THE EFFECT OF NON-AUDIT SERVICES ON AUDIT QUALITY

Sadiq Oshoke Akhor [*], Alexander Olawumi Dabor [**],
Kayode Ismaila Ashaju [***], Osagie Uwagboe Osifo [**], Friday Adoghe [****],
Frederick Ogbeide [*****], Joshua Edosa Aronmwan [******],
Timothy Onochonjo Usman [******], Sunny Ewan Aigbonmian [*******],
Onutomaha Dennis Akrawah [*******], Godwin Ohiokha [**],
Ajueyitse Martins Otuedon [********], Uwadiah John Oroboh [**],
Osarodion Famous Wilson [**]

[*] *Corresponding author,* Department of Accounting, Edo State University Uzairue, Iyamho, Nigeria
Contact details: Edo State University Uzairue, Km7, Auchi-Abuja Road, Iyamho, Edo State, Nigeria
[**] Department of Accounting, Edo State University Uzairue, Iyamho, Nigeria
[***] Finance and Accounts Department, Federal Medical Centre, Owo, Nigeria
[****] Treasury Department, Office of the Accountant General, Benin City, Nigeria
[*****] Department of Public Administration, Edo State University Uzairue, Iyamho, Nigeria
[******] Department of Accounting, University of Benin, Benin City, Nigeria
[*******] Department of Business Administration, National Institute of Construction Technology and Management, Uromi, Nigeria
[********] Department of Accounting, Chukwuemeka Odumegwu Ojukwu University, Uli, Nigeria
[*********] Department of Accounting, Igbinedion University, Okada, Nigeria

Abstract

Audit quality (AQ) is value-relevant if the information is capable of making a difference in the decisions taken by various stakeholders. Therefore, the provision of non-audit services (NAS) to clients, and auditors can create economic bonding and self-review threats that compromise independence and AQ (Friedrich & Quick, 2023). The study investigates the effects of NAS on AQ in the Nigerian insurance industry. The *ex-post facto* research design was adopted and data were sourced from the annual reports of the 22 insurance companies listed on the Nigerian Exchange Group (NGX) between 2015 and 2020 and sampled through a filtering method. The study used descriptive statistics, correlation matrix, and binary regression techniques to test the formulated hypotheses. The study made use of a binary logistic econometric approach because the dependent variable is a dummy variable assuming the value of "1" and "0". In agreement with the study of Pappert and Quick (2022), the regression results revealed that the provision of NAS, audit fees, and firm size significantly affect AQ in the Nigerian insurance industry, while auditor tenure had an insignificant effect on AQ. The study recommended that the provision of NAS should be strengthened and monitored to align with the list of services that auditors are not prohibited from rendering to the client.

Keywords: Audit Fees, Audit Quality, Auditor Tenure, Firm Size, Non-Audit Services

1. INTRODUCTION

The attention of researchers, investors, auditors, and regulators in recent times has been drawn to audit quality (AQ) and non-audit service (NAS) (Qawqzeh et al., 2018). The essence of an audit report is mainly to present relevant information regarding the reliability of the audited financial report, which in turn will lower the degree of information asymmetry and limit managerial discretion in accounting estimates (Public Company Accounting Oversight Board [PCAOB], 2016). AQ is seen as value-relevant if the information is capable of making a difference in the decisions taken by various stakeholders. AQ is paramount to "institutional investors, capital providers, employees, government, and researchers in decision-making concerning accounting information" (Al-Dmour et al., 2018, p. 256). AQ is the extent to which the audit conducted adheres to applicable auditing standards and regulations.

A NAS is an additional service rendered by an auditor in carrying out the audit engagement outside the scope of the audit work. Friedrich and Quick (2023) argued that NAS has been considered by Big 4 accounting firms for maintaining a high audit firm's reputation. NAS commands additional fees paid to the auditor for extra services carried out in auditing the financial statement of the client firm. Basioudis et al. (2012) asserted that the amount of audit fees paid to the auditor affects the auditor's independence of the auditors rather than the non-accounting fees. Audit fees are payments made to the auditor during the audit function and non-audit fee is the payments for other NAS carried out by the auditor which may not be part of the audit engagement negotiation. However, "the presence of audit committees may be primarily for the interest in negotiating a lower audit fee for their clients instead of going for higher audit quality that attracts a higher audit fee" (Asthana et al., 2019, p. 403).

Prior studies in Nigeria had explored audit fees and AQ without considering the effect of NAS on AQ (Akrawah & Akhor, 2016; Daferighe & George, 2020; Onatuyeh & Nwabuko, 2016; Monye-Emina et al., 2020). Therefore, the study addressed the gap in knowledge by sampling insurance companies to examine the effect of NAS on AQ in Nigeria for the period covering 2015 to 2020. This study added to the existing body of knowledge regarding the motivation to apply the true economic bonding that would be seen from abnormal fees for NAS which the ratio of non-audit fees to total fees may not capture.

The main purpose of this study is to investigate the effect of non-audit fees on AQ in the Nigerian Insurance industry. The specific objective is to investigate the effect of NAS on AQ in the Nigerian insurance industry, examine the effect of audit fees on AQ in the Nigerian insurance industry, assess the effect of firm size on AQ in the Nigerian insurance industry and determine the effect of auditor tenure on AQ in the Nigerian insurance industry. The hypotheses of the study are formulated in the alternative form in the section of the literature review. The study made use of a binary econometric approach to test the significant relationship between AQ and NAS because the dependent variable is a dummy variable assuming the values of "1" and "0".

The structure of other sections of this paper is as follows. Section 2 reviews the relevant literature. Section 3 states the methodology. Section 4 entails the analyses and results. Section 5 captures the conclusion and recommendations of the study.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Concept of audit quality

The auditors communicated to the shareholders based on the financial position of the company through the audited annual report and accounts (Gutierrez et al., 2016). Jonas and Blanchet (2000) also see AQ as the extent to which financial information is full and transparent but not misleading to users of accounting information. Financial statements (FS) ought to be understandable, relevant, reliable, and comparable if quality decisions are to be made by the stakeholders. This is because FS is a vital element necessary for a quality corporate governance system to function effectively and for the stakeholders to make economic decisions about their resources.

Agbaje and Dare (2018), added that "users of financial statement are managers of the firm, shareholders, employee, creditors, investors, government, journalists and other stakeholders of the company" (p. 66). Ding et al. (2007), argued that "adopting high-quality standards might be a necessary condition for high-quality information but not necessarily sufficient" (p. 27). However, the influence of the International Financial Reporting Standards (IFRS) on the quality of financial information is highly dependent on its actual implementations which vary across countries (Al-Refiay et al., 2023; Almaqtari et al., 2021). According to DeAngelo (1981), AQ is "seen as a market-assessed joint probability that the auditor detects an anomaly in the audited FS and reveals it out to the management and users of accounting information" (p. 183). DeFond and Zhang (2014) see AQ as the true representation of the FS with relevant information about the firm's financial conditions, and the firm's characteristics. In Nigeria, the need for high AQ is needed. Therefore, there should be timely financial information made available to users of accounting information. Lai (2023) added that non-audit fees do not have the potential to influence audit report lag for better AQ.

The motivation behind this study is the relationship between AQ and the provision of NAS and controlling for audit fees and auditor tenure to control for auditor-related attributes while the size of the firm is used as a control for company-specific attributes that can affect AQ. The outcome of this study is beneficial to audit professionals, accountants, management and policymakers of the insurance companies for the inclusion of NAS for improving the AQ.

2.2. Non-audit services and audit quality

The knowledge spillover effect hypothesis suggests that the provision of NAS enables the auditor to be more familiar with the client's accounting system and structure, which gives rise to audit efficiency. Conversely, the independence threat hypothesis posits that by providing NAS to clients, auditors can

create economic bonding and self-review threats that compromise independence and AQ. More so, when the ratio of the fees collected for the NAS is high. Therefore, based on these two competing views, it is clear that there exists a relationship between the quality of an audit and the provision of NAS. There are two common measures for NAS as seen in most studies. One is the proportion of fees paid for NAS to the total fees paid for audit and non-audit related services. This measure was first used by DeFond et al. (2002) and has equally been used by others (Chu & Hsu, 2018; Hohenfels & Quick, 2020). This measure helps determine if the provision of NAS causes economic bonding that constrains the quality of the audit. However, Ruddock et al. (2006) argued that the desire for NAS may stem from financial health concerns and may not cause economic bonding. They further suggested that true economic bonding would be seen from abnormal fees for NAS which the ratio of non-audit fees to total fees may not capture. Based on this, other measures have been used in the literature. Chu and Hsu (2018) used abnormal non-audit fees captured as the residual obtained from regressing non-audit fees on itself and other control variables. Svanström (2013) used the logarithm value of the fees paid for NAS to capture the absolute level of fee dependence. Mahieux (2022) posited that incentives offered by auditors for NAS have the tendency to improve AQ. In line with Svanström (2013), this study uses the absolute value of the amount paid for NAS rendered by the auditor. The effect of the provision of NAS on AQ is significant. The study proposed that:

H1: There is a significant relationship between the provision of NAS and AQ.

2.2.1. Audit fees and audit quality

The audit fee is a monetary indicator of the audit efforts put into the audit. Higher audit fees infer more audit effort, which translates to AQ ceteris paribus. In addition, the efforts put into an audit increase with the complexity associated with the audit (Knechel & Sharma, 2012) and this is captured by the fees charged by the auditor. Pervasive fee refers to limited budgets as a result of audit fees received whereby audit firms usually absorb the costs of overruns (Hackenbrack & Hogan, 2005). Ohidoa and Okun (2018), added that "audit fees are the amounts of fees received by an auditor for carrying out an audit assignment on the accounts of the client firm" (p. 719). Besides, Akrawah and Akhor (2016) see audit rewards and incentives based on the fee received for the audit engagement. They defined audit fees as the sums payable to the auditor, for carrying out audit services offered to the auditing company. Brazel et al. (2016) maintained that auditors are aware that rewards and incentives are very rare due to costly skepticism. The effect of audit fees on AQ is significant. The study proposed that:

H2: There is a significant relationship between the audit fees and AQ.

2.2.2. Auditor tenure and audit quality

Auditors' tenure can be based on short-term audit assignments and long-term audit assignments. Qawqzeh et al. (2018) maintained that "auditor's tenure is the number of years an audit firm carried out audit assignment in a client or the number of years a company employs the same auditor" (p. 1318). The presence of a longer auditor's tenure might impair the independence of the auditor and professionalism of the auditing profession. Feleke (2017) stressed that a period of long audit tenure may cause an increase in the knowledge about the client's internal operations and reflect negatively on the auditor's independence concerning higher AQ. Moreover, a shorter auditor's tenure provides the audit firm with less knowledge about the client's internal control mechanism which may lead to a low level of AQ. The association between an audit firm and a company client could lead to the closeness of the auditing firm with its company client's management which in turn makes it difficult for the auditor to freely express his professional opinion. The effect of the provision of auditor tenure on AQ is significant. The study proposed that:

H3: There is a significant relationship between auditor tenure and AQ.

2.2.3. Firm sizes and audit quality

Firm size in alignment with the political power hypothesis suggests that large companies have the resources to engage industry specialists to audit and protect themselves from reputation and litigation damages associated with a bad audit. Also, large companies can set up sophisticated reporting structure and system that contributes to accurate reporting of accounting information, fewer errors, and better financial reporting quality (Svanström, 2013). Often assumed is that large audit firms provide a higher level of quality audits than smaller audit firms. It is also argued that AQ depends on the responsibility of the auditor to find a given offense and the possibility of reporting the discovered offense (DeAngelo, 1981). The effect of firm size on AQ is significant. The study proposed that:

H4: There is a significant relationship between the provision of firm size and AQ.

2.3. Empirical reviews

Pappert and Quick (2022) investigated the effect of the non-provision of NAS and statutory fee schedules on AQ in Germany. They made use of an experiment research design with the collection of German bankers and non-professional investors and an ordinary least squares (OLS) regression technique in the analysis of data. The results showed that non-provision of NAS, and statutory fee schedule influence AQ. Beardsley et al. (2021) conducted a study on the distraction effect of NAS on AQ. The regression results revealed NAS had a distraction effect on AQ. This implies that the essence of NAS enhances client financial statement restatements. Onatuyeh and Nwabuko (2016) studied the relationship between audit firm characteristics and litigation risk in Nigeria. They found out that "audit fee has a significant positive effect on audit litigation and quality while audit tenure and audit firm size were statistically insignificant and the non-audit fee was negatively related to litigation risk" (p. 153). Shakhatreh et al. (2020) studied the effect of audit fees, audit firm size, and audit opinion on AQ in Jordan. The study sampled manufacturing and

services companies listed on the Amman Stock Exchange (ASE) for the period from 2009 to 2016 and logistic regression was used to test the stated hypotheses. The results showed that audit fees exert a positive effect on AQ. Daferighe and George (2020) used a "sample of twenty-two (22) listed manufacturing firms in Nigeria to examine the impact of audit firm attributes on the AQ" (p. 43). The study made use of an *ex-post facto* research design and secondary data collected from 2011 to 2015 from the audited annual reports. Multivariate regression was used in the analysis of data. The empirical evidence revealed that audit fees exert a significant impact on AQ while audit firm size exerts an insignificant impact on the AQ. Babatolu et al. (2016) examined the effect of auditor's independence on AQ of selected deposit money banks in Nigeria and found that audit firm rotation exerts a positive relationship with AQ while there is a negative relationship between audit firm tenure and AQ. Ilaboya and Ohiokha (2014) conducted a study on audit firm characteristics and AQ in Nigeria and established that a significant positive relationship exists between firm size, board independence, and AQ. They also found a significant negative relationship between auditor independence; audit firm size, audit tenure, and AQ. Mahieux (2022) did a study on auditors' incentives and AQ in relation to NAS and contingent audit fees. The empirical results showed that NAS had a significant negative effect on AQ.

2.4. Theoretical reviews

The underlying theory of NAS and AQ will be reviewed below. The anchored theory is the agency theory.

2.4.1. Agency theory

The agency theory was propounded by Jensen and Meckley (1976). The agency cost faced by shareholders is reflected in the pervasive fees charged by audit firms to carry out an audit. The auditor, the agent is always aware of the NAS rendered, and this results in additional fees charged outside the purview of the audit engagement. Agency theory is a useful economic theory of accountability that explains the development of the audit. Casterella et al. (2007) affirmed that the inability of the principal to monitor the activities of the agents is due to information asymmetry. The theory describes the conflicts that arise as a result of the separation of ownership and control. There is considerable information asymmetry between the agent and the principal. Auditors serve to reduce agency costs by reducing this information asymmetry. The auditors (agents) are vested with the resources of the firm in order to render AQ either quantitatively or qualitatively. In the market for professional services, high-quality services involving the disclosure of critical audit matters are normally associated with higher costs resulting from the NAS. Generally, the increased audit costs from NAS may be due to the amount of effort that has been devoted to the audit procedure (more audit hours) or greater audit experience (higher price per hour).

3. RESEARCH METHODOLOGY

3.1. Research design

This study relied on the *ex-post facto* research design in investigating the relationship between the provision of *NAS* and *AQ*. This design is appropriate as it helps to investigate events that have already happened before the time, they are been studied thus restricting the ability of the investigator to interfere with the outcomes. The population of the insurance company in the Nigerian Exchange Group (NGX) was thirty-five (35). Therefore, the filtering method was introduced based on the available financial information from the period of 2015 to 2020. A sample of twenty-two (22) insurance companies listed on the NGX within the period under review (2015–2020) through the filtering method. The choice of this sector is premised on the fact that the companies in this sector are the only ones that sufficiently disclose information on *NAS*. The data for the study are secondary and were collected from the annual reports of the sampled companies for the respective years. These reports are publicly available on the sites of these companies. The study used descriptive statistics, correlation matrix, and binary regression techniques to test the formulated hypotheses.

3.2. Model specification

Consequently, the model for the study is presented in Eq. (1).

$$AQ_{it} = \beta_0 + \beta_1 NAS_{it} + \beta_2 AUDF_{it} + \beta_3 AUDT_{it} + \beta_4 FSIZE_{it} \qquad (1)$$

where,
- *AQ* — audit quality;
- *NAS* — non-audit services;
- *AUDF* — audit fees;
- *AUDT* — auditor tenure;
- *FSIZE* — company/firm size.

The *a priori* expectations were predicted as $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 < 0$, and $\beta_4 > 0$.

Table 1. Measurement of variables

No.	Variable	Code	Variable type	Measurement	Source
1	Audit quality	*AQ*	Dependent	Dummy variable: 1 for Big 4, 0 for non-Big 4	Asiriuwa et al. (2018)
2	Non-audit services	*NAS*	Independent	Total fees paid by the client for NAS and consultancy	Svanström (2013)
3	Audit fees	*AUDF*	Control	Fees paid by the client for audit service	Akrawah and Akhor (2016)
4	Auditor tenure	*AUDT*	Control	Number of years spent as the auditor	Onatuyeh and Nwabuko (2016)
5	Company/firm size	*FSIZE*	Control	Log of total asset	Svanström (2013)

Source: Authors' elaboration.

4. RESULTS AND DISCUSSION

In this section of the study, some techniques like descriptive statistics, correlation matrix, binary regression as well as a robustness check were used in ascertaining the results of the research.

4.1. Descriptive statistics

The descriptive statistics of the variables in the sample are shown in Table 2. Note, that *AQ* was measured as a categorical variable that represented one (1) for Big 4 auditors and zero (0) for non-Big 4.

Table 2. Descriptive statistics

Variable	Mean	Max	Min	Std. dev. (SD)	Skewness
AQ	0.629	1.000	0.000	0.485	-0.533
NAS ('000)	132,492.10	467,270.00	700.00	128,114.70	1.16
NAS (%)	0.642	0.970	0.000	0.329	-1.072
AUDF ('000)	23,506.61	80,364.00	5,256.00	17,358.58	1.32
AUDT	3.720	13.000	1.000	2.425	1.313
FSIZE	16.905	18.895	15.211	0.882	0.402

Source: Authors' elaboration.

Based on the statistics (Mean = 0.629, SD = 0.485) as seen in Table 2, it is safe to infer that a good number of insurance companies employ the services of Big 4 auditors as such, the quality of the audit may be adjudged high. The statistics for non-audit service especially the maximum value of about ₦467 million suggests that payments for consultancy and professional services within the industry are very high. This is not surprising considering the high level of risk, litigations, and investigations associated with this sector. However, the payment for *NAS* is widely dispersed and not uniform within the industry as observed from the large standard deviation. In terms of ratio (*NAS*, %), fees paid by insurance companies for audit consultancy and professional services are about 64% on average. This percentage, being above 50% indicates that more value is paid for *NAS* than for audit services. The amount paid for *AUDF*, which has a maximum value of about ₦80 million and a minimum value of ₦5.2 million, is skewed to the right indicating more companies pay above the median fees in the industry. In addition, the amount paid for audit services is also not uniform within the industry. The statistics for *AUDT* (Mean = 3.7, SD = 2.4) reveal that auditors tend to spend about 4 years on average with their clients. However, the maximum value of 13 suggests a likely violation of the 10-year ceiling fixed for the audit client relationship. If such a trend is allowed to continue, this may lead to regulatory breakdown and familiarity threats capable of ruining audit quality.

4.2. Correlation analysis

Correlation analysis helps to investigate the association between variables on a univariate basis. Furthermore, it can also be a prima facie test for multicollinearity. The closer the correlation coefficient (*r*) is to 1, the stronger the association between the variables.

Table 3. Correlation matrix

	AQ	NAS	AUDF	AUDT	FSIZE
AQ	1				
NAS	0.368*	1			
AUDF	0.481*	0.495*	1		
AUDT	-0.068	0.190**	0.015	1	
FSIZE	0.390*	0.765*	0.731*	0.112	1

*Note: *, ** significance level at 1% and 5%.*
Source: Authors' elaboration.

From Table 3, the extent of associations between *AQ* and all the independent/control variables is fairly strong apart from *AUDT* which has very weak correlation coefficients (r = -0.068). Coincidentally, this variable also has an inverse association with audit quality. Consequently, companies with high *AQ* are likely to be big companies, and pay heavily for audit services and *NAS* but are less likely to have a long auditor-client relationship. In addition, surface analysis of the correlation between the independent/control variables reveals the absence of multicollinearity as the largest correlation coefficient between these is 0.76 (*NAS – FSIZE*).

4.3. Binary regression

However, due to the nature of the dependent variable, the binary regression technique was deemed appropriate for estimating the model for the study. To ensure the reliability of the results, the Hosmer-Lemeshow tests for goodness of fit, the likelihood-ratio (LR) statistics for model specification, and the Nagelkerke R-square for explained variation were reported.

Table 4. Binary regression result

Variable	β	Wald	Sig.	Exp(β)
NAS[a]	0.000	4.455**	0.035	1.000
AUDF[b]	0.000	12.687*	0.000	1.000
AUDT	-0.087	0.723	0.395	0.917
FSIZE	-3.570	5.802**	0.016	0.028
C	22.501	5.128**	0.024	
Nagelkerke R-square			0.491	
-2 Log-likelihood			93.523	
Classification accuracy			77.4	
LR statistic			49.426*	
LR Prob. χ(4)			0.000	
H-L Stat. Prob. χ(8)			0.402	

*Note: *, ** significance level at 1% and 5%.*
[a] The absolute value of β is 0.000008.71, therefore, eβ is 1.00000871 indicating a very tiny size effect of 0.000871%.
[b] The absolute value of β is 0.000203, therefore, eβ is 1.0002030206 indicating a small size effect of 0.02%.
Source: Authors' elaboration using SPSS software.

From Table 4, the insignificant p-value of the Hosmer-Lemeshow statistics (p = 0.402) reveals that the goodness of fit of the model is satisfactory. The significant p-value of the LR statistics (p < 0.001) for model specification indicates the model is well-specified and reliable for a policy decision. Furthermore, the Nagelkerke R-square of 0.491

suggests that the explained variation in *AQ* based on the explanatory variables is about 49% and the model correctly classifies 77.4% of cases. Conclusively, the overall result of the binary logistic regression indicates that there is a significant association between the provision of *NAS*, the amount paid as *AUDF, AUDT, FSIZE*, and *AQ* ($\chi^2(4) = 49.426$, p < 0.001).

Looking at the Wald statistics and associated p-values, we found that *AUDF* has a significant and positive relationship (p < 0.001) with *AQ* at a 5% level of significance. The odd ratio ($e\beta > 1$) reveals that for every 10000-unit increase in *AUDF*, the odds of having a quality audit also increase by 0.02%. The result was supported by the findings of Daferighe and George (2020) and Shakhatreh, et al. (2020) that *AUDF* exerts a significant impact on *AQ*. The tenure of the auditor (*AUDT*) is not significantly related (p = 0.395) to *AQ*. The odd ratio ($e\beta = 0.917$) reveals that for each year the auditor is retained, the odds of having an *AQ* decrease by 8.33%. This means that companies with increasing years of auditor-client relationships are less likely to be associated with an *AQ*. The result was supported by the findings of Onatuyeh and Nwabuko (2016) that the auditor's tenure was insignificant on *AQ*. Firm size (*FSIZE*) has a significant relationship (p = 0.016) with *AQ* and the odds ratio ($e\beta = 0.028$) suggests that an increase in the size of a firm is associated with a decrease of 97.2% in the likelihood of having *AQ*. The result was supported by the findings of Ilaboya and Ohiokha (2014) that a significant positive relationship exists between *FSIZE* and *AQ*. Lastly, *NAS* is statistically significant (p = 0.03) and positively affects audit quality. The odd ratio ($e\beta > 1$) shows that for every 10000-unit increase in the amount paid for *NAS*, the odds of having an *AQ* increase by

a minute factor of 0.0871. Therefore, we submit that the provision of *NAS* is associated with higher *AQ* thus supporting the knowledge spillover effect hypothesis although our findings suggest that the spillover effect experience in Nigeria is very marginal. The result was supported by the findings of Pappert and Quick (2022) and Mahieux (2022) that *NAS* had a significant effect on *AQ*.

4.4. Robustness check

To investigate the consistency of the results established in Table 4, we capture *NAS* using two other alternative measures. The variable *NAS* is highly skewed, therefore, with reference to the median, we reclassified it (1 = fees above the median value, 0 = fees below the median value) and named it *NASMED* (see Panel A of Table 5). We also capture measure *NAS* as the ratio of fees paid for *NAS* to the total fees paid for audit and non-audit related services. This is in line with DeFond et al. (2002) and Chu and Hsu (2018). In the Nigerian business environment, the Regulation on the Adoption and Compliance with Audit Regulations 2020 issued by the Financial Reporting Council of Nigeria (FRCN) advised a limit on permissible *NAS* of not more than 80% of the annual *AUDF* paid for the statutory audit of a parent and its subsidiaries. Therefore, to suit this measure in the context of the Nigerian business environment, we created an indicator variable *RNAS90* (1 = ratio above 90%, 0 = ratio below 90%). We used 90% instead of 80% because data were gathered from the single FS of companies and not the consolidated statements. The results for both measures are presented in Panels A and B of Table 5 respectively.

Table 5. Robust estimation

Variable	Panel A				Panel B			
	β	Wald	Sig.	Exp(β)	β	Wald	Sig.	Exp(β)
NASMED	1.367	4.646**	0.031	3.924	-	-	-	-
RNAS90	-	-	-	-	2.552	10.028*	0.002	12.84
AUDF[a]	0.000	19.442*	0.000	1.000	0.000	23.117*	0.000	1.000
AUDT	-0.093	0.964	0.326	0.911	-0.144	1.944	0.163	0.866
FSIZE	-4.131	8.67*	0.003	0.016	-4.913	10.832*	0.001	0.007
C	25.99	7.661*	0.006		31.049	9.646*	0.002	
Nagelkerke R-square			0.538				0.582	
-2 Log-likelihood			107.946				100.834	
Classification accuracy			75.8				81.1	
LR statistic			66.188*				73.299*	
LR Prob. χ(4)			0.000				0.000	
H-L Stat. Prob. χ(8)			0.137				0.935	

*Note: *, ** significance level at 1% and 5%.*
[a] In Panel A, the absolute value of β is 0.000254, therefore, eβ is 1.0002540323 indicating a small size effect of 0.0254%. In Panel B, the absolute value of β is 0.000303, therefore, eβ is 1.0003030459 indicating a small size effect of 0.0303%.
Source: Authors' elaboration using SPSS software.

From Panel A of Table 5, we observe a significant p-value of the LR statistics (p < 0.001) for model specification indicating that the model is well specified. Furthermore, the explained variation in *AQ* based on the explanatory variables is about 54% and the model correctly classifies 75.8% of cases. The overall result of the binary logistic regression indicates that there is a significant association between the provision of *NAS*, the amount paid as *AUDF, AUDT, FSIZE*, and *AQ* ($\chi^2(4) = 66.18$, p < 0.001). *NASMED* is statistically significant (p = 0.031) and positively affects *AQ*. The odd ratio ($e\beta = 3.924$)

shows that for a unit increase in the amount paid for *NAS*, the odds of having a quality audit increase by a minute factor of 2.924. From Panel B of Table 5, we observe a significant p-value of the LR statistics (p < 0.001) for model specification indicating that the model is also well specified. Furthermore, the explained variation in *AQ* based on the explanatory variables is about 58% and the model correctly classifies 81.1% of cases. The overall result of the binary logistic regression indicates that there is a significant association between the provision of *NAS*, the amount paid as *AUDF, AUDT, FSIZE*, and

AQ (χ^2(4) = 72.29, p < 0.001). *RNAS90* is statistically significant (p = 0.002) and also positively affects audit quality. The odd ratio ($e\beta$ = 12.84) shows that for a unit increase in the ratio of fees paid for *NAS* to total fees, the odds of having an *AQ* greatly increase by a factor of 11.84.

The results from both panels reinforce the earlier findings that the provision of *NAS* is associated with higher *AQ*.

5. CONCLUSION

The objective of the study was to investigate the nexus between non-audit services and audit quality in the Nigerian insurance industry. The ex-post research design was adopted and data were sourced from the annual reports of the 22 insurance companies listed on the Nigerian exchange market between 2015 and 2020. The binary logit regression technique was employed in estimating the model and the results revealed that the provision of non-audit services is associated with higher audit quality thus supporting the knowledge spillover effect hypothesis although the spillover effect was sensitive to the measures used to capture non-audit services.

Based on the findings, the study, therefore, concludes that the provision of non-audit services, audit fees, and firm size significantly affects audit quality in the Nigerian insurance industry while auditor tenure had an insignificant effect on audit quality.

Prior studies depict that the rendering of non-audit service by external auditors had economically enhanced the audit quality of the insurance sector in a developing economy like Nigeria. However, the evidence revealed by the findings of Pappert and Quick (2022) and Mahieux (2022) is a prerequisite for obtaining better quality financial reporting.

The study recommended that the provision of non-audit services should be strengthened and monitored to align with the list of services that auditors are not prohibited from rendering to the client. Future researchers can examine the relationship between various categories of non-audit services and audit quality using other sectors in Nigeria. By implication, it had been reflected from the outcome of the study that the presence of non-audit services is strongly influenced by audit quality. That means in practical terms, the rendering of non-audit services by Big 4 audit firm with reasonable experience lead credence to disclosure of good news in audited annual reports and accounts of insurance companies.

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