



# INVESTIGATING THE EFFECT OF GENDER DIVERSITY AND BOARD INDEPENDENCE ON CORPORATE RISK DISCLOSURE PRACTICES OF LISTED INSURANCE FIRMS IN NIGERIA

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## ABSTRACT

*The study examines the effect of gender diversity and board independence on corporate risk disclosure practices of listed insurance firms in Nigeria from 2012 to 2024. The research design adopted for the study was ex-post facto design. Purposive sampling techniques was adopted to select the sample size of ten (10) listed insurance firms, where data were extracted from their financial reports. The panel multiple regression analysis was conducted with the aid of STATA version 17. Generalized least square regression tool was used to test for the formulated hypotheses. The results found both gender diversity and board independence have positive and significant effect on corporate risk disclosure practices of listed insurance firms in Nigeria. The study recommends among others that, Policy makers and practitioners should promote gender diverse and independent board to ensure robust monitoring and quality reporting within the insurance sector. Further studies could adopt mixed method, such as interviews to complement the quantitative findings and offer a richer understanding of the organizational culture influence corporate risk disclosure.*

**Keywords:** Gender Diversity, Board Independence, Corporate Risk Disclosure

**JEL Classifications:** C012, D022, F013, G123

## 1.0 Introduction

After the episodes of corporate scandals and economic crisis of 2008 -2009 (Li, et al, 2018; Oino, 2019; Srairi, 2019; Halkos & Nomikos, 2021), the need for corporate risk disclosure has dominated policy makers, standard setters and regulators' agenda. This is so evidenced by the increasing demand in the quality of reporting in response to the calls for corporate risk disclosure transparency (Amrin, 2019; Haj-Salem, et al, 2019 and Anderson & Frigo, 2020). For instance, in the United States of America (USA), the Securities and Exchange Commission (SEC) mandated listed firms to provide risk-related information in their annual reports (Mbithi, et al., 2022). Similarly, the German Accounting Standard Board (GASB) publishes a comprehensive Risk Reporting Standard (GAS 5) which mandated corporate institutions to disclose information on all risk categories and risk management on their financial reports (Mbithi et al., 2022). Bangladesh Securities and Exchange Commission (BSEC) issued Corporate Governance Code (revised) 2012 which requires listed companies to disclose information on "Risk and Concern" in the 'Directors' report to shareholders' section of corporate annual reports. Although, details guidelines are missing which could direct the company regarding the nature, extent and format of risk disclosures (Mazumder & Hossain, 2018). Also, in South Africa, risk reporting has undergone several reforms in South Africa

these includes regulations like the King I to King IV (1994, 2002, 2009 and 2016) respectively (Osman & Baldavoo, 2023). These reforms were established to strengthened good corporate governance and to enhance firm's value and increase transparency in risk reporting.

In Nigeria, regulatory bodies such as the Financial Reporting Council and the National Insurance Commission (NAICOM) have made considerable efforts to establish disclosure benchmarks within the financial sector, including insurance activities. Furthermore, the 2020 Nigerian Code of Corporate Governance, mandates disclosure requirements, including risk governance frameworks. NAICOM's prudential standards and solvency models also require insurance firms to disclose information related to underwriting, reinsurance, and liquidity risks. However, these principles do not yet fully compel firms to provide comprehensive, forward-looking risk reports. Empirical studies suggest that while some insurance firms comply rigorously, others offer only minimal disclosures (Woods, 2022; Adams, 2025). This disparity in the quality and extent of disclosures raises serious concerns, prompting stakeholders to question the internal factors driving firms' disclosure behaviors (McChlery & Hussainey, 2021). This is largely due to the underexplored influence of organizational culture beyond the commonly studied moderating variable. Corporate risk disclosure is crucial to the insurance firms whose mainstay is to indemnify the insured/assured against financial losses, also to maintain stable market value. As such, they need to disclose their risk management strategies to convince their clients that they are not exposed to any risk of non-indemnity, thus building investors' confidence and create more market value.

Empirically, firm-specific variables such as firm size, profitability, and leverage have been widely used to explain corporate disclosure patterns in Nigeria and other emerging markets. For instance, Amanamakh (2024) and Adams (2025) reported an insignificant relationship between firm size and the quality of risk disclosures among Nigerian insurance firms. Similarly, leverage showed inconsistent associations with the level of disclosure, and none of these variables provided a consistent explanation for firm-level differences. These findings imply that financial metrics alone may not sufficiently explain firms' willingness to disclose risks beyond statutory obligations (El-Deeb et al., 2024). Also, previous literature highlights internal managerial mechanisms particularly corporate governance as core predictors of disclosure practices (Ulijn & Salamzadeh, 2024; Elamer et al., 2025). Corporate governance structures such as board side, chief executive officer duality, audit committee expertise, and the frequency of board meetings have been associated with improved risk disclosure outcomes (Chouaibi & Affes, 2021; Al Amosh & Khatib, 2021; Ali et al., 2018; Haj-Salem et al., 2019). For instance, Nicolò et al. (2022) found that firms with robust and well-structured governance practices disclosed significantly more risk-related information than those with weaker governance structures. These studies centered on deposit money banks and other sector of the economy. Therefore, the study aimed to investigate the relationship between gender diversity and board independence on corporate risk disclosure practices of listed insurance firms in Nigeria. This paper is organized in seven sections after the introduction, section 2 presents the literature review; section 3 discusses empirical review and hypotheses development; section 4 discusses the methodology and variable measurements; section 5 presents results and discussion and section 6 discusses the conclusion and future researches.

## 1.2 Research Questions

1. To what degree gender diversity promote corporate risk disclosure practices of listed insurance firms in Nigeria?
2. What is the relationship between board independence and corporate risk disclosure practices of listed insurance firms in Nigeria?

## 2.0 Literature Review

This section defined concepts: gender diversity, board independence and corporate risk disclosure. The section discussed the theory and the empirical review and development of hypotheses used in the study.

### 2.1 Conceptual Review

#### 2.1.1 Gender Diversity

Gender diversity refers to the proportion of females to males in an organizational structure or workplace. The Organization for Economic Cooperation and Development (OECD) defines gender diversity as the balanced representation of men and women in decision-making. This is the equitable representation of people of different genders, including those that are beyond the traditional binary categories of male and female. Gender diverse workplace or decision-making body promotes fairness and acknowledges the value of diversity as natural part of existence (Wachira, 2019). The presence of women on the board of directors of firms add value in the performance of the board due to their divergence perspectives on issues (Wachira, 2019). Gender diverse boards aim to enhance corporate risk-reporting through reduced sycophancy and collective thinking, which otherwise is not uncommon in homogenous boards (Saggar et al., 2021).

A gender-diverse board brings varied beneficial resources to the firm, and are also likely to disclose more risk information voluntarily (Mirza et al., 2020). Among varied board attributes, one that has evolved as the quintessential component of corporate governance is gender diversity (Saggar et al., 2021). Females on board exert a strong control over executives and managers (Wachira, 2019). In addition, they have higher tendency to frequently attend board meetings and join monitoring-related committees as compared to their male counterparts (Adams & Ferreira, 2009), consequently accelerating their monitoring capabilities. This increased monitoring, incentivizes the managers to engage in extensive risk reporting. Wachira (2019); Bufarwa et al. (2020); Sagar et al. (2021) established a positive relationship between gender diverse board and corporate risk disclosure practice in firms. Gender-diverse boards aim to enhance corporate risk-reporting through reduced sycophancy and mediocrity.

#### 2.1.2 Board Independence

Board independence refers to the extent a board is composed of independent or non-executive who have no relationship with the firm beyond the role of director (Wachira, 2019). An independent director is a member of the board who does not own any shares in the company and does not have any fiduciary relationship with the company except for his/her remuneration. A non-executive director provides the check mechanisms that is important for board effectiveness (Wachira, 2019). They are considered important for monitoring because they provide necessary checks for board effectiveness (Wachira, 2019; Kiflee & Khan, 2020). While in their studies, Elgammal et al. (2018); Ibrahim et al. (2019) found a negative relationship on corporate risk disclosure practice among firms. The presence of independent of directors on the board helps to reduce agency costs and information asymmetry and improve the quality of the disclosure of information (Sriari, 2019; Habtoor et al., 2019). In theory, independent of directors are not influenced by corporate insiders. However, to meet the need and satisfaction of stakeholders' information requests, independent members have more incentives to disclose risk disclosure (Sriari, 2018; Haj-Salem et al., 2019).

### 2.1.3 Corporate Risk Disclosure

Corporate risk disclosure, according to Ibrahim and Hussainey (2019) is any information about the past, present, or potential loss, failure, collapse, crisis, deterioration, breakdown, accident, emergency, hazard, danger, harm, threat, or exposure that enables the present and potential users to identify and assess the current and potentially negative outcomes for a business. Risk disclosure is the product of a company's risk management process. It helps management understand firms' risk profile. Osman and Baldavoo, (2023) admits that, risk disclosure provides vital information to internal and external stakeholders about the company's risk profile and ability to manage its risk exposure. Corporate risk disclosures lead, among other things, to a reduction of information asymmetry and a reduction of monitoring costs (Crovinini et al., 2021). Therefore, firms try to satisfy investors' needs by disclosing more information about different risks and thereby mitigating monitoring costs associated with these. ICAEW (2002) suggests that a number of benefits would arise from risk reporting. For instance, risk disclosure encourages better risk management, it provides practical forward-looking information, it improves accountability and transparency for stewardship, it provides investors' protection and the usefulness of financial reporting, and it increases shareholder value.

## 2.2 Theoretical Review

Agency theory was developed by Jensen and Meckling in 1976, and the theory was based on Berle and Means' (1932) opinion which believes that there are always conflicts between agent and principal based on the separation of control and ownership of corporate institutions. The theory is based on the notion that, shareholders (principals) and managers (agents) have different interests, and they act according to their best interests. Each party has an incentive to maximize their own interests (Jensen & Meckling, 1976). The theory seeks to address the agency problem between shareholders and managers of corporations by mitigating information asymmetry thereby, increasing shareholders' confidence. Also, the theory provides a practical insight into the agency problem that might arise and as well mitigate the agency cost through monitoring policies and disclosure (Haj-Saleem, et al 2020).

Disclosure is an effective means to manage the interest' conflicts and alleviate monitoring managers by the investors and the creditors. Moreover, especially the agent can disclose whenever there is a risk and indicates the good ways to manage this risk. Hence, stakeholders will be better informed about the risk that may incur and will be able to assess the current and future firm performance. Investors notably, as users of annual reports need company risk information before they make financial decisions.

In the monitoring perspective, agency theory advocates that a gender-diverse board assists the firm ameliorate its monitoring abilities and board independence; it is further likely to augment transparency in corporate risk disclosure (Saggar, et al 2021). Considering the view that the managerial decision-making, particularly with regard to risk reporting, is broadly influenced by varied characteristics of board, gender diversity holds utmost significance, as it brings cognitive diversity in satisfactorily managing various issues related to firm (Saggar, et al 2021). Gender-diverse boards not only deflate the agency issues through effective monitoring and reduced information asymmetry via adequate risk disclosures but also enable the corporate connect to external organizations, resulting in higher corporate reporting (Saggar, et al 2021). Also, the presence of independent of directors on the board helps to reduce agency costs, information asymmetry and improve the quality of disclosure (Sriari, 2019). Independent members on board have more incentives to disclosure risk disclosure.

## 2.3 Empirical Review and Hypotheses Development

### 2.3.1 Gender diversity and corporate risk disclosure

Gender diverse boards aim to enhance corporate risk-reporting through reduced sycophancy and collective thinking, which otherwise is not uncommon in homogenous boards (Saggar, et al 2021). A gender-diverse board brings varied beneficial resources to the firm, also are likely to disclose more risk information voluntarily (Nadeem, 2020; Mirza, et al, 2020). Women on board have higher tendency to frequently attend board meetings and have better chance to join monitoring-related committees as compared to their male counterparts (Saggar, et al 2021), consequently accelerating their monitoring capabilities. This increased monitoring incentivizes the managers to engage in extensive risk reporting. Gender is currently the most debated diversity topic in the academic literature. Considering that, gender may explain differences in behavior and skills, recent literature on gender diversity provides wide-ranging results.

Empirically, previous studies like (Haj-Salem, et al, 2019; Burfarwa, et al, 2020; Khandeiwal, et al, 2020; Arora & Singh, 2021; Saggar, et al 2021) found the presence of women on the board affects board decisions positively towards disclosing risk-related information in their financial reports. On the other hand, some studies like (Oghuma & Garuba (2021), concluded that women's contribution to the board is questionable in disclosing risk related information. These studies present an inconsistent result. In the context of Nigerian insurance firms, few studies investigated corporate risk disclosure. For instance, Wada, et al (2024) examined committee and risk disclosure quality of listed insurance firms in Nigeria. Also, Akpan et al (2024) found corporate attributes positively associated with risk management disclosure of listed insurance firms in Nigeria. These studies failed to acknowledge the effect of gender diverse board on corporate risk disclosure. The study therefore, suggests that, women on board will help in monitoring the directors through frequent presence at a board meetings consequently increased monitoring which incentivizes the managers to engage in extensive risk reporting. Therefore, based on the prescription of agency theory, and empirical evidence, this study hypothesized thus:

*H<sub>1</sub>: There is no significant effect between gender diversity and risk disclosure practice of Nigerian listed insurance companies.*

### 2.3.2 Board independence and corporate risk disclosure

An independent director is a member of the board who does not own any shares in the company and does not have any fiduciary relationship with the company except for his/her remuneration. The presence of independent of directors on the board helps to reduce agency costs and information asymmetry and improve the quality and the disclosure of information (Sriari, 2018; Habtoor, et al, 2019). Also, based on the fact that, in theory, independent directors are not influenced by corporate insiders. To satisfy their stakeholders' information requests, independent members have more incentives to disclose risk information.

Empirical scholarly studies have examined the linkage (if any) between independent directors and improvement in financial reporting through the mechanism of reduction of agency problem (Fama, 1983; Jensen & Meckling, 1976; Netti, 2018). To be specific, such empirical studies investigated whether the presence of independent directors encourages better corporate financial disclosure practices. While a particular strand of literature pinpoints the presence of a relationship between independent directors and corporate risk disclosure practices (Haj-Salem, et al, 2019; Grassa, et al. 2020; Kiflee & Khan, 2020; Kufa & Shtembari 2023; Anggraeni et al. 2024) which found board independence positively associated with corporate risk disclosure.

However, scholarly consensus in this regard happens to be elusive as certain prior studies like (Ibrahim, et al. 2019; Khandeiwal, et al. 2020; Oghuma & Garuba 2021) found insignificant associations between the presence of independent directors on corporate disclosure practices. These studies accounts for other sectors of the economy other than insurance firms, also the studies presence an inconsistent result. Few studies in the context of Nigerian insurance firms like (Wada et al 2024; Akpan et al 2024) which investigated corporate attributes on risk management disclosure of listed insurance firms in Nigeria. Therefore, study in the light of board independence on corporate risk disclosure of listed insurance in Nigeria is understudied. Therefore, the study predicts that presence of independence of directors on the board helps to reduce agency cost and information asymmetry and improve the quality and the disclosure of information. It is therefore, based on the prescription of agency theory, and empirical evidence, this study hypothesized thus:

*H<sub>2</sub>: There is no significant effect between board independence and risk disclosure practices of listed insurance companies in Nigerian.*

### 3.0 Methodology

The research design adopted for the study was ex-post factor design. The design was chosen because the data was generated from secondary source (annual reports of sample population) and which the events has already occurred and cannot be manipulated, modified or altered by the researchers. The study examines listed insurance firms in Nigeria. The insurance sector plays a prominent role in the Nigerian economy by providing financial protection against losses, promote economic stability among others. Corporate risk disclosure is crucial to the insurance firms whose mainstay is to indemnify the insured/assured against financial losses, also to maintain stable market value.

The target population of the study was 26 listed insurance firms in Nigeria. Purposive sampling was adopted to ensure that only firms meeting specific criteria established are included in the sample. The criteria require that only firms that are listed on the Nigerian stock group, and have complete annual reports from the period 2012 to 2024, ensuring consistency and reliability of data, actively operating within the period under study. The sample size of the study was ten (10) listed insurance firms which were active on the Nigerian Stock Group, whose financial statements were available, and those whose financial statements were not available were eliminated. Data were collected from financial reports of listed insurance firms in Nigeria. Panel regression analysis was adopted because it has the ability to combined cross-sectional and time-series data, increase variability and reduced collinearity and helps control for unobserved time-invariant individual differences (heterogeneity) that bias simpler models allowing for more accurate estimation. The study used generalized least square regression model with the aid of STATA statistical software version 17 to estimate and test for hypotheses.

### 3.1 Control variables

Control variables are included to account for other factors that might affect risk disclosure. These include firm age (FAG), is the time a firm has been in operation usually measured from its incorporation date, reflecting its maturity and influencing factors like performance, size, resources and risk. Leverage (Lev) this is means of using debt capital to amplify potential returns on an investment. These controls help isolate the effect of the primary variables of interest. Older firms might have more established disclosure practices, while firms with higher leverage might disclose more information to mitigate perceived risks by creditors and investors.

### 3.2 Model Specification

This model captures the relationship as adapted from the Nkemjika, et al. (2023), stated as:

$$CRDI = f(GEND, BDI, LEV, FAG)$$

The model was econometrically modified to state as:

$$CRDI_{it} = \beta_0 + \beta_1 GEND_{it} + \beta_2 BDI_{it} + \beta_3 LEV_{it} + \beta_4 FAG_{it} + \varepsilon_{it}$$

Where;

Dependent variable: CRDI = Corporate Risk Disclosure Index

Independent variables:

- GEND = Gender Diversity
- BDI = Board Independence

Control variables:

- LEV = Leverage
- FAG = Firm Age
- $\beta_0$  = constant
- $\beta_1 - \beta_2$  = coefficient of independent variables
- $\beta_3 - \beta_4$  = coefficient of control variables
- $\varepsilon$  = Error term which is incorporated in the equation to cater for other factors that may influence corporate risk disclosure.
- i = cross section of insurance firms; and t = time in terms of years.

#### The apriori expectation:

$\beta_1, \beta_2, \beta_3$ , and  $\beta_4 > 0$ . This implies all the explanatory and control variables are expected to have a positive relationship with the dependent variables.

### 3.3 Measurement of Variables

Gender diversity refers to the proportion of females to males in an organizational structure. This is measured by the percentage of women on the board of an organization. Therefore, to measure gender diversity, Blau index is to be applied. It belongs to the very frequently used indicators of diversity in gender studies (Li & Li, 2020; Hedija & Nemec, 2021). Blau's index is calculated as:

$$1 - \sum_{i=1}^2 p_i^2$$

Where i stands for sex (male, female),  $P_i$  is the percentage of executive body members in each category. The values of the Blau's index for board gender diversity range from 0 to 0.5, where the value of 0.5 means the equal number of men and women in an executive body (Blau, 1977). Board independence refers to the extent a board is composed of independent non - executive

directors who have no relationship with the firm beyond the role of director. Therefore, independence of board is measured by percentage of independent non-executive directors on board.

### Corporate Risk Disclosure

This variable will be operationalized to measure information contained in annual reports of Nigerian insurance companies. The construct will be measured using corporate risk disclosure index. The index approach permits the researcher to examine several variables of interest (Wachira, 2019). The checklist is developed after a review of the checklist used by previous researchers (Linsley & Shrives, 2006; Wachira, 2019 and Nahar et al, 2020). The disclosure checklist will be composed of 36 information items shown on table 1. It covers corporate risk disclosure items in seven areas (operational, strategic, environmental, financial, empowerment, information processing and technology and integrity). The annual reports will be carefully studied and scored based on the checklist developed by the researcher. A disclosure index can be weighted or unweighted (Wachira, 2019).

The weighted approach assumes that some items of information are more important than others hence are weighted higher (Nahar, et al., 2020). This, may introduce a bias towards a particular user orientation (Wachira, 2019). The unweighted approach, on the other hand, assists in avoiding any form of bias arising from weighting such as making any particular disclosure item more important than the other. Therefore, using the unweighted approach all items are weighted equally. This is based on the assumption that all disclosure items are equally important since different users pay attention to different items of information which may not be true (Wachira, 2019). This study employed the unweighted approach to avoid any bias arising from weighting such as making a particular disclosure item more important than others. Each item is therefore scored (1) if the item is disclosed in the annual reports and (0) if otherwise in line with Wachira (2019). To arrive at disclosure index, the researcher intends to employ the formula employed by Wachira (2019).

$$CRDI_j = \frac{\sum_i^m rd \times 100}{nj}$$

Where,  $CRDI_j$  is the corporate risk disclosure index for firm  $j$ ,  $rd$  the disclosure score for firm  $i$  and if the item is not disclosed and 1 is the item is disclosed,  $n_j$  the maximum number of items that could be disclosed.

Table 1: Risk Disclosure index

Risk Categories	Risk Items
Operational Risk	Internal control system failure/error, inefficiency of basic internal control, risk of losses, increase in operating costs, human error, reduction in productivity, liquidity problem, health and safety problem, non-compliance with the regulatory requirements, management failure, insurance risk, unauthorized activities and frauds and reputation problem.
Strategic Risk	Research and development, politics, regulations, competition, and macroeconomic factors.

Environmental Risk	Economic risk such as general economic condition and global financial crisis, weather condition, political risk, legal and regulation risk, and industry sources (suppliers and customers).
Financial Risk	Financial risk management objectives and policies, interest rate risk, foreign currency exchange rate risk, price and commodity risk, credit risk, market risk, cash flow and liquidity risk.
Empowerment Risk	Leadership and management, Outsourcing, Performance incentives, Change readiness and Communications
Information Processing and Technology Risk	Integrity, Access Availability, and Infrastructure
Integrity Risk	Management and employee fraud, Illegal acts and Reputation

Source: Linsey and Shrieves (2006)

### 3.4 Control variables

Leverage in this study is represented by the debt-to-equity ratio. The debt-to-equity ratio were calculated thus; total debt / total equity  $\times 100\%$  (Liebenberg & Hoyt, 2003; Ahmad et al. 2021). Firm age refers to the duration a corporate entity has existed as a legal entity over a time period usually in years. It is typically measured in years since its incorporation or the listed on a stock exchange. This study adopted the number of years from incorporation. Therefore, it is represented as the log of age since incorporation, in years (Nahar et al. 2020)

## 4.0 Results and Discussion

This section presents the results and discussion of the study. The section starts with the robustness tests, descriptive statistic and the correlation matrix.

### Robustness tests

#### Shapiro-Wilk Normality Test

The Shapiro-Wilk W test results provides key outputs which includes the W statistic, z-value, and p-value, to collectively determine if the data significantly deviates from normality. The results reveals that corporate risk disclosure index (CRDI) as thus (W statistic = 0.936, v-value = 6.581, z-value = 4.239, and p-value = 0.000) this suggests that, the risk disclosure is not normally distributed. Gender diversity (GEND) with (W statistic = 0.961, v-value = 4.016, z-value = 3.128, and p-value = 0.001), this suggests that gender diversity is not normally distributed. Board independence (BDI) shows (W statistic = 0.914, v-value = 8.899, z-value = 4.918, and p-value = 0.000), indicates that the variable is not normally distributed. Leverage (LEV) with (W statistic = 0.837, v-value = 16.797, z-value = 6.348, and p-value = 0.000), also indicates a non-normal distribution. Lastly, firm age shows (W statistic = 0.977, v-value = 2.337, z-value = 1.910, and p-value = 0.028), which indicates that, the distribution of firm age data is not normally distributed. The results of the Shapiro-Wilk W test reveals that all the variables in the dataset are not normally distributed. Therefore, this study concludes that one of the basic assumptions of linear regression which allows only normally distributed series

has been violated which may lead to some problems in OLS regression, hence necessitated for a robust regression technique (Bera & Jarque, 1982; Law 2018; Obaje, et al. 2021).

Table 2: Shappiro-Wilk Normality Result

Variable	Obs	W	V	Z	Prob>z
CRDI	130	0.936	6.581	4.239	0.000
GEND	130	0.961	4.016	3.128	0.001
BDI	130	0.914	8.899	4.918	0.000
LEV	130	0.837	16.797	6.348	0.000
FAG	130	0.977	2.337	1.910	0.028

Source: Researchers' computation (2025) using STATA 17 software

### Variance Inflation Factor Test

Variance Inflation Factor (VIF) was conducted using STATA 17 software to detect multicollinearity. The test results show that the VIF ranges between 1.232 to 1.444 and the mean VIF is 3.157 indicates that there is no multicollinearity and the data conforms to both assumptions meaning that the data qualify for further statistical tests (Law, 2018).

Table 3: Variance Inflation Factor (VIF) Results

	VIF	1/VIF
GEND	1.278	0.782
BDI	1.232	0.812
LEV	1.423	0.703
FAG	1.444	0.693
Mean VIF	3.157	

Source: Researchers' computation (2025) using STATA 17 software

### Heteroskedasticity Test

Breusch-pagan Lagrangian multiplier test was conducted to determine the presence of heteroskedasticity, and the result indicate that the  $\chi^2 = 54.11$  and the p-value = 0.0000 which is less than the significance level of 0.05 suggests that the variance is not constant therefore, we reject null hypothesis, which indicates the presence of heteroskedasticity in the model.

Table 4: Heteroskedasticity Result

Statistics	P-value
chi2 (10)	250.05
Prob>chi2	0.0000

Source: Researchers' computation (2025) using STATA 17 software

### Descriptive Statistics

The descriptive statistics for the variables in the study are presented in Table 5.

Table 5: Descriptive Statistics Result

Variable	Obs	Mean	Std. Dev.	Min	Max
CRDI	130	0.317	0.089	0.167	0.472
GEND	130	15.875	11.217	0	45.45
BDI	130	9.131	10.289	0	45.45
LEV	130	2.204	1.991	0.008	7.905
FAG	130	1.245	0.277	0.477	1.732

Source: Researchers' computation (2025) using STATA 17 software

The descriptive statistics provide insights into the characteristics and diversity of corporate risk disclosure practices and structures of 130 observations. The descriptive analysis on table 5 shows the main descriptive statistics for the variables used in the analysis for the sample insurance firms in this investigation. Each variable was examined based on the mean, standard deviation, minimum and maximum. The mean and standard deviation of corporate risk disclosure (CRD) reported by the sample firms has (mean value = 0.317, standard deviation = 0.089) signifying that the data deviate from the mean value of 0.089. this suggests that, there is no wide dispersion between the mean and the standard deviation. This indicates therefore, that there is no much gap between risk disclosure practices of the sample firms. The minimum risk disclosure practice among the sample firm was 0.167 with a maximum of 0.472. the low adherence of risk disclosure practice among insurance firms could be explained on the basis of lack of strict compliance to regulations and little or no effective regulation enforce firms to disclose risk-related information on their financial reports.

The descriptive statistics with respect to gender diversity show coefficient of (mean value = 15.875, standard deviation = 11.217). This signifies that the data deviate from the mean value of 11.217. This indicate, there is no wide dispersion between the mean and the standard deviation. It therefore suggests that, there is no much gap between insurance firms with the presence of women on board and firms with the presence of men on the board of directors. The minimum and maximum values of gender diverse board are from 0 to 45.45 respectively. This implies that, the minimum percentage of women to men of some sample firms are 0% and maximum of 45% diverse representations on the board of directors. This signifies, some insurance firms do not have women representation on their board while others 45% presence of women on board.

The statistic shows the board independence values as (mean value = 9.131, standard deviation = 10.289). This indicates that, the data deviate from the mean by 10.286, signifying no wide deviation from the mean value. The minimum and maximum ranges from 0 and 45.45 respectively. This suggests some of the sample firms has 0 percentage of independent directors and a maximum of 45% of independent directors.

The descriptive statistics also indicates that, firm leverage shows (mean value = 2.204, standard deviation = 1.991). This signifies that, the sample firms maintained their debts level at ₦2.204 billion with dispersion among some firms with the debt level of ₦1.991 billion. This implies that, some of the insurance firms are more levered than others in the sector. The sample firms indicate a minimum and maximum values of 0.008 and 7.905 respectively. This implies that the sample firms maintained a minimum of ₦0.008 billion debts and maximum of ₦7.905 billion debts. This suggests that, some of the sample firms are highly levered while maintained a low profile of leverage. The Firm age was characterized by (mean value = 1.245, standard deviation = 0.277). This indicates a small variation between the sample firms with a minimum of 0.477 and a maximum of 1.732. The descriptive statistics reveals all the variables indicates a moderate variation from the mean. However, there are dispersions between the mean and the standard deviation suggesting the complexity and heterogeneity of the sample firms in their practices and leadership. The most sample means are good estimates of the population mean.

## Correlation Matrix

The correlation statistics in Table 6 provide insights into the relationships between CRD and other key variables: GEND, BDI, LEV, and FAG.

Table 6: Pairwise Correlations Matrix Result

Variables	CRDI	GEND	BDI	LEV	FAG
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CRDI	1.000				
GEND	0.059	1.000			
BDI	-0.028	0.215	1.000		
LEV	-0.257	-0.128	0.215	1.000	
FAG	-0.280	-0.065	0.306	0.440	1.000

\*\*p<0.05

Source: Researchers' computation (2025) using STATA 17 software

The results in the correlation coefficient demonstrate a positive and statistically significant between corporate risk disclosure and gender diversity indicates a positive but weak significant correlation with corporate risk disclosure at a value of ( $r = 0.059$ ). This indicates that, diverse board is associated with level of risk disclosure. This suggests that, diverse board brings variety of perspectives and experience which drive to more complex decision-making processes that could impact the extent of firm's disclosure of risk-related information.

Board independence indicates a negative but weak significant relationship with risk disclosure at a value of ( $r = -0.028$ ). This indicate that, the presence of independence of directors on board is associated with significant risk disclosure. This suggests that insurance firms with a high number of independence of directors on their board could influence decision making towards transparency and accountability, thereby encouraging compliance to disclosure practices. Similarly, correlation matrix results show that, leverage has a negative but weak significant relationship with risk disclosure at a value of ( $r = -0.257$ ). This weak negative relationship suggests that insurance firms with higher leverage disclose less risk-related information. This implies that firms with high leveraged are more cautious in their disclosures in order to avoid highlighting their financial vulnerabilities.

Also, Firm age indicate a negative but weak statistically significant relationship with risk disclosure with a coefficient of ( $r = -0.280$ ). This indicates that, older insurance firms are associated with risk disclosure than the emerging firms. This suggests that older firms believe to have an established integrity, good corporate governance and historical background of interactions with stakeholders which informed and enhanced transparency and accountability.

Therefore, these correlations indicate that the relationships between corporate risk disclosure practices and other variables are significant excepts board independence that is negative and not significantly related with corporate risk disclosure.

### Inferential Statistics

The post-diagnostic estimations were conducted to determine and selects the most appropriate regression model for the study. The following diagnoses were conducted to determine which model is appropriate for the regression analysis, these were Breusch-Pagan test and Hausman specification test.

Table 7: Summary of Post Diagnostics Test

Statistics	Action	chibar2(01	P-Value	Mean	Decision
Breusch and Pagan Lagrangian multiplier test (PB-LM Test)	Choose between Pooled OLS and Random effect model	177.75	0.0000		P<0.05 Random effect is more appropriate

Hausman Test	Choose between Random effect and fixed effect	4.04	0.7752		P>0.05 Random effect is more appropriate
Wooldridge test for autocorrelation	Autocorrelation	F (1, 9) = 3.573	0.0913		P>0.05 there is no autocorrelation
Heteroskedasticity Test	Homoskedasticity	250.05	0.0000		P<0.05 there is Heteroskedasticity
Multicollinearity Test	VIF			3.157	VIF<10 No Multicollinearity

Source: Researchers' computation (2025) using STATA 17 software

### Breusch-Pagan Multiplier Test

Table 8: Breusch-Pagan Lagrangian Multiplier Test for Random Effect

Statistics	P value
chibar2(01)	177.75
Prob > chibar2	0.0000

Source: Researchers' computation (2025) using STATA 17 software

Breusch-Pagan Lagrangian multiplier test was conducted to determine the appropriate model between random effects model or a pooled OLS model for panel data set at the significance level of 0.05. The result shows the p-value is less than the significance of 0.05. Therefore, null hypothesis was rejected, suggesting random effect is more appropriate.

### Hausman Specification Test

Table 9: Hausman Test for Fixed Effect Result

Statistics	P value
chi2(9) = (b-B)'[(V <sub>b</sub> -V <sub>B</sub> ) <sup>-1</sup> ](b-B)	4.04
Prob > chi2	0.7752

Source: Researchers' computation (2025) using STATA 17 software

The Hausman specification test was conducted to choose between fixed effects model and a random effects model (Law, 2018). The Hausman specification test shows p-value is higher than the critical value 0.05. Therefore, we rejected null hypothesis, this suggests that, random effect is more appropriate. Therefore, the use of random effect model for the analysis. However, the presence of heteroskedasticity constitutes a challenge in the model which could lead to misleading estimations and conclusion. In order to overcome the problem of heteroskedasticity in the model, a robust model is more appropriate for the analysis which necessitated the used of generalized least square (GLS) model is proposed (Law, 2018).

Table 10: Generalized Least Square (GLS) Regression Results

Estimated covariances	=	1	Number of obs	=	130	
Estimated autocorrelations	=	0	Number of groups	=	10	
Estimated coefficients	=	8	Time periods	=	13	
Wald chi2(7)	=	99.52				
Log likelihood	=	167.407	Prob > chi2	=	0.0000	
CRD	Coef.	St.Err.	t-value	p-value	[95% Conf Interval]	Sig
GEND	0.002	0.001	3.33	0.001	0.001 0.003	**

BDI	0.001	0.001	2.00	0.045	0.000	0.003	**
LEV	-0.001	0.004	-0.39	0.7	-0.008	0.006	
FAG	-0.106	0.026	-4.15	0.00	-0.156	-0.056	**
Constant	0.913	0.066	13.87	0.00	0.784	1.042	**
Mean dependent var			0.317	SD dependent var		0.089	
Number of obs			130	Chi-square		99.519	
Prob > chi2			0.941	Akaike crit. (AIC)		-318.814	

\*\*\*  $p < .01$ , \*\*  $p < .05$ , \*  $p < .1$

Source: Researchers' computation (2025) using STATA 17 software

## Test of Hypotheses

### Hypothesis One

The hypothesis one seeks to investigate the effect of gender diversity on risk disclosure practices of listed insurance firms in Nigeria. The hypothesis postulates that, there is no significant relationship between gender diversity and risk disclosure practices of listed insurance firms in Nigeria. The results in Table 20 indicate the results thus (coefficient = 0.002, t-value = 3.33, p-value 0.001). The p-value = 0.001 that is less than the 5% critical value, which shows that gender diversity has a positive and significant effect on corporate risk disclosure practices of listed insurance firms in Nigeria. The study failed to support null hypothesis and conclude that gender diversity has a positive and significant effect on corporate risk disclosure practices of listed insurance firms in Nigeria.

The finding is consistent with Wachira, (2019); Haj-Salem et al. (2019); Khandeiwal et al. (2020); Bufarwa et al. (2020); Oghuma and Garuba, (2021) and Saggar et al. (2021) which found that, gender diverse board has significant relationship on corporate risk disclosure. However, the finding inconsistent with the study by, Akhter et al. (2021) and Yoko et al. (2023) which found that, gender diversity has no statistically significant effect on corporate risk disclosure practices. The study is consistent with agency theory. The theory postulates that a diverse board is most likely to adhere to compliance and committed to best practices. This study therefore concludes that a gender diverse board promote transparency.

### Hypothesis Two

The hypothesis two sought to establish the effect of board independence on risk disclosure practices of listed insurance firms in Nigeria. It was postulated in the hypothesis that, there is no significant relationship between board independence and risk disclosure practices of listed insurance firms in Nigeria. The results in table 20 shows a result as (coefficient = 0.001, t-value = 2.00, p-value = 0.045). The p-value = 0.045 which is less than the 5% critical value, indicate that board independence has a positive and significant effect on corporate risk disclosure practices of listed insurance firms in Nigeria. Therefore, the study failed to support null hypothesis and conclude that board independence has a positive and significant relationship on corporate risk disclosure practices of listed insurance firms in Nigeria.

This result aligns with Netti (2018); Haj-Salem et al. (2019); Wachira (2019); Nkuutu et al. (2020); Kiflee and Khan (2020); Grassa, et al. (2020) found a positive and significant relationship between board independence and corporate risk disclosure practices. This suggests that independent boards are more likely to prioritize the interests of shareholders and ensure that the company engages in ethical and transparent practices. Also, Kufo and Shtembari (2023) which studied the relationship between board size and board independence on performance, the results found board independence to be positively related. However, Elgammal, et al. (2018); Oghuma and Garuba, (2021) found an inconsistent result.

The result is consistent with agency theory which postulates that, non-executive directors are likely to prioritize the interest of shareholders and ensure ethical and transparent practices. However, other studies, such as one by Oghuma and Garuba (2021); Elgammal et al. (2018) and Netti (2018) might offer a counterpoint by suggesting that independent boards, while beneficial for governance, may be less familiar with the day-to-day operations of the firm. This could result in less detailed or cautious risk disclosures; as independent directors may shy away from providing in-depth information about potential risks that could harm the company's reputation.

## 5.0 Conclusion and Recommendations

In conclusion, the study highlights the significant role of gender diversity and board independence on corporate risk disclosure practices of listed insurance firms in Nigeria. Gender diversity, and board independence emerge as crucial factors in ensuring that insurance firms engage in more comprehensive and transparent risk reporting. The findings underscore the importance and necessity of the holistic approach to the adherence to improved monitoring policies to ensure transparency and corporate values.

### 5.1 Recommendations

In a turbulent market environment, risk is unavoidable, and in order to mitigate and manage risk, a strong and robust monitoring policies and quality reporting be improved upon to ensure transparency and reduce information asymmetry. Effective monitoring enhances transparency and quality of risk reporting which as well builds investors' confidence and reduce the cost of capital. In this regard, the study therefore recommends that to improve the monitoring capabilities, practitioners and policy-makers in the insurance sector in Nigeria should promote gender egalitarianism by electing higher quantum of women directors on board to achieve global standards of maintaining higher risk disclosure. Lastly, shareholders should appoint more independent directors on their board to enable proper monitoring.

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