Audit Market Concentration Structure and Audit Quality in Listed Non-Financial firms in Nigeria

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Abstract
The study examined the impact of audit market concentration structure in audit quality in listed non-financial firms in Nigeria. The study adopted the ex-post facto research design. A sample of 81non-financal firms that have available and up to date annual reports that covered the period of study were used. The simple random sampling technique was used. The study relies on the use of secondary data. The data were collected for a period of 2008-2019. The study made use of panel regression technique for data analysis. Panel data regression was chosen because of the multidimensional nature of the data which had time or periodic and also cross-sectional dimension. The results of the study revealed that CC-Ratio has a positive (0.0743) effect on audit quality which is statistically significant at 5% (p=0.0033) and CCRatio-Dyn has a positive (0.2516) effect on audit quality which is statistically significant at 5% (p=0.000). HH-Index has a positive (0.1339) effect on audit quality though not statistically significant at 5% (p=0.3153) but HH-Index-Dyn has a positive (0.0096) effect on audit quality which is statistically significant at 5% (p=0.004). Hence both the static and dynamic estimation results using concentration ratio and Herfindahl-Hirschman Index all suggest that audit market concentration has a positive effect on audit quality in Nigeria which implies that increasing level of concentration has positive implications on audit quality. The study recommends the need for widespread commitment for on the part of all audit firms in the audit market to improve the audit quality. Also the study recommends that joint audits should be made mandatory in Nigeria as this can go a long way in reducing big concentration in the market and also improving the proficiency non-big 4 firms.
Keywords: *Audit market concentration, Audit quality, Herfindahl-Hirschman Index*

1. Introduction

A market is said to be highly concentrated when a few companies dominate and control the majority of the audit market share or sales volume. The audit firms referred to as the Big4 include PricewaterhouseCoopers (PWC), Deloitte, Ernst & Young (EY) and KPMG have been dominating the global market for audit services and this has consequently deepened the market concentration. The current state of audit market concentration reveals some developments that have raised concerns to both regulatory interest group and academic researchers. These concerns border on the threat of limited choice to the demand side (clients' firms), systemic risk to the market and non-competitiveness that limits efficiency and audit quality (European Commission, 2017). Even in Nigeria, the audit market is very much skewed in the direction of the big 4 and thus promoting concentration in the market. For example in the case of financial industry about 97% of firms are audited by the big 4 and in the non-financial sector though there is mix between big 4 and non-big 4 firms, the market is still very much skewed towards the big 4 (Eniola, 2020; Eguasa & Urhoghide (2017).

Audit market concentration is worrisome globally due to the possibility of a number of scenarios. First there is the worry that the current structure of the market for audit services could create the problems of limited choice and systemic risk which are associated with the current audit market structure (Eniola, 2020). In addition to the problem of limited choice, the prevailing situation also poses two additional potential threats; monopolistic situation and uncompetitive pricing as stressed by Caban-Garcia and Cammack (2009). If this development is viewed along increasing supplier concentration, the market power of big audit firms will be increasing. This would result to cartelization that could make collective market dominance and price arrangements between or among the Big4 audit firms possible. This concentration can also create an oligopolistic or monopolistic market structure and highly concentrated or oligopolistic market can lower quality

product or service. With few competitors, the suppliers (audit firms) can charge higher prices and offer lower quality audits while the demand region (clients' firms) can do little or nothing in such circumstances. Hence there are clear audit quality implications originating from audit market concentration. Also raised, is a concern for systemic risk which fear for audit market if one of the Big4 firms (Steven, 2016).

Unfortunately, despite the potential for audit market concentration to signal systemic risk if not properly managed, the issue has not attracted much attention both from reearchers and policy institution in Nigeria especially when compared with the kind of attention that it has garnered in developed climes such as Europe and America where the issues have been deliberated heavily in government and regulatory circles. Very limited attention has been devoted to the issue of audit concentration in Nigeria which represent the biggest economy in Africa aside from Eguasa and Urhoghide (2017). This study addresses this gap by first identifying the level of audit market concentration in Nigeria using both the Concentration Ratio (CR) and Herfindahl-Hirschman index and then identifying the impact of audit market concentration on audit quality. In doing this, unlike any other introduces dynamic considerations in the models to control for auditor and client alignment and re-alignments decisions over the study period. The rest of the paper is structured as follows; section 2 examines the literature review, the methodology is presented in section 3 and then the presentation of result is seen in section 4. Finally, section 5 addressed the conclusion and recommendation of the study.

2.2. Literature and Hypothesis

The literature on the relationship between audit market concentration and audit quality is surrounded by empirical finding that tend to be at polarity. Marleen, Simon, Liesbeth and Wieteke (2020), using U.S. data from 2009 to 2017, we examine the effect on audit quality of two competing measures of auditor market power: (a) a "traditional" market concentration measure (Herfindahl index) and audit quality as measured using the level of absolute abnormal accruals, and the incidence of financial statement restatements. The results do not find an association between market concentration and audit quality.

Jeroen, Erik, Roger and Caren (2019) examined whether audit market concentration tructure affects audit quality. Focusing on the private-client segment of the Belgian audit market, the authors compared the quality effects of market structure between the segment of small and medium-sized (SME) clients and the segment of large clients to test how audit complexity moderates such effects. The findings reveal that market concentration impairs quality competition in the SME-client segment. However, market concentration is unrelated to audit quality in the large-client segment, where we argue that concentration is endogenous to audit complexity.

Boone, Khurana and Raman (2010) examined audit quality for Big4 and Mid-tier auditors during 2003-2006 and included clients of other smaller audit firms for comparison purposes. They examine *actual* audit quality (as proxy by earnings management metrics) as well as *perceived* audit quality (as proxy by the client- and year-specific e-loading and ex ante equity risk premium metrics). Relative to other smaller audit firm clients, they found Big4 and Mid-tier audit clients to have (1) *lower* levels of accrual management, (2) *higher* levels of real earnings management, and (3) *higher* levels of investor-perceived accruals quality. In each case, they were unable to reject the null that Big4 and Mid-tier audits are similar. Collectively, their findings indicate that in situations where a Mid-tier auditor is potentially viable, Big4 clients could utilize a Mid-tier firm without adversely affecting audit quality.

Jere, Michas and Seavey (2013) in a study use cross-country variation in the audit market structure of 42 countries to examine two separate aspects of Big4 dominance: (1) Big4 market concentration as a group relative to non–Big4 auditors; and (2) concentration within the Big4 group in which one or more of the Big4 firms is dominant relative to the other Big4 firms. They find that in countries where the Big4 (as a group) conduct more listed company audits, both Big4 and non–Big4 clients have higher quality audited earnings compared to clients in countries with smaller Big4 market shares. In contrast, in countries where there is a greater concentration within the Big4 group, they find that Big4 clients have lower quality audited earnings compared to countries with more evenly distributed market shares among the Big4.

Sanjay, Srinivasan and Yoonseok (2010) carried out a study to analyze the relation between audit market concentration (Herfindahl index of concentration) and audit quality (measured by discretionary accruals). They find that higher audit market competition is associated with lower audit quality. Their results are robust to several sensitivity tests they performed in an attempt to rule out omitted variables correlated with client firms location. Their results are also robust to controls for endogeneity between audit market concentration and audit quality.

On the contrary, studies showing a positive relationship between audit quality and audit market concentration includes those of Jere and Michael (2009) which examines if larger offices of Big4 auditors are predicted to have higher quality audits. In other ti test this prediction, they examined a sample of 6,568 U.S. firm-year observations for the period 2003–2005 and audited by 285 unique Big4 offices. Results are consistent with larger offices providing higher quality audits. Specifically, larger offices are more likely to issue going-concern audit reports and clients in larger offices evidence less aggressive earnings management behavior. These findings are robust to extensive controls for client risk factors and to controls for other auditor characteristics. In a similar vein, Francis (2013) carried out a study on the effect of audit market concentration on the quality of audited earnings. Findings from the study led to the conclusion that the Big Four dominance does not appear to harm audit quality and is in fact associated with higher earnings quality, after controlling for other country characteristics that potentially affect earning quality.

Guo (2016) carried out a study on the relationship between Big4 global member firms and audit quality control. Using Hofstede's (1980) six dimensions of national cultures and Gray's (1988) model of accounting system values, this paper examines the audit quality of the Big Four global member firms in China, Japan, and Eastern Europe. This paper also analyzes the benefits and disadvantages of Big Four localization and predicts how the Big Four will adjust to cultural influences while they strive to improve audit quality. Findings from the study revealed that Big4 global firms enhance audit quality and is in fact associated with higher earnings quality, after controlling for country characteristics that potentially affect audit quality.

In a similar vein, Limei, Ole-Kristian and Langli (2016) carried out a study to determine whether Big-4 firms provide higher quality audits relative to non-Big-4 firms when the characteristics of audit partners and auditees are held constant. Employing a unique dataset of individual auditors for a large sample of private companies in a setting with documented low litigation and reputation risk, they analyzed audit quality of the partner-auditee pairs that switch affiliations between Big-4 and non-Big-4 firms. A proxy of audit quality includes measures of earnings management, deviations from clean audit reports, and accuracy of going-concern reporting. They find less earnings management, higher going-concern accuracy, after a switch from a non-Big-4 firm to a Big-4 firm.

Eshleman and Guo (2016) examined this issue using the incidence of accounting restatements as a measure of audit quality. Using a propensity-score matching procedure similar to that used by recent research to control for clients' endogenous choice of auditor, they find that clients of Big4 audit firms are less likely to subsequently issue an accounting restatement than are clients of other auditors. In additional tests, they find weak evidence that clients of Big4 auditors are less likely to issue accounting restatements. Taken together, the evidence suggests that Big4 auditors do perform higher quality audits.

Therefore, in the light of the above, the hypothesis for the model is specified thus

H_{01}: Audit Market Concentration has no significant impact on audit quality in Nigeria

2.3. Theoretical Framework: Signalling Theory

Signalling theory is credited to the works of Akerlof, (1970) and according to theory, to overcome the information asymmetry between buyers and sellers, buyers will make attributions about services based on information signals provided by sellers (Connelly et al. 2011). Sellers can use various signalling mechanisms to inform buyers and reduce buyer uncertainty faced in evaluating sellers (Kirmani & Rao, 2000). There are two characteristics of efficacious signals (Connelly et al. 2011). The first is signal observability, which refers to the extent to which outsiders are able to notice the signal. If actions insiders (signal senders) take are not readily

observed by outsiders (signal receivers), it is difficult to use those actions to communicate with receivers. Observability varies in intensity, strength, clarity, and visibility of the signal. Signal cost represents the second characteristic of efficacious signals. Observability is necessary but not sufficient characteristic of a signal (Connelly et al. 2011).

In the context of concentration in the audit market, auditing is characterized by high information asymmetry, thus creating a fruitful ground for the application of signalling theory. However, as Moizer (1997) point out, it is difficult for companies to assess audit firms' level of audit quality both ex ante and even ex post. Companies choosing auditors must do so through indirect measures such as the general reputation of the auditor in the market place (Moizer, 1997). The Big4 auditors due to their expertise, wide network effects and global outlook release further signalling waves to the market selling their competence and expertise and therefore creating room for concentration of the market. No doubt increasing concentration dynamics globally have come on the heels of unique strengths either actual or perceived that come with the brand name of big4 auditors.

3. Methodology

The study adopted the ex-post facto research design. This design is suitable for the study as the research intends to find causal relationship between audit market concentration and a number of theoretical identified factors and also the implications of audit market concentration on audit fee and quality. A sample of 81non-financal firms that have available and up to date annual reports that covered the period of study were used. The simple random sampling technique was used. The study relies on the use of secondary data. These were obtained from annual financial reports of the sampled companies in Nigeria and the fact books of Nigerian Stock Exchange (NSE). The data were collected for a period of 2008-2019 for all the variables. The study covered between 2008 to 2019 and therefore captured pre-IFRS and post-IFRS periods. The study made use of panel regression technique for data analysis. Panel data regression was chosen because of the multidimensional nature of the data which had time or periodic and also cross-sectional dimension.

Model Specification

Following the signalling theory, companies demand audit quality because of costs associated with audit failures. The Big4 auditors due to their expertise, wide network effects and global outlook release further signalling waves to the market selling their competence and expertise and therefore creating room for concentration of the market. No doubt increasing concentration dynamics globally have come on the heels of unique strengths either actual or perceived that come with the brand name of big4 auditors. Adopting the models of Francis (2013), we specify the relationship as follows;

Audit Quality = f (Audit Market Concentration)

$AUDQUA_{it} = \beta o + \psi_1 AUDCON_{it} + \mu_{it}$---------- *(i)*

$AUDQUA_{it} = \beta o + \psi_1 AUDCON_{it} + \mu_{it}$---------- *(ii)*

Following Dinh and Piot (2014) which examined audit market concentration for Europe utilizing dynamic considerations, this study also estimates a dynamic model in which the static value of each variable is replaced by its annual variation. However, unlike Dinh and Piot (2014) which employed a difference approach, this study utilizes the seasonal decomposition method (STL). This has several advantages over the classical approaches as it handles any type of seasonality. Seasonal component is allowed to change over time, and the rate of change can be controlled. Importantly, it can be robust to outliers so that occasional unusual

$AUDQUA\text{-}Dyn_{it} = \beta o + \psi_1 AUDCON\text{-}Dyn_{it} + \mu_{it}$---------- *(iii)*

$AUDQUA\text{-}Dyn_{it} = \beta o + \psi_1 AUDCON\text{-}dyn_{it} + \mu_{it}$---------- *(vi)*

Where:

AUDCON = Audit Market Concentration

AUDQ= Audit quality

i =ith firm

t = time period

μ_{it} = Model disturbance term

ε_t = Stochastic term.

$\eta_6 > 0$ = This implies that audit market concentration has a positive effect on audit fees

$\eta_7 > 0$ = This implies that audit market concentration has a positive effect on audit fees

Table 3.1 operationalisation of variables

Variable	Definition	Measurement	Source
AUDCON	Audit Market Concentration	Concentration Ratio (CR) and Herfindahl-Hirschman index. (HHI)	Dinh and Piot (2014)
	Concentration Ratio (CR)	Measured as the percentage of companies audited by the biggest audit firms (Big four). An oligopoly status is established if at three audit companies could have a market share greater than 50%. A monopoly position is assumed, if an audit firm has more than one third of total examined firms.	
	Herfindahl-Hirschman index (HH-Index)	Measured as the proportion of the market shares in term of fees accrued to the big four in relation to the total audit fees obtained in the audit market for the year. That is the ratio of fee collected by big4 to the ratio of total fees collected by the industry per year in the audit market. The value of close to 1 indicates a very high level of market concentration, if close to 0 indicates high level of competition and low-level audit market concentration	
AUDQUA	Audit quality	Discretionary accruals using the modified Jones model (ACC)	Francis (2013).

Source: Researcher's compilation (2021)

4. Presentation of Result

Table 4.1: Summary Statistics

	Mean	Max	Min	Std. Dev	Jacgue-bera	Prob
AUDQUA	-0.06777	0.986	-4.125	0.213046	899067.3	0.000
HH-Index	0.792217	0.914458	0.712677	0.063443	84.53829	0.00
CC-Ratio	0.545271	0.65	0.468	0.051056	27.07894	0.000

Source: Researcher's compilation (2021)

The summary statistics in table 4.2 shows that the mean for AUDQUA measured using discretionary accruals (ACC) stood at -0.678 with maximum and minimum values of 0.986 and -4.125 respectively. The CC-Ratio stood at average of 0.545 for the entire study period and using the Herfindahl-Hirschmann Index audit market concentration stood at 0.79 which is higher than the concentration ratio. As earlier argued, the reason for this according to Ohidoa and Okun (2018) is that the amount charged as fees by the Big-4 firms in Nigeria was quite different and higher than what was being charged by local auditors in Nigeria. This is also similar to the findings of Urhoghide and Izedonmi (2015) that the Big 4 audit firms are larger and are well-established and hence tend to charge higher audit fees when compared to the non-Big 4 audit firms. The higher charge may be due to product differentiation and competition

Table 4.2: Pearson Correlation Matrix

	ACC	CCR	HHINDEX
ACC	1		
CCR	0.025	1	
Prob.	0.475		
HHINDEX	0.029	0.364	1
Prob.	0.402	0.00*	

Source: Researcher's compilation (2021)

Table 4.2 shows the correlation statistics for the variables and the focus for the study is the correlations between the audit market concentration measures and the independent variables. The results reveal that CCR is positively correlated ACC (r=0.025) and HH-Index is positively correlated with ACC(r=0.029). The positive correlations imply that increase in one variable is associated with increase in the other and vice-versa while the negative correlations suggest that increase in one variable is associated with decrease in the other and vice-versa. However, correlations are not adequate for inferential analysis as they do not necessarily imply functional dependence between variables.

Table 4.3a. Regression Result

Variable	Aprori Sign	AQ	AQ-dyn
C	+	-0.10798* (0.0136) {0.000)	-5.86e-05* (4.40e-08) {0.000}
CC-Ratio	+	0.0743* (0.0252) {0.0033}	
CC-Ratio-Dyn	+		0.2516* (0.0001) {0.000}
Ar(2)		-0.0056 (0.0276) {0.8395)	-0.0056* (0.0233) {0.000)
Model Parameters			
R^2		0.453	0.353
Adjusted R^2		0.381	0.279
F-statistic		6.293	4.788
Prob(F-stat)		0.00	0.00
Durbin-Watson		2.0	2.0
Period Hetero.Test		0.155	0.140
Cross-section Hetero.Test		0.378	0.625
Ramsey Reset test		0.292	0.452

Source: Researcher's compilation (2021) using Eviews 10. * sig @5%, ** sig @ 10

Table 4.3a show the results for the audit market concentration and audit quality regression using the concentration ratio for both the static and dynamic estimations. The R^2 for the static regression stood at 45.3% with an adjusted value of 38.1%. The F-stat is 6.293 (p-value = 0.00) is significant at 5%. The analysis of coefficients reveals that CC-Ratio has a positive (0.0743) effect on audit quality which is statistically significant at 5% (p=0.0033). The R^2 for the dynamic regression using seasonal decomposition values stood at 35.3% with an adjusted value of 27.9%. The F-stat is 4.788 (p-value = 0.00) is significant at 5%. The analysis of coefficients reveals that CCRatio-Dyn has a positive (0.2516) effect on audit quality which is statistically significant at 5% (p=0.000).

Table 4.3b. Audit Market Concentration and Audit Quality Regression

Variable	Aprori Sign	AQ	AQ-dyn
C	+	-0.1731 (0.1046) {0.0984)	0.0001 (0.000) {0.8649}
HH-Index	+	0.1339 (0.1333) {0.3153}	
HH-Index Dyn	+		0.0096* (0.0027) {0.0004}
Ar(1)		-0.1199* (0.0394) {0.0024)	-0.1199* (0.0394) {0.0024)
Model Parameters			
R^2		0.134	0.250
Adjusted R^2		0.032	0.155
F-statistic		1.309	2.625
Prob(F-stat)		0.042	0.00
Durbin-Watson		2.03	2.0
Period Hetero.Test		0.402	0.102
Cross-section Hetero.Test		0.601	0.583
Ramsey Reset test		0.502	0.451

Source: Researcher's compilation (2021) using Eviews 10. * sig @5%, ** sig @ 10

Table 4.3 b show the results for the audit market concentration and audit quality regression using the Herfindahl–Hirschman Index at both the static and dynamic estimations. The R^2 for the static regression stood at 13.4 with a significant F-stat of 259 (p-value = 0.00) at 5%. The analysis of coefficients reveals that HH-Index has a positive (0.1339) effect on audit quality though not statistically significant at 5% (p=0.3153). The R^2 for the dynamic regression using seasonal decomposition values stood at 25%. The F-stat is 2.625 (p-value = 0.00) is significant at 5%. The HH-Index-Dyn has a positive (0.0096) effect on audit quality which is statistically significant at 5% (p=0.004). Both dynamic estimation results using concentration ratio and Herfindahl–Hirschman Index all suggest that audit market concentration has a positive effect on audit quality in Nigeria which implies that increasing level of concentration has no impairing influence on audit quality. Instead, market concentration can have a net beneficial effect on quality as it helps audit firms to achieve scale economies in audit technology and resources. Our evidence indicates that competition can be improved by facilitating client mobility rather than by reducing market concentration. While we consider it possible that the introduction of joint audits in Nigeria which has also been suggested by the UK Competition & Markets Authority (2019) and the European Commission (2010), helps to stimulate client mobility without eroding large audit firms' economies of scale, we leave this issue to future research. The finding is supported by those of Boone, Khurana and Raman (2012) which find higher concentration with an increased audit quality, Guo (2016) which revealed that Big4 global firms enhances audit quality and is in fact associated with higher earnings quality and Limei, Ole-Kristian and Langli (2016) which find less earnings management and higher going-concern accuracy, after a switch from a non-Big-4 firm to a Big-4 firm. For switches from Big-4 firms to non-Big-4 firms, they find lower going-concern reporting accuracy and lower audit fees after the switch. However, some other studies found otherwise such as Velte and Stiglbauer (2012) which showed that audit market concentration cannot clearly be related to increase audit quality but increasing transaction costs, Jere, Michas and Seavey (2013) which find that in countries where there is a greater concentration within the Big4 group, they find that Big4 clients have lower quality.

5. Conclusion and Recommendation

Various stakeholders are concerned with the current structure of the market for audit services for various reasons. Prominent among these concerns are the problems of limited choice, systemic risk, uncompetitive pricing and lower quality of product or service. So audit market concentration when viewed from both regulatory and academic evidence by several studies of developed and developing economies in the literature is considered non desirable. Nonetheless, Nigeria audit market seems to be quite as they are yet to give enough attention to this growing trend in audit market concentration despite the global concerns. Ironically, the concerns of limited choice and lack of competition as a result of big4 dominance raised by several economies and global institutions are yet to receive any tangible solution. Our results reveal that using concentration ratio and Herfindahl-Hirschman Index all suggest that audit market concentration has a positive effect on audit quality in Nigeria which implies that increasing level of concentration has positive implications on audit quality. The study recommends the need for widespread commitment for on the part of all audit firms in the audit market to improve the audit quality. Also the study recommends that joint audits should be made mandatory in Nigeria as this can go a long way in also improving the proficiency non-big 4 firms.

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