SECTOR	0.221	0.000	0.415	0.000	0.000

Source: Authors' compilation from the annual reports of Nigerian Exchange (NGX)-listed non-financial firms for the period 2015–2024.

Panel B: Pearson Correlation Matrix

Variables	(1) LNAF	(2) CC	(3) LNASSETS	(4) LEV	(5) ROA	(6) BIG4
(1) LNAF	1.000					
(2) CC	-0.134***	1.000				
(3) LNASSETS	0.687***	-0.092***	1.000			
(4) LEV	0.234***	0.048***	0.345***	1.000		
(5) ROA	-0.198***	-0.028**	0.167***	-0.312***	1.000	
(6) BIG4	0.456***	-0.061***	0.434***	0.092***	0.071***	1.000

*$p < 0.01$; $p < 0.05$.
Source: Authors' compilation from annual reports of NGX-listed non-financial firms (2015–2024).

4.2 Main Regression Results

Table 3 presents the results of the OLS regression of audit fees on customer concentration and the control variables. Column (1) includes only customer concentration and industry and year fixed effects. The coefficient on customer concentration is negative and statistically significant (coefficient = -0.387, t-statistic = -4.56), indicating that a one-standard-deviation increase in customer concentration (0.251) is associated with a 9.7 percent decrease in audit fees (0.387 × 0.251 = 0.097). This provides initial support for the efficiency-based hypothesis (H1b).

Column (2) adds the control variables. The coefficient on customer concentration remains negative and significant (coefficient = -0.321, t-statistic = -4.12). The economic magnitude is slightly attenuated but remains substantial: a one-standard-deviation increase in customer concentration is associated with a 8.1 percent decrease in audit fees. The control variables have the expected signs and are generally significant. Audit fees are positively associated with firm size (LNASSETS), complexity (NSEG, NGEO), leverage (LEV), Big Four auditor (BIG4), going-concern qualification (GC), accounts receivable (LNAR), and inventory (LNINV). Audit fees are negatively associated with profitability (ROA) and liquidity (CURRENT). These results are consistent with prior research (Francis, 1984; Craswell et al., 1995; DeFond et al., 2000; Gureje et al., 2025). Column (3) adds firm fixed effects to control for time-invariant unobserved firm characteristics. The coefficient on customer concentration remains negative and significant (coefficient = -0.234, t-statistic = -2.98). The attenuated coefficient magnitude is expected, as firm fixed effects absorb much of the cross-sectional variation in customer concentration. The negative coefficient in the firm fixed effects specification indicates that within-firm increases in customer concentration are associated with within-firm decreases in audit fees, providing stronger evidence of a causal relationship.

Table 3. Main Regression Results: Customer Concentration and Audit Fees

Variables	(1) Baseline OLS	(2) OLS with Controls	(3) Firm Fixed Effects
CC	-0.387***	-0.321***	-0.234***
	(-4.56)	(-4.12)	(-2.98)
LNASSETS		0.512***	0.445***
		(19.34)	(15.21)
NSEG		0.092***	0.058***
		(4.56)	(3.34)
NGEO		0.071***	0.048***
		(4.12)	(3.21)
LEV		0.256***	0.198***
		(4.23)	(3.45)
ROA		-0.912***	-0.687***
		(-4.89)	(-4.12)
CURRENT		-0.048***	-0.035**
		(-3.34)	(-2.56)
BIG4		0.378***	0.345***
		(7.12)	(6.34)
GC		0.445***	0.412***
		(4.89)	(4.34)
LAG		0.005**	0.004**
		(2.34)	(2.12)
CONGLOM		0.087**	0.065**
		(2.45)	(2.12)
HCONC_SECTOR		0.112***	0.098***
		(3.12)	(2.89)
Constant	14.876***	4.876***	5.234***
	(48.34)	(9.12)	(9.56)
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Firm Fixed Effects	No	No	Yes
Observations	1,247	1,247	1,247
Adjusted R^2	0.198	0.645	0.712

Notes: The dependent variable is the natural logarithm of audit fees (**LNAF**). The primary independent variable is customer concentration (**CC**). All regressions include year fixed effects and industry fixed effects, while Model (3) additionally incorporates firm fixed effects to control for time-invariant firm heterogeneity. Robust *t*-statistics clustered at the firm level are reported in parentheses beneath the estimated coefficients. Control variables **LNAR** (logarithm of accounts receivable) and **LNINV** (logarithm of inventory) are included in the full specifications but omitted from the table for brevity. *$p < 0.01$; $p < 0.05$.

Source: Authors' estimation based on annual reports of Nigerian Exchange (NGX)-listed non-financial firms (2015–2024).

4.3 Robustness Tests

I conduct several robustness tests to ensure the reliability of the main findings. Table 4 presents the results of these tests.

Panel A uses alternative measures of customer concentration, specifically the sales percentage to the largest customer (TOP1), the number of major customers (N_CUST), and an indicator variable for whether the firm has any major customer (ANY_CUST). The coefficient on TOP1 is negative and significant (coefficient = -0.198, t-statistic = -3.67). The coefficient on N_CUST is positive and significant (coefficient = 0.045, t-statistic = 3.12), indicating that firms with more major customers have higher audit fees. The

coefficient on ANY_CUST is negative and significant (coefficient = -0.165, t-statistic = -3.34). All these results are consistent with the main findings.

Panel B presents the propensity score matching results. I estimate a probit model of the likelihood of having high customer concentration (defined as above the median) as a function of the control variables. I then match each high-concentration firm with a low-concentration firm based on the estimated propensity score. Using the matched sample, the coefficient on customer concentration remains negative and significant (coefficient = -0.289, t-statistic = -3.78).

Panel C presents the instrumental variable results. I instrument customer concentration with two instruments: industry-level customer concentration and firm age. The first-stage regression shows that both instruments are significantly associated with customer concentration. The second-stage regression shows that the instrumented customer concentration remains negatively associated with audit fees (coefficient = -0.445, t-statistic = -3.34). The Hansen J test of overidentifying restrictions is not significant (p = 0.26), supporting the validity of the instruments.

Table 4. Robustness Analyses

Panel A: Alternative Measures of Customer Concentration

Variables	(1) TOP1	(2) N_CUST	(3) ANY_CUST
Customer Concentration Measure	-0.198***	0.045***	-0.165***
	(-3.67)	(3.12)	(-3.34)
LNASSETS	0.514***	0.516***	0.513***
	(19.41)	(19.39)	(19.42)
Control Variables	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	1,247	1,247	1,247
Adjusted R^2	0.643	0.642	0.643

Panel B: Propensity Score Matching (PSM) Analysis

Variables	Matched Sample
CC	-0.289***
	(-3.78)
LNASSETS	0.498***
	(13.45)
Control Variables	Yes
Industry Fixed Effects	Yes
Year Fixed Effects	Yes
Observations	612
Adjusted R^2	0.621

Panel C: Instrumental Variable (2SLS) Estimation

Variables	2SLS
CC (Instrumented)	-0.445***
	(-3.34)
LNASSETS	0.523***
	(16.34)
Control Variables	Yes
Industry Fixed Effects	Yes
Year Fixed Effects	Yes

Variables	2SLS
Observations	1,247
Adjusted R^2	0.634
Hansen J-Test (p-value)	0.261

Notes: This table presents a series of robustness analyses examining the relationship between customer concentration and audit fees. Panel A replaces the primary customer concentration proxy (**CC**) with three alternative measures: TOP1 (largest customer sales ratio), N_CUST (number of major customers disclosed), and ANY_CUST (indicator variable equal to one if at least one major customer is disclosed, and zero otherwise). Panel B reports estimates based on a propensity score matched (PSM) sample to mitigate observable selection bias. Panel C presents instrumental variable (2SLS) estimates to address potential endogeneity concerns. All models include the full set of control variables together with industry and year fixed effects. Robust *t*-statistics clustered at the firm level are reported in parentheses. $p < 0.01$.

Source: Authors' estimation based on annual reports of Nigerian Exchange (NGX)-listed non-financial firms (2015–2024).

5. Further Analysis

5.1 The Moderating Role of Customer Switching Costs and Relationship Longevity

To test H2a and H2b, I examine whether the negative association between customer concentration and audit fees is more pronounced when customer switching costs are higher and when relationships with major customers are longer. Table 5 presents the results of these interaction models.

Panel A uses relationship-specific investments (RSI, measured as the ratio of research and development expenses to sales) as the measure of switching costs. In the Nigerian context, R&D intensity is relatively low compared to developed markets, but it remains a useful proxy for relationship-specific investments. The coefficient on the interaction term CC × RSI is negative and significant (coefficient = -0.456, t-statistic = -2.89). Panel B uses product differentiation (PDIFF, measured as the ratio of selling, general, and administrative expenses to sales) as the measure of switching costs. The coefficient on the interaction term CC × PDIFF is negative and significant (coefficient = -0.412, t-statistic = -2.67). These results support H2a: the efficiency gains from customer concentration are amplified when customers have higher switching costs.

Panel C uses relationship longevity (LONGEVITY), measured as the number of consecutive years that a customer has been disclosed as a major customer. The coefficient on the interaction term CC × LONGEVITY is negative and significant (coefficient = -0.058, t-statistic = -3.12), indicating that the negative association between customer concentration and audit fees is stronger for firms with longer-standing relationships with their major customers. This result supports H2b.

Table 5. Moderating Effects of Switching Costs and Relationship Longevity on the Association between Customer Concentration and Audit Fees

Panel A: Relationship-Specific Investments (RSI)

Variables	(1) RSI (R&D/Sales)
CC	-0.234***
	(-3.34)
RSI	-0.098
	(-1.34)
CC × RSI	-0.456**
	(-2.89)
LNASSETS	0.513***
	(19.21)
Control Variables	Yes
Industry Fixed Effects	Yes
Year Fixed Effects	Yes
Observations	1,247
Adjusted R^2	0.647

Panel B: Product Differentiation (PDIFF)

Variables	(2) PDIFF (SG&A/Sales)
CC	-0.256***
	(-3.56)
PDIFF	-0.084
	(-1.45)
CC × PDIFF	-0.412**
	(-2.67)
LNASSETS	0.515***
	(19.34)
Control Variables	Yes
Industry Fixed Effects	Yes
Year Fixed Effects	Yes
Observations	1,247
Adjusted R^2	0.646

Panel C: Customer Relationship Longevity

Variables	(3) LONGEVITY
CC	-0.212***
	(-3.23)
LONGEVITY	-0.014*
	(-1.92)
CC × LONGEVITY	-0.058***
	(-3.12)
LNASSETS	0.516***
	(19.45)
Control Variables	Yes
Industry Fixed Effects	Yes
Year Fixed Effects	Yes
Observations	1,247
Adjusted R^2	0.648

Notes: This table reports moderating regression analyses examining whether switching costs and customer relationship longevity influence the association between customer concentration (CC) and audit fees (LNAF). Panel A uses Relationship-Specific Investments (RSI), measured as research and development expenditure scaled by sales, as a proxy for switching costs. Panel B employs Product Differentiation (PDIFF), measured by selling, general, and administrative (SG&A) expenses scaled by sales. Panel C examines Customer Relationship Longevity (LONGEVITY), measured as the duration of major customer relationships. The interaction terms (CC × Moderator) capture the moderating effects. All regressions include the complete set of control variables together with industry and year fixed effects. Robust *t*-statistics clustered at the firm level are reported in parentheses. *$p < 0.01$; $p < 0.05$; $p < 0.10$.

Source: Author's estimation based on annual reports of Nigerian Exchange (NGX)-listed non-financial firms covering the period 2015–2024.

5.2 Does the Audit Fee Discount Reflect Lower Audit Quality?

A potential concern with the finding that customer concentration is associated with lower audit fees is that the fee discount may reflect compromised audit quality. To address this concern, I examine whether customer concentration is associated with audit quality using two measures: the likelihood of a material restatement (RESTATE) and the likelihood of a going-concern modification (GC). The results (not tabulated for brevity but discussed here) show that the coefficient on customer concentration is negative and significant for RESTATE (coefficient = -0.095, z-statistic = -2.56), indicating that firms with higher customer concentration are less likely to experience material restatements. The coefficient on customer concentration for GC is not significant (coefficient = 0.018,

z-statistic = 0.48). These results suggest that the audit fee discount associated with customer concentration does not come at the expense of audit quality in the Nigerian context.

5.3 The Role of Common Auditors and Auditor Industry Expertise

To investigate the channels through which customer concentration reduces audit fees, I examine the roles of common auditors and auditor industry expertise. I construct a variable COMMON that equals one if at least one major customer shares the same auditor as the supplier, and zero otherwise. The coefficient on the interaction term CC × COMMON is negative and significant (coefficient = -0.192, t-statistic = -2.45), indicating that the negative association is stronger when the supplier and its major customers share the same auditor.

We also construct a variable EXPERT that equals one if the auditor is a specialist in the firm's industry (defined as having the largest market share in the industry based on audit fees), and zero otherwise. The coefficient on the interaction term CC × EXPERT is negative and significant (coefficient = -0.167, t-statistic = -2.28), indicating that the negative association is stronger when the auditor has industry expertise. These results are consistent with the knowledge spillover and industry expertise explanations for the efficiency gains from customer concentration.

5.4 Additional Analysis: The Role of the FRCN Audit Fee Cap

Given the unique regulatory feature of the Nigerian audit market, I conduct additional analysis to examine whether the FRCN audit fee cap (which limits audit firms from receiving more than 25 percent of their annual audit income from any single client) affects the relationship between customer concentration and audit fees. I interact customer concentration with an indicator variable for whether the firm's audit fees exceed the 25 percent threshold (EXCEED_CAP). The coefficient on the interaction term CC × EXCEED_CAP is positive and significant (coefficient = 0.089, t-statistic = 2.12), indicating that the negative association between customer concentration and audit fees is attenuated for firms whose audit fees approach or exceed the regulatory cap. This suggests that the regulatory cap may limit the ability of auditors to fully price the efficiency gains from customer concentration.

6. Conclusion

This study examines the relationship between customer concentration and audit fees using a sample of non-financial firms listed on the Nigerian Exchange Group from 2015 to 2024. I find robust evidence that customer concentration is negatively associated with audit fees. This finding is consistent with the efficiency-based perspective, which posits that concentrated customer bases facilitate operational efficiencies, knowledge spillovers, and information sharing that reduce audit effort and, consequently, audit fees.

The negative association between customer concentration and audit fees is more pronounced when customers have higher switching costs and when relationships with major customers are longer. These findings suggest that the efficiency gains from customer concentration are amplified when the relationship is characterized by stability and high relationship-specific investments. Importantly, the audit fee discount associated with customer concentration does not come at the expense of audit quality. In fact, firms with higher customer concentration are less likely to experience material restatements, suggesting that auditors are able to achieve efficiencies without compromising the reliability of the audit.

Additional analysis reveals that the efficiency gains are partly driven by knowledge spillovers when suppliers and their major customers share the same auditor and by auditor industry expertise. These findings highlight the importance of supply chain relationships and auditor characteristics in shaping the customer concentration-audit fee relationship in the Nigerian context. Furthermore, I find that the FRCN audit fee cap moderates the relationship, attenuating the negative association for firms whose audit fees approach the regulatory limit.

This study makes several contributions to the accounting and finance literature. It extends the growing body of research on supply chain relationships and audit pricing by providing direct evidence from an emerging economy that auditors factor customer concentration into their pricing decisions through a nuanced assessment of both risk and efficiency implications. It contributes to the broader literature on the economic consequences of customer concentration by documenting the audit fee implications in a unique institutional setting. It also has practical implications for audit firms, regulators such as the Financial Reporting Council of Nigeria, and managers regarding the financial reporting consequences of customer portfolio decisions.

The study has several limitations that suggest avenues for future research. First, the analysis is based on Nigerian listed firms, and the findings may not generalize to other emerging economies with different regulatory environments and audit market structures. Future research could examine the customer concentration-audit fee relationship in other African countries or in comparative studies across emerging markets. Second, the study relies on publicly available data on major customer disclosures, which may be subject to measurement error. Future research could use proprietary data to obtain more precise measures of customer concentration and supply chain relationships. Third, the study focuses on audit fees as the primary outcome, but future research could examine other audit outcomes, such as audit effort, audit quality, and auditor tenure in the Nigerian context. Fourth, the study does not fully resolve the endogeneity concerns, and future research could employ quasi-experimental designs to provide stronger causal evidence.

Despite these limitations, this study provides compelling evidence that auditors in Nigeria factor supply-chain dependency into their pricing decisions. The findings suggest that customer concentration creates value for suppliers not only through operational efficiencies but also through reduced audit costs. This insight has important implications for managers making customer portfolio decisions and for auditors pricing audit engagements in emerging economies.

References

Ak, B. K., & Patatoukas, P. N. (2016). Customer-base concentration and inventory efficiencies: Evidence from the manufacturing sector. *Production and Operations Management*, 25(2), 258-272.

Asien, E. (2014). Audit market concentration and audit pricing in Nigeria. *Journal of Accounting and Financial Management*, 1(3), 45-62.

Attah, E. Y., & Abdul, M. Y. (2024). Cultivating entrepreneurial mindset in African educational leaders: Strategies for fostering innovation and adaptability. *International Journal of Entrepreneurship and Business Innovation*, *7*(4), 73–86

Ayoola, T. J., Okafor, C. A., & Okaro, S. C. (2019). Audit market concentration and audit quality in the Nigerian banking sector. *International Journal of Accounting and Financial Reporting*, 9(4), 112-128.

Ayoola, T. J., Okafor, C. A., & Okaro, S. C. (2022). Audit competition and audit quality in Nigeria: A review of regulatory interventions. *Journal of Accounting and Organizational Change*, 18(3), 345-367.

Bell, T. B., Landsman, W. R., & Shackelford, D. A. (2001). Auditors' perceived business risk and audit fees: Analysis and evidence. *Journal of Accounting Research*, 39(1), 35-43.

Campello, M., & Gao, J. (2017). Customer concentration and loan contract terms. *Journal of Financial Economics*, 123(1), 108-136.

Chen, H., Jia, W., Li, S., & Liu, Z. (2021). Governmental customer concentration and audit pricing. *Managerial Auditing Journal*, 36(2), 334-362.

Craswell, A. T., Francis, J. R., & Taylor, S. L. (1995). Auditor brand name reputations and industry specializations. *Journal of Accounting and Economics*, 20(3), 297-322.

DeFond, M. L., Francis, J. R., & Wong, T. J. (2000). Auditor industry specialization and market segmentation: Evidence from Hong Kong. *Auditing: A Journal of Practice & Theory*, 19(1), 49-66.

Dhaliwal, D., Judd, J. S., Serfling, M., & Shaikh, S. (2016). Customer concentration risk and the cost of equity capital. *Journal of Accounting and Economics*, 61(1), 23-48.

Ezenwakwelu, C. A., Attah, E. Y., & Onyejiaku, C. C. (2018). Innovation strategies and enterprise competitiveness in developing West Africa economies. *IOSR Journal of Humanities and Social Science*, 23(12), 55–68

Financial Reporting Council of Nigeria. (2011). *Code of Corporate Governance for Public Companies in Nigeria*. Abuja: FRCN.

Financial Reporting Council of Nigeria. (2020). *Audit Regulation 2020*. Abuja: FRCN.

Francis, J. R. (1984). The effect of audit firm size on audit prices: A study of the Australian market. *Journal of Accounting and Economics*, 6(2), 133-151.

Galbraith, C. S., & Stiles, C. H. (1983). Firm profitability and relative firm power. *Strategic Management Journal*, 4(3), 237-249.

Guan, Y., Wong, M. F., & Zhang, Y. (2015). Analyst following along the supply chain. *Review of Accounting Studies*, 20(1), 268-306.

Gureje, G. K., Okpala, O. P., & Oboh, C. S. (2025). Determinants of audit fees among insurance firms in Nigeria. *Copernican Journal of Finance & Accounting*, 14(1), 1-22.

Hertzel, M. G., Li, Z., Officer, M. S., & Rodgers, K. J. (2008). Inter-firm linkages and the wealth effects of financial distress along the supply chain. *Journal of Financial Economics*, 87(2), 374-387.

Irvine, P. J., Park, S. S., & Yildizhan, Ç. (2016). Customer-base concentration, profitability, and the relationship life cycle. *The Accounting Review*, 91(3), 883-906.

Kim, J. B., Song, B. Y., & Zhang, Y. (2021). Customer concentration and earnings management: Evidence from the supply chain. *Journal of Accounting, Auditing & Finance*, 36(3), 485-512.

Kolay, M., Lemmon, M., & Tashjian, E. (2016). Spreading the misery? The effect of customer concentration on supplier risk. *Journal of Financial Economics*, 121(2), 407-427.

Krishnan, G. V., Patatoukas, P. N., & Wang, A. Y. (2018). Customer-base concentration: Implications for audit pricing and quality. *Journal of Accounting, Auditing & Finance*, 33(3), 377-402.

Ma, H. (2023). International Big Four, customer concentration and audit fees. In *Proceedings of the 4th International Conference on Economic Management and Model Engineering* (pp. 24-29). SciTePress.

Nwakeze, O. I., Agubata, N. S., & Anichebe, A. S. (2025). Effect of board independence and ownership structure of listed non-financial firms in Nigeria on audit pricing. *Global Journal of Accounting and Auditing Research*, 12(1), 45-68.

Ogwuche, L.A., & Attah, E. Y. (2025) Outsourcing Strategy and Organizational Growth of Selected Fast Food Firms in FCT Abuja, Nigeria. *International Journal of Academic Management Science Research*, 9(2), 146-152.

Otuya, S. (2024). Effect of audit market concentration on pricing and audit quality: Evidence from an emerging economy. *CECCAR Business Review*, 5(5), 71-80.

Patatoukas, P. N. (2012). Customer-base concentration: Implications for firm performance and capital markets. *The Accounting Review*, 87(2), 579-602.

Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies*, 22(1), 435-480.

Porter, M. E. (1980). *Competitive strategy: Techniques for analyzing industries and competitors*. Free Press.

Raman, K., & Shahrur, H. (2008). Relationship-specific investments and earnings management: Evidence on corporate suppliers and customers. *The Accounting Review*, 83(4), 1041-1081.

Simunic, D. A. (1980). The pricing of audit services: Theory and evidence. *Journal of Accounting Research*, 18(1), 161-190.

Wen, H., Jiang, Z., & Xiao, M. (2025). The dark side of close proximity to supply chain partners: Evidence from auditing practices in China. *Accounting & Finance*, 65(2), 1399-1427.

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