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THE EFFECT OF AUDIT COMMITTEE ATTRIBUTES ON RISK DISCLOSURE OF LISTED FIRMS IN EMERGING ECONOMIES

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ABSTRACT

Purpose: *Effective corporate governance mechanisms, particularly audit committees, reduce information asymmetry and strengthen risk management oversight and disclosure. This study investigates the effect of audit committee attributes on risk disclosure practices of listed oil and gas firms in Nigeria.*

Methodology: *Data were collected from annual reports & accounts spanning 2016 to 2025. Descriptive statistics summarized the variables, Pearson correlation analysis examined relationships, and multiple regression techniques were applied, given the panel nature of the data. Panel-Corrected Standard Error (PCSE) estimation was used to ensure robust results.*

Findings: *The results indicate that Audit Committee Independence (ACI), Audit Committee Meetings (ACM), and Audit Committee Size (ACSIZ) have significant positive effects on risk disclosure among listed oil and gas firms in Nigeria. In contrast, Audit Committee Financial Expertise (ACFEXP) shows a inverse effect on risk disclosure. These findings highlight that independence, meetings, and committee size are crucial in reducing information asymmetry and ensuring comprehensive disclosure, while expertise alone may not enhance disclosure practices.*

Conclusion: *Audit committee independence, meeting regularity, and committee size play a vital role in promoting transparency and accountability in listed oil and gas firms. However, financial and risk expertise of committee members does not necessarily improve disclosure.*

1. Introduction

The multifaceted technological advancement, coupled with the complexity and uncertainty in the global markets triggers the need for more sophisticated and sufficient risk disclosure. Risk disclosure informs users about any past or future possibility of any hazard, danger, harm, threat, or exposure that may have a direct effect on the company's prospects (Linsley & Shrives, 2006). Thus, risk disclosure should be substantive and sophisticated enough to provide future estimates and projections about the investment and reporting

entity's prospects to equip the users with detailed and sufficient information to serve as the basis for their decisions.

Despite the significance of risk disclosure, companies are performing below expectations in disclosing risk-related information that will alert users about the associated risks of an organization. Risk reporting tends to be more of non-financial than financial, historical rather than future-orientated, good news rather than bad, and qualitative rather than quantitative (Elshandidy, Neri & Guo, 2018). Accordingly, stakeholders, including shareholders, need more information concerning firms' risks and their management (Muzahem, 2011). Failure to recognize and manage risks can adversely affect companies and other stakeholders, including investors, suppliers, creditors, employees, customers, taxpayers, and the immediate community (Samaila, 2014; Jia, 2017). Succinctly, inadequate and insufficient risk disclosure may deter investors and other stakeholders from adequately evaluating a firm's risk profile.

The board of directors is responsible for defining the company's risk profile, risk appetite, and risk limit and overseeing the integration of the risk monitoring system into the company's operations (IASB, 2010). However, board can delegate the risk management task to the board sub-committee (audit committee), even though it is legally responsible for that (Viljoen, Bruwer & Eslin, 2016). The main responsibilities of the audit committee are to oversee the financial reporting process (Bedard & Gendron, 2010), ensure the existence of effective external control to safeguard against risk, and ensure that corporate reports and other disclosures to shareholders are adequate, relevant, and faithfully presented (Zhang, Taylor, Qu & Oliver, 2013). Thus, an effective corporate governance mechanism should enable the board to discharge its risk management duties effectively.

Interest in corporate information has increased among users who demand clear, relevant, precise, and timely information about firms' financial performance and other facets of firms' activity, especially those related to social issues and corporate risks (Madrigal, Guzman & Guzman, 2015). Risk disclosure will assist investors in assessing the information disclosed by a firm to establish the level of different types of risks in a firm and make economic decisions based on the risk-return relationship (Cabedo & Tirado, 2004). Thus, corporate risk disclosure is of imminent importance for the efficient capital market, investors, government, employees, and other stakeholders as it assists them in making informed decisions.

However, most reporting entities are disclosing risk-related information to comply with the regulatory requirements rather than to alert users about the risk associated with the prospects of the reporting entities. Corporate risk disclosure has been deficient and limited (Linsley & Shrives, 2000; Lajili & Zegal, 2005; Linsley & Shrives, 2006; and Amran, Bin & Hassan, 2009) and lacks informational content (Gaulin, 2017). In the same vein, Habtoor, Ahmad, Baabbad, Masood, Mohamad, and Che-Haat (2018) explained that, corporate risk disclosure used to be brief, generic, ambiguous, scattered, insufficient, backward-looking, qualitative and lacking comparability, readability, uniformity, and coherence.

Prior studies investigated the impact of audit committee attributes on risk disclosure. These include Abdullah, Abdul-shukor, and Rahmat (2017), Ankama (2018), Elghafar, Abotalib and Khalid (2019), Elfeky, Fank and Isa (2019), Salem, Ayadi and Hussainey (2019), Zango (2019), Augustin et al. (2019), Ahmad, Muhammad and Narullia (2021), Yamani, Hussainey and Albitar (2021), Alshirah, Alshirah and Latfi (2021), Kyari, Tahir and Waziri (2020), Rahayu et al. (2022); Fasihi and Barshad (2023) and Almunawwaroh and Setiawan (2023).

However, the findings of these studies were mixed, and inconsistent. Yamani, Hussainey and Albitar (2021) found that audit committee size and meetings significantly affect financial risk disclosure of listed banks in

Gulf Cooperation Council (GCC) markets. The finding was inconsistent with that of Zango (2019) and Mukhibal, Nurkhin and Rohman (2020), who found that audit committee size and meetings do not influence financial risk disclosure of listed banks on the Nigerian Stock Exchange. Similarly, a study carried out by Kyari, Tahir and Waziri (2020) revealed that audit committee independence and expertise affect the risk disclosure of listed banks in Nigeria. This finding conflicts with Abdullah et al. (2017) whose results show that audit committee independence and expertise does not affect the financial risk disclosure of the listed firms in Malaysia. A most recent study by Almunawwaroh and Setiawan (2023) revealed that audit committee meeting and size do not impact risk disclosure of the listed banks in Indonesia. The results contradicted that of Fasihi and Barshad (2023), which shows that audit committee size significantly affects the level of risk disclosure of the sampled companies.

Furthermore, some studies in the extant literature employed fewer audit committee attributes (Augustin et al., 2019; Mukhibal et al., 2020; Ahmad et al., 2021; Yamani et al., 2021; Fasihi and Barshad, 2023; and Almunawwaroh and Setiawan, 2023). Accordingly, some of these studies concentrated on the volume (quantity) of risk disclosure rather than the informativeness of the risk-related information disclosed by the reporting entities. Moreover, majority of studies in the extant literature were carried out in the banking and insurance industries, with less focus on the oil and gas industry.

It is in light of the limitations pointed out in the existing literature that this study becomes necessary. The study incorporates broader audit committee attributes such as: independence, expertise, size, and meetings. It also addresses the limited period covered by the prior studies to cover a period from 2016 to 2025. Furthermore, the study concentrates on a vital, but unexplored sector to examine the effect of audit committee attributes (proxied by independence, expertise, size & meetings) on risk disclosure of listed oil and gas firms in Nigeria.

2.0 Literature Review and Hypotheses Development

2.1 Risk Disclosure

Risk Disclosure refers to the dissemination of risk-related information in the annual report of the reporting entity, aimed to alert the users of any prospects of the company and possibilities that might hinder its realization. It refers to narrative descriptions provided outside the corporate financial statement in the management discussion and analysis (Miihkinen, 2013). Risk disclosure is accompanied by risk management disclosure to reveal the management's ability to manage external factors faced by the management (Anthony & Godwin, 2016). Thus, sufficient, comprehensive, systematic, and reliable corporate risk disclosures are vital to stakeholders, including shareholders, investors, lenders, suppliers, employees, reporting firms' and other stakeholders. A series of prior studies used quantity to measure the extent of risk disclosure quality (Alzead, 2017; Bako, 2017; Hussainey & Mouselli, 2014). These studies assumed that the quantity of disclosure signifies its quality. In the same direction, Alzead (2017) argues that quantity is a satisfactory measure of the quality of risk disclosure.

2.2 Audit Committee and Risk Disclosure

The Cadbury Committee (1992) defined Audit Committee as a sub-committee of the main board comprising mainly independent directors or non-executive directors, saddled with the responsibility for overseeing auditing activities. A presence of an audit committee is an eminent corporate governance mechanism in overseeing financial reporting (BRC, 1999). The significant role of the audit committee has gained momentum in the wake of corporate governance failures and scandals around the world, as the committee

is seen as an effective corporate governance mechanism in detecting and forestalling corporate misconduct. The primary task of the audit committee is to oversee the financial reporting process, monitor managers' tendencies to manipulate earnings, and increase the audit quality (Isa & Farouk, 2018).

Audit committees help improve firms' ethical disclosure and effectively monitor management (Othman, Ishak, Arif & Aris, 2014). The audit committee is a monitoring device that reduces information asymmetry (Barako et al., 2006; Akhtaruddin & Haron, 2010; Dhaliwal et al., 2010). Additionally, Madi, Ishak, and Manaf (2014) contend that the audit committee maintains and enhances risk confidence in the credibility and objectivity of financial reporting by improving the disclosure practice of the published information. The committee can help prevent illegal activities, improve financial reporting, and present transparent and reliable financial reports and information (Fakari & Pitenoei, 2017). An effective audit committee will enhance the financial reporting process, reduce information asymmetry and ensure the existence and implementation of effective risk strategies that will secure and safeguard the operating effectiveness of an entity.

It has been documented in the extant literature that the effectiveness of an audit committee is significantly influenced by its attributes. Appuhami and Tashakor (2017) contend that an audit committee with sufficient attributes influences the financial and non-financial disclosure levels. Similarly, audit committee characteristics, including independence, size, expertise, and meetings, are more likely to support the board of directors in overseeing risk management activities (Alzharani and Aljaaidi (2015).

2.3. Review of Empirical Studies

2.3.1 Audit Committee Independence and risk disclosure.

Audit committee independence is operationalized as the proportion of independent non-executive directors serving on the audit committee relative to its total membership. Independence is a major characteristic of the audit committee's effectiveness (Klien, 2002). An independent audit committee can effectively discharge its management oversight function, which will subsequently reduce Agency problems and information asymmetry (Fama & Jensen, 1983). The independent directors on the audit committee have more opportunities to detect and curtail management's opportunistic behavior (Allegrini & Greco, 2013). Accordingly, independent audit committee members are more objective and less likely to overlook possible deficiencies in the manipulation of financial reports (Abbott, Parker, and Peters, 2004; Anis, 2016; Albawat, 2022). Agency Theory proposes that the independent audit committee is more likely to act in the best interests of the firm's investors in terms of decreasing information asymmetry (Taylor, 2011). Thus, to ensure the independence of the audit committee, there should be an equal or sufficient shareholders representative in the committee.

An investigation carried out by Zango (2019) reported that audit committee independence influences risk disclosure of the listed banks in Nigeria. Similarly, Kiflee et al. (2019) found that audit committee independence increases risk disclosure of the listed firms in Malaysia. More so, a study conducted by Kyari, Tahir and Waziri (2020) revealed that audit committee independence and expertise affect the risk disclosure of listed banks in Nigeria. The findings contradicted those of Yamani et al. (2021) and Fasihi and Barshad (2023) who documented that audit committee independence does not influence risk disclosure. In line with the forgoing, the following hypothesis was developed:

These inconsistent findings suggest that the relationship may vary across countries, industries and institutional environments. Moreover, limited evidence exists regarding listed oil and gas firms in Nigeria.

Therefore, this study examines the extent to which audit committee independence influences risk disclosure among listed oil and gas firms in Nigeria. Based on the above forgoing, the following hypotheses is developed:

$H0_1$: Audit committee independence does not have a significant impact on risk disclosure of listed oil and gas firms in Nigeria.

2.3.2 Audit committee expertise and risk disclosure.

Audit committee expertise refers to the extent to which members of an audit committee possess the accounting, auditing, financial, and related professional knowledge and experience necessary to effectively perform their monitoring and risk management oversight responsibilities. The competency of the audit committee is perceived to be higher when the committee is composed of members with accounting and financial expertise (Samaila, 2014). The expertise of audit committee members significantly influences the committee's ability in discharging their responsibilities. Similarly, Dionne et al. (2015) argue that finance and accounting education will improve risk management's effectiveness. More so, Zango (2019) contends that audit committee expertise will improve financial reporting disclosure quality. The Upper Echelons Theory associates risk-taking tendencies with top managers' educational background (Hambrick & Mason, 1984). Hence, an effective audit committee with qualified and experienced members will protect the stakeholders' interests by ensuring reliable financial reporting, effective internal controls, and risk management.

Kyari, Tahir and Waziri (2020) revealed that audit committee expertise influence the risk disclosure of listed banks in Nigeria. Accordingly, audit committee expertise was found to have significant impact on the risk disclosure of the listed firms in Indonesia (Ahmad et al., 2021; Almunawwaroh & Setiawan, 2023). Conversely, the finding conflicted those of Alshirah, Alshirah and Lutif (2021) and Fasihi and Barshad (2023) who found that audit committee expertise does not affect risk disclosuree. Based on the above forgoing, the following hypotheses is developed:

$H0_2$: Audit committee expertise does not have a significant impact on risk disclosure of listed oil and gas firms in Nigeria.

2.3.3 Audit committee size and risk disclosure.

Audit committee size refers to the number of the committee members. As amended, section 404 (3) of CAMA 2020 provides that the maximum number of audit committee members should be at most five (5) but remains silent about the minimum number. The size of the audit committee has been tipped to influence the effectiveness of the committee. Jensen (1993) argues that a large audit committee size may result in richer expertise and diversity. Additionally, Kalbers and Fogarty (1993) contend that a larger audit committee is more likely to improve the committee's status and power within an organization and thus enhance the audit quality. In the same direction, Shatnawi et al. (2019) posit that substantial audit committee members may offer valuable expertise and experience in improving the quality of financial disclosure. More members in the audit committee will ensure high risk quality which will lead to richer voluntary risk management disclosure (Abdullah et al., 2017). Thus, a large and diversified audit committee guarantee skilled and experienced members that would enable the committee to discharge its risk management oversight and disclosure functions.

An investigation conducted by Yamani et al. (2021) found that audit committee size and meeting significantly affect financial risk disclosure of listed banks in Gulf Cooperation Council (GCC) markets.

Similarly, Alshirah et al. (2021) discovered that audit committee meeting increases risk disclosure of the listed firms in Jordan. More so, study conducted by of Fasihi and Barshad (2023) established that audit committee size significantly affects the level of risk disclosure of the listed firms in Iran. On the other side, the finding contradicted those of Zango (2019) and Mukhibal, Nurkhin, Rohman (2020), and Almunawwaroh and Setiawan (2023) who found that audit committee size does not influence financial risk disclosure.

The contradictory findings in the above foregone hints that relationship may differ across industries and institutional environment. Thus, this study investigates the effect audit committee size on risk disclosure in the listed oil and gas firms in Nigeria. Therefore, the following hypotheses is developed:

$H0_3$: Audit committee size does not have a significant impact on risk disclosure of listed oil and gas firms in Nigeria.

2.3.4 Audit committee meetings and risk disclosure.

Audit committee meetings can be defined as the meetings held by an audit committee over a financial year. The number of audit committee meetings is a perceived indicator of audit committee effectiveness as users of financial statements assume fewer meetings as an indicator of less commitment and insufficient time to oversee the financial reporting process (Mwangi, 2018). Audit committee meetings allows the members to ensure the integrity of financial reporting and provide better monitoring and effective review of the operations (Salloum, Azzi & Gebrayel, 2014; Abdul-Latif, Mohd, & Kamardin, 2022). Similarly, frequent meetings of audit committee can lead to informed decisions concerning accounting and auditing issues (Allegrini & Greco, 2013). Furthermore, audit committees with a high number of meetings will likely spot discrepancies and ensure the reliability of the corporate disclosure (Appuhami & Tashakor, 2017). Accordingly, the Agency Theory views meeting as an avenue through which a committee discusses significant matters that need to be addressed for the betterment performance of an entity (Vafeas, 1999). Succinctly, frequent committee meetings will enable committee members to substantively discuss and deliberate on vital issues that could affect the company's performance and future prospect.

A study conducted by Augustin et al. (2019) discovered that audit committee meetings increase risk disclosure of the listed firms in Jordan. More so, Elfeky et al. (2019) found that audit committee meetings significantly impacted on risk disclosure of the listed firms in Egypt. Furthermore, Yamani et al. (2021) found that audit committee meetings significantly affect financial risk disclosure of listed banks in Gulf Cooperation Council (GCC) markets. On contrary, a study conducted by Zango (2019) discovered that audit committee meetings do not increase risk disclosure of the listed banks in Nigeria. Accordingly, a recent study by Almunawwaroh and Setiawan (2023) revealed that audit committee meeting does not impact risk disclosure of the listed banks in Indonesia.

Hence, in line with inconsistent findings above, this study examines the influence of audit committee size on risk disclosure in the listed oil and gas firms in Nigeria. Thus, the following hypothesis was developed:

$H0_4$: Audit committee meetings do not have a significant impact on risk disclosure of listed oil and gas firms in Nigeria.

2.4 Theoretical Review

Several theories have been developed to highlight managerial motivation to disclose more risk related information. These theories seek to explain why managers disclose risk-related information, how corporate

governance mechanisms influence disclosure practices, and how companies respond to the information needs of shareholders and other stakeholders. Risk disclosure is particularly important because it provides information about uncertainties and potential events that may affect firm's financial position, operational performance, and future prospects. However, the extent of disclosure may be influenced by managerial incentives, the effectiveness of corporate governance mechanisms, as well as inherent characteristics of those responsible for monitoring corporate reporting.

This study adopts Agency Theory and Upper Echelons Theory to explain the relationship between audit committee attributes and risk disclosure among listed oil and gas firms in Nigeria. Agency Theory explains the monitoring role of the audit committee in reducing information asymmetry and managerial opportunism. Upper Echelons Theory explains how the characteristics, knowledge, and experience of individuals involved in corporate oversight may influence their judgments and decisions concerning risk reporting. Collectively, these theories provide complementary explanations for the expected relationships between audit committee independence, financial expertise, meeting frequency, size, and risk disclosure.

2.4.1 Agency theory:

Agency Theory is associated with the seminal work of Jensen and Meckling (1976), who explained the agency problems arising from the separation of ownership and control. Under this theory, shareholders (principals) delegate decision-making authority to managers (agents) to manage the firm's resources and pursue corporate objectives. However, differences in objectives and access to information may create conflicts between the two parties. The agency problems and information asymmetry among stakeholders result from the separation of ownership and control (Jensen & Meckling, 1976). Managers generally possess more detailed information about the firm's operations, financial condition, and risk exposures than shareholders. This information asymmetry may provide opportunities for managers to withhold unfavourable information, selectively disclose corporate risks, or present information in ways that protect their personal interests. Information asymmetry is the main agency-related problem of concern that arises potentially from the willingness of each agency party to conceal information from the other party.

Agency costs arise from the need to monitor managerial activities, establish appropriate incentives, and address conflicts between principals and agents (Jensen & Meckling, 1976). Corporate governance mechanisms, including the board of directors and its committees, are therefore important for reducing managerial opportunism and strengthening the credibility of corporate reporting. In this regard, the audit committee performs a monitoring function by overseeing aspects of financial reporting, internal control, audit activities, and the disclosure of relevant corporate information. An effective audit committee may constrain management's discretion over risk reporting and encourage the disclosure of material risks, thereby reducing information asymmetry between corporate insiders and external users of financial statements (Forker, 1992; Allegrini, 2011).

Previous studies have employed Agency Theory to explain the role of audit committees and other corporate governance mechanisms in promoting accountability and disclosure, including Bako (2017), Kyari et al. (2020), Ahmad et al. (2021), and Almunawwaroh and Setiawan (2023). In the context of this study, Agency Theory provides the principal explanation for how the attributes of the audit committee may influence management's risk-disclosure decisions.

2.4.2 The Upper Echelon Theory: The Upper Echelon Theory was first introduced in the strategic management literature by Hambrick and Mason (1984) to explain how the characteristics of senior organizational decision-makers influence strategic choices and organizational outcomes. The theory

proposes that corporate decisions are determined by executive's background characteristics (education, carrier experience, personalities, financial position and socioeconomic roots) which influences their decisions and judgments. These observable characteristics may impact on the behaviors, preferences, values (Velez-castrillon, 2012) and essential strategic decisions made by these central corporate managers (Al-magzom et al., 2016).

Hambrick and Mason (1984) proposed two units of analysis including the individual top executive, such as CEO and group of top management group. The scope of traditional definition of top management team covers only company's executives while a broader definition encapsulates the board of directors as well as the executives (Finkelstein & Hambrick 1996; Jensen & Zajac 2004 as cited in Velez-catrillon 2012). Accordingly, the extension of the upper echelons theory beyond the TMT to the study of the board of directors is pertinent, as they are more involved in strategy formulation and implementation (Velez-catrillon, 2012). Similarly, Mueller & Baker (1997) contended that the effect of the board or its committee attributes including size, independence, meetings, etc. on the strategic decisions with regard to profitability and financial reporting can be explained by the upper echelon theory (Mueller & Baker, 1997). Hence, the upper echelon theory can be extended to observe the influence of the background characteristics of the board audit committee members on the risk disclosure. The relevance of UET to audit committees lies in the recognition that the individuals responsible for oversight differ in their knowledge, professional backgrounds, experience, and capacity to interpret complex corporate information. These differences may affect how they evaluate management's reporting practices and respond to information about corporate risks. UET has been employed by previous studies, including Ali (2013) and Al-Magzom et al. (2016).

Different theories have been adopted to explain the relationship between audit committee and risk disclosure. Nonetheless, there is no consensus concerning a particular theory that best explains the inter-dependent relationship among the variables. These theories have been used interchangeably or rather competed with each other. However, these theories should complement each other rather than compete (Carpenter & Feroz, 1992). Accordingly, Zango (2019) argued that no single theory can comprehensively justify why companies disclose risk information in their annual report. Various studies in the extant literature employed more than one theory to direct their studies (Bako, 2017). Multiple theories stand to provide better explanations concerning corporate phenomena. Thus, this study will employ the Agency Theory and Upper Echelon Theory to direct it to explore the relationship between audit committee and risk disclosure.

3.1 Methodology

The study employed a correlational research design to explore the cause-effect relationship between audit committee attributes (proxied by independence, expertise, meeting, and size) on risk disclosure of the listed oil and gas firms in Nigeria. Hence, the study adopted a longitudinal panel research design, which facilitates the analysis of firm-level observations across both entities and time. The study population comprises all listed oil and gas firms in Nigeria. Presently as of 2025, there were (10) listed oil and gas firms in Nigeria that are quoted on the floor of the Nigerian Exchange (NGX) Limited (ngxgroup.com, 2025). The study employed a two-point filter to arrive at the working population. The first point filter is that a company must have been listed on NSE/NGX on or before 31st December 2016 and must have their published financial statements for the period covered by the study (2016 to 2025). Having applied this filter, the number of the listed oil and gas firms that formed the population reduced to eight (8) companies. Data for the study were collected from the annual accounts and reports of the sampled companies from 2016 to 2025. The data

generated were analyzed using STATA 17. The content analysis technique was used in this study to measure risk disclosure using sentences as a unit of analysis. The study employed a risk disclosure index utilized by Amran et al. (2009) with slight modifications. The risk disclosure index consists of 6 categories of risk and 30 risk-related items.

3.2 Variable and their measurement

The dependent variable (risk disclosure) of the study is measured by counting the number of risk sentences disclosed in the annual reports and accounts. To measure the audit committee attributes, the study employed four proxies including audit committee independence, expertise, meetings, and size. Firms' specific attributes including size, leverage, and profitability were adopted as the control variables to address the random variation that might affect risk disclosure resulting from influence of variables not capture in the model of the study. These attributes were found to have a certain degree of effect on corporate risk disclosure, as documented by previous studies (Linsley and Shrives, 2006; Ali and Taylor, 2014). The measurements of the study variables are presented in the Table below:

Table 1

Summary of Variables and their Measurements

VARIABLES	Constructs	ACRONYMS	MEASURES	SOURCE
Dependent Variable	Risk Disclosure	RD	Risk disclosure will be measured by the total number of risk disclosure sentences in the annual reports of the listed oil and gas firms in Nigeria.	Amran et al. (2009), Bako (2017).
Independent Variables	Audit Committee Independence	ACI	Measured by the number of independent directors in the committee to total committee members.	Albawat (2022), Fasihi & Barshad (2023)
Independent Variables	Audit Committee Expertise	ACFXEP	Determined by the ratio of the number of directors with academic or professional certificates in accounting, auditing finance, or risk management in the committee to the total number of directors in the committee.	Fasihi & Barshad (2023), Almunawwaroh & Setiawan (2023)
Independent Variables	Audit Committee Meetings	ACM	Measured by the frequency of the meetings held by the audit committee over the financial year.	Yamani et al. (2021), Fasihi & Barshad (2023)
Independent Variables	Audit Committee Size	ACSIZ	Determined by the number of audit committee members.	Kyari et al. (2020), Almunawwaroh & Setiawan (2023),
Control Variables	Size	SIZ	This will be determined by the logarithm of total assets at the end of each financial year	Jamil et al. (2022); Albawat (2022)

VARIABLES	Constructs	ACRONYMS	MEASURES	SOURCE
Control Variables	Leverage	LEV	This will be measured by the aggregate of long-term loans divided by total assets.	Bako (2017).
Control Variables	Profitability	ROE	Profitability will be measured by the return on equity (ROE) which will be determined by profit after tax divided by total equity.	Jamil et al. (2022); Albawat (2022)

Source: Developed from the literature reviewed (2026).

Note. The variable measurements are based on the cited studies. RD = risk disclosure; ACI = audit committee independence; ACFEXP = audit committee financial expertise; ACM = audit committee meetings; ACSIZ = audit committee size; SIZE = firm size; LEV = leverage; ROE = return on equity.

3.3 Model specification.

The study employed regression analysis to test the four hypotheses of the study. In line with prior studies (Augustin et al., 2019; Kyari et al., 2020; & Almunawwaroh and Setiawan, 2023), the following regression model was employed to estimate the predictive ability of Audit Committee attributes on Risk Disclosure:

$$RD=\beta_0 it+\beta_1 ACIit+\beta_2 ACEXPit+\beta_3 ACMit+\beta_4 ACSIZit+r_1 SIZEit+r_2 LEVit+r_3 PROFit+\varepsilon it\ldots$$

4.0 Results and discussions

4.1 Robustness Tests

The study conducted robustness tests to ensure the data set meets the underlying assumptions of regression analysis. The robustness tests are carried out to enrich and strengthen the validity of all statistical inferences for the study (Samaila, 2014). Thus, Normality, Multicollinearity, Heteroscedasticity, and Hausman specification tests were conducted in this study.

4.2 Descriptive Statistics

Table 4.2 summary statistics on the research variables

Table 4.1
Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Rd	80	15.6250	5.3613	7	32
Aci	80	0.2746	0.0809	0.17	0.5
Acexp	80	0.3089	0.0591	0.2	0.4
Acm	80	4.2000	0.6244	3	6
Acsiz	80	5.4375	0.7436	4	6
size (Million)	80	238,361	363,9815	10,588	1,751,612
Leverage	80	1.7513	0.6722	0.53	2.89
profitability (Million)	80	8,503	17,760	-41,384	92,111

Source: STATA output 17.0 based on data collected.

Table 4.1 presents the summary statistics on the study variables. It can be seen from Table 4.1 that risk disclosure (RD) has a mean of 15.6250, which showed that the average risk disclosure sentences disclosed by listed oil and gas firms in Nigeria is 16 sentences. A standard deviation of 5.3613 highlights a significant variation of risk disclosure among the sampled companies varying from the minimum of 7 and a maximum of 32 sentences. On the side of independent variables, Table 4.1 showed that ACI has an average value of 0.2746. The standard deviation to the tune of 0.0809 showed a low-level variation of independent directors from the minimum of 0.17 and a maximum of 0.5 in the audit committees of the sampled companies. More so, the mean value of 0.3089 ACEXP highlights that majority of the listed oil and gas firms have a moderate proportion of directors with expertise in their audit committee. This resonated with SEC (2011), provision which requires the inclusion of at least two members in the committee that could read and understand financial statement. The standard deviation of 0.0591 indicates an insignificant variation in the level of experts in the audit committees of the sampled companies. Furthermore, the results show that on average the sampled companies held four (4) meetings annually. The findings conformed with the provision of CAMA 2020 which requires companies to hold four meetings annually. A standard deviation of 0.6244 indicates a significant variation on the number of meetings held during the year among the sampled companies. This can be witnessed from the number of meetings held by the audit committees of the sampled companies, ranging from a minimum of 3 to maximum of 6 meetings during the period. Similarly, the results reveal that the average ACSIZ is 5 members, which is above the five members requires by CAMA 2020. A standard deviation to the tune of 0.7436 reveals a significant variation in the ACSIZ of the sampled companies from a minimum of 4 to a maximum of 6 members.

On the side of the control variables, the sampled companies have an average size of N238,361million. The results show a standard deviation of N3,639,815 million, implying a significant dispersion in sizes, ranging a minimum of N10,588 million and a maximum of N1,751,612 during the study period. Additionally, the results highlighted that the average leverage of the sampled companies is 1.7513. It also discloses a standard deviation of 0.6722, revealing a significant degree of leverage volatility between the sampled companies between a minimum of 0.53 to maximum of 2.89, respectively. Finally, the results show that on average the sampled companies made profit to the tune of N8,503 million. A standard deviation of N17,760 million highlights a high level of the variation of profitability among the sampled companies for the study period. This can be witnessed by the variation in the degree of profitability amongst them from a minimum of -N41,384 million (loss) to a maximum of N92,111 million profitability, respectively.

4.3 Correlation Analysis

The correlation analysis was used to explore the relationship between the study variables. The results of the analysis carried out on the data collected for the study period from the listed oil and gas firms in Nigeria are presented in Table 4.2. The correlation matrix Tables 4.2 presents the relationship between the study variables in the regression model. It showed the association between the explanatory variables and explained variable, and among the explanatory variables. The associations between the study variables are presented in Table 4.2:

Table 4.2
Correlation Matrix of the Dependent and Independent Variables

Variables	Rd	Aci	Acexp	Acm	Acsiz	Size	Leverage	Profitability
Rd	1.0000							
Aci	0.2632*	1.0000						
acexp	0.0266	0.0744	1.0000					
Acm	0.3668*	0.1143	0.2017	1.0000				
acsiz	0.2068	0.2437*	0.4894*	0.0545	1.0000			
Size	-0.2077	0.2378*	0.1769	0.0546	0.3205*	1.0000		
leverage	0.0132	-0.0925	-0.0806	-0.0959	-0.1452	-0.2366*	1.0000	
profitability	-0.1117	0.1840	0.1472	-0.0143	0.2105	0.6667*	-0.3943*	1.0000

Source: STATA output 17.0 based on data collected.

Note: "*" denotes statistical significance at the 5% level

Table 4.2 presents the correlation coefficient on the association between the dependent variable (risk disclosure) and audit committee attributes proxied by independence, expertise, meetings and size. It can be seen from Table 4.2 that each variable has a perfect linear association with itself, as indicated by the correlation coefficient values of 1.

The results revealed that ACI, ACEXP, ACM, ACSIZ, size, leverage and profitability have a correlation coefficient to the magnitude of 0.2632*, 0.0266, 0.3668*, 0.2068, -0.2077, 0.0132 and 0.1117 respectively with RD. This highlights that ACI, and ACM have a positive and significant correlation with RD, whereas ACEXP, ACSIZ and leverage are shown to have positive but insignificant correlation with RD. Similarly, Size and profitability are shown to have negative and insignificant correlation with RD. It can also be observed that the highest positive correlation is between the ACM and RD at the coefficient value of 0.3668*, indicating a positive but insignificant correlation. More so, the results show that the negative correlation is between size and risk disclosure and profitability to the tune of -0.2077 and -0.1117 respectively, signifying weak association among the variables.

Similarly, the results also revealed that all the independent variables are positively but insignificantly correlated with each other except between ACSIZ & ACI and ACSIZ & ACEXP, which are shown to have significant positive correlations to the tune of 0.2437* and 0.4894* respectively. Accordingly, it can also be observed that the highest positive correlation among the independent variable is between the ACSIZ & ACEXP at the value of 0.4894*, indicating positive and significant association. More so, the results also revealed that the lowest positive correlation is between the ACSIZ & ACM to the tune of 0.0545. This entails that independent variables are not highly correlated and severe multicollinearity is unlikely between the study variables, as their correlation coefficients are less than 0.8 threshold. This is further assessed using the variance inflation factor (VIF) test. Overall, the correlation results provide preliminary evidence of associations among the study variables, while the subsequent regression analysis determines their effects after controlling for other factors.

4.4 Regression Results

The study runs pooled regression as proposed by the study model. Fixed and random effect were run after which the study conducted the Hausman Specification test with a view to selecting the suitable model. The Hausman result (P-value of 0.000) as presented in Table 4.6 indicates that the test selected a fixed effect. Thereafter, the study ran the post estimation test to validate the fixed effect model proposed by the Hausman test conducted. Subsequently, the study conducted several panel regression tests with a view to identifying the most suitable model for more precise and accurate parameters. After conducting Breusch–Pagan test for heteroskedasticity test, the Modified Wald test for groupwise heteroskedasticity test, Pesaran's test of cross-sectional independence, Breusch-Pagan LM test of independence and Wooldridge test for autocorrelation, three of the tests indicated the presence of groupwise heteroskedasticity and cross-sectional independence related to the model proposed by the study.

Therefore, the model proposed needs to be rejected and to select the most suitable model for the study. Thus, the study found Panel-Corrected Standard Errors (PCSE)suitable for the study. The justification for selecting this model is that the initial parameters set by the proposed models were considered biased due to the presence of groupwise heteroskedasticity and autocorrelation in the models. For this reason, the study found it suitable to utilize PCSE model for precise and accurate parameters, as the model is capable of correcting issues in relation to heteroskedasticity and autocorrelation condition (Drukker, 2006, Zidi & Hamdi, 2024). Accordingly, this study found the need for the PCSE model as all the conditions for the use of other models failed.

Table 4.5
Post Estimation Test Results

Tests	P-Value	Remark
Hausma Specification Test	0.0000	Fixed Effect
Breusch–Pagan test for heteroskedasticity Test	0.0539	Absence
Modified Wald test for groupwise heteroskedasticity Test	0.0000	Presence
Breusch-Pagan LM test of independence	0.0039	Presence
Pesaran's test of cross-sectional independence	0.0007	Presence
Wooldridge test for autocorrelation	0.0913	Absence

Source: STATA output 17.0 based on data collected.

Hence, regression analysis was carried out to assess the impact of audit committee attributes (proxied by independence, expertise, meetings and size) on risk disclosure of the listed oil and gas firms in Nigeria. The results of regression analysis (PCSE) are presented in Table 4.7, which is used to test the hypotheses of the study. Table 4.7 presents the coefficient, standard error, t-statistics, and probability of PC:

Table 4.6
Panel Corrected Standard Error (PCSE)

RD	Coef.	Std. Err.	z-statist	P>z
Aci	15.6165	6.9651	2.24	0.0250
Acexp	-14.14	12.1337	-1.17	0.2440

Table 4.6
Panel Corrected Standard Error (PCSE)

RD	Coef.	Std. Err.	z-statist	P>z
Acm	2.9205	0.7132	4.09	0.0000
Acsiz	2.2477	0.8254	2.72	0.0060
Size	-5E-06	1.3E-06	-4.01	0.0000
Leverage	0.3138	0.7294	0.43	0.6670
Profitability	1.5E-05	2.2E-05	0.71	0.4770
_cons	-8.2629	4.5761	-1.81	0.0710
Obs	80			
R-squared	0.3130			
Prob>F	0.0000			
Estimated autocorrelations	0.0000			

Source: STATA output 17.0 based on data collected.

The regression results of the Risk Disclosure (RD) and audit committee attributes proxied by independence, expertise, meetings and size) are presented in Table 4.6. The results comprise the coefficients of the explanatory variables, standard error, z-statistics, and probability values. Table 4.6 showed that the coefficient of the determination, which is the R^2 of the PCSE is 0.3130, signifies that Audit Committee attributes (proxied by independence, expertise, meetings and size) and control variables (size, profitability and leverage) accounted for 31.30% of the variation in risk disclosure of the listed oil and gas firms in Nigeria. This entailed that 68.70% of the variation in risk disclosure is caused by other variables not incorporated in the model. This translates and signifies the goodness fit of the model as a considerable value of risk disclosure is explained by the explanatory variables of the study. The model's fitness is revealed by the Prob > F of 0.000. Hence, this highlights that the study findings could be relied upon. The R^2 value of 31.30% commensurate with previous studies on audit committee attributes and risk disclosure including Abdullah et al. (2017), Ankama (2018) and Kyari et al. (2020).

On the part of the independent variables, the analysis in Table 4. shows that Audit Committee Independence has a positive and significant impact on risk disclosure of the listed oil and gas firms in Nigeria. This entails that a higher number of independent directors enhances the risk disclosed in their annual report. The findings affirmed those of Elfeky et al. (2019), Kiflee et al. (2019), Salem et al. (2019), and Kyari et al. (2020), but contrary to Abdallah et al. (2017) and Carmona et al. (2017) Fasihi et al. (2023). Furthermore, contrary to our expectation, the regression results revealed that audit committee expertise has insignificant impact on risk disclosure. This is consistent with Abdullah et al. (2017), Elfeky et al. (2019), Alshirah et al. (2021), Fasihi et al. (2023) but contradicted those of Kyari et al. (2020), Ahmad et al. (2020) and Almunawwaroh & Setiawan (2023).

Similarly, the results revealed that audit committee meetings have a positive and significant impact on risk disclosure. This implies that a frequent audit committee meeting will translate to sufficient risk disclosure. The finding is consistent with that of Abdullah et al. (2017), of Elfeky et al. (2019) and Fasihi et al. (2023) but contrary to those of Ankama (2018), Alshirah et al. (2021) and Almunawwaroh & Setiawan (2023).

Furthermore, as expected the results show that audit committee size has a significant effect on the risk disclosure. This indicates that a large audit committee will result in higher risk disclosed in the annual reports of the sampled companies. This is consistent with the findings of Alshirah et al. (2021) and Fasihi and Barshad (2023), but contradicted those of Zango (2019), Kyari et al. (2020) and Almunwwaroh and Setiawan (2023).

The regression analysis findings revealed that audit committee independence, meetings and size are significant determinants of sufficient risk disclosure is in line with agency theory which posits that large and independent committee members will ensure effective risk monitoring and oversight functions of the committee. Thus, in line with regressions results, the study rejects $\mathbf{H0_1}$, $\mathbf{H0_3}$, and $\mathbf{H0_4}$. The findings that audit committee expertise does not guarantee sufficient disclosure, but the integrity of the members is what guarantees effective risk monitoring and oversight functions of the committee. Hence, the study fails to reject $\mathbf{H0_2}$.

5.0 Conclusions and Recommendations.

This study examined the effect of audit committee attributes proxied by independence, expertise, meetings, and size on risk disclosure of the listed oil and gas firms in Nigeria. In line with prior studies in the extant literature, content analysis was employed in collecting data from the annual reports and accounts of the sampled companies. The data generated was analyzed using the Multiple regression technique. The regression analysis revealed that audit committee independence, meetings and size have a significant positive impact on risk disclosure. The findings are in line with the underpinned assumptions of agency theory.

The study concludes that, substantive independent members in the audit committees of the listed oil and gas firms in Nigeria would ensure effective risk management monitoring, oversight, and sufficient risk disclosure. On the contrary, it is also observed that expertise and meetings do not increase the risk disclosure of the sampled companies. This highlights that the expertise of the committee members may not necessarily influence risk disclosure. Similarly, it is also observed that the frequency of audit committee meetings enhances the risk disclosure of the sampled companies. Finally, the study also established that the size of audit committee enhances risk disclosure of the listed oil and gas firms in Nigeria.

The above findings and conclusions have implications for the users of financial information and regulatory agencies.

The users should note that substantive independent members, meetings and size of the committee would ensure and guarantee effective risk management monitoring, oversight, and risk disclosure. In line with the above findings, the regulators should note that a large and independent audit committee is necessary for the committee to effectively guarantee robust risk management oversight and risk disclosure. They should also note that frequency of meeting and the size of audit committee enhance risk disclosure of the listed oil and gas firms in Nigeria.

Lastly, as this study concentrated on risk disclosure quantity, further research should explore both quantitative and qualitative dimension of disclosure to provide a more comprehensive understanding of corporate risk reporting practices. Furthermore, the study's sample of 8 firms over a ten years period may limit the generalizability of the findings. Thus, future studies should consider a larger sample of companies, thereby potentially extending the analysis to other sectors or industries, to enhance the robustness and generalizability of the findings

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