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Board Attributes and Credit Risk Exposure of Listed Financial Service Firms in Nigeria: The Moderating Effect of Risk Committee

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Abstract

The existing risk governance in the financial service firms has not been able to ensure stability and sufficient performances, which resulted in excessive credit risk taking in the Nigerian financial institutions. This study examined the moderating effects of risk committee on the relationship between board of directors' attributes and credit risk exposure of listed financial service firms in Nigeria. The study used secondary data for a period of 10 years (2010-2019) of a sample of 29 financial service firms. Panel multiple regression technique of data analysis was applied, and the study found after controlling for firm size, firm leverage and firm age that risk committee of the listed financial service firms in Nigeria has an effect on the relationships between board attributes and credit risk exposure. The study also found that there was a significant difference recorded before the moderation and after moderation of board size, board independence and board meetings with risk committee. The findings shows that the direction of the moderated variables changes after the moderation except for board gender diversity. The study also found that the level of significance of the variables changes for all the variables. This implies that the variables are affected when they are moderated with the risk committee. The study therefore recommends that the CBN, SEC and the board of directors of listed financial service firms should review the structure and composition of the risk committees of financial institutions in Nigeria.

Keywords: *Corporate Governance, Agency Theory, Non-Performing Loans, Insurance*

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Background to the Study

Credit risk in the financial service industry have been the main determinants of success or failure, especially in the banking system. Extending credit services to the deficit units of the economy is one of the major traditional functions of commercial banking, and as such credit risk must be adequately monitored. Although banks are a subset of the micro-economy, their failure have a severe effect on the macro-economy and a long-term future effect on the financial system stability. Many banks and insurance companies such as Oceanic Bank, Intercontinental Bank, Afribank collapse as a result of poor handling of risk assets (Loan and Advances).

However, existing literature has confirmed that credit risks is positively related to instability in the financial service firms (Ghenimi, Chaibi, Ali, and Omri, 2017). They used a sample of banks in the Middle East and North Africa region and found that credit risk and liquidity risk have an impact on the financial system stability. Corporate governance literature also makes a lot of contribution to identify mechanisms that improve credit risks exposure of financial service sector. Although existing studies have established the nature of the relationship between credit risk and governance mechanisms, no effort was made to investigate the moderating effects of risk committee on the relationship between board characteristics and credit risk exposure of banks in Nigeria.

This is in spite of the fact that regulators and researchers have being experimenting different factors to improve risk governance and the exposure of financial service firms to credit risk. Moreover, the Basel Committee on Banking Supervision (2016) argued that good corporate governance for banking firms increases the effectiveness of risk management, thereby increasing the financial strength of the financial institutions. In general, banks and insurance companies deliberately take the financial risk to generate revenue and provide services to their customers, which creates asymmetric information. Therefore, good risk governance of financial institutions is essential for boards of directors to focus more on risk assessment, management and mitigation. Thus, this study focuses on the impact risk committee on the relationship between board characteristics and the credit risk exposure of financial service firms in Nigeria.

The study is therefore an attempt to provide an answer to the research question, "what is the impact of risk committee on the relationship between board of directors' attributes and credit risk exposure of financial service firms in Nigeria.

The main objective of the study is therefore to examine the effect of risk committee on the relationship between board of directors' characteristics and the credit risk exposure of listed financial service firms in Nigeria. The following hypothesis is formulated in null form for the study;

H_{01}: Risk committee has no significant effect on the relationship between board attributes and credit risk exposure of listed financial service firms in Nigeria.

The study is relevant as it provides financial service firms with tools to more effectively manage bank stability through the monitoring of credit risks exposure. The management would find

this study useful as it assists them to identify how various aspects of corporate governance mechanisms especially risk committee affect the credit risk exposure of financial service firms and other factors affecting credit risk management in Nigeria. The findings from this study would also provide policy makers with information of the dynamics of the Nigerian financial service sector and in designing suitable practices with a view to regulate the credit risk management among banks and other financial institutions. The study covers a period of ten years (2010-2019) and the financial service firms in the context of this study refers to the Deposit Money Banks and Insurance Companies listed on the floor of the Nigerian Stock Exchange (NSE) markets.

Literature Review

Credit risk according to Ahmadi, Ahmadi and Abolhassani (2016) is connected with the operational activities of the banks and is among the most critical risks existing in the banking and financial system, and most of the time, the harm related to the credit risk is more than the other risks. Glantz (2003) defined credit risk as the probability of non- repayment or delayed payment of the debt by the customer. Corporate governance on the other hand is seen by Vazifehdoust, Ahmadvand, and Sadehvand (2016) as a set of rules, regulations, institutions, and methods that determine how and in favor of whom the companies are managed.

The review shows that there are few or non-empirical studies that focused on the Nigerian financial services industry, which provided research gap to fill. Moreover, previous empirical studies did not attempt to moderate the effect of the risk committee on the relationship between corporate governance mechanisms and credit risk exposure. For example, Seyram, Yakubu and Bawuah (2014) examined the corporate governance and risk management in the banking sector of Ghana using a survey questionnaire. They found that board of directors, senior staff are actively involved in risk management. In Kenya, Wangui (2014) investigated the effect of corporate governance on enterprise risk in commercial banks and concludes that increasing independent directors and expanding the board size since these facets of corporate governance were believed to improve the banks' enterprise risk management.

Truong, Trinh, Duyen and Nguyen (2015) examined the impact of corporate governance on financial risk in Vietnamese Commercial Banks. The empirical study indicated that board strengths, information disclosure, foreign capital, and stakeholder roles have a significant impact on financial risk management in the banking systems. In another study by Binh and Hoa (2015) explored the relationship between default probability of banks due to their credit risks and the corporate governance structures of these banks from the perspective of creditors. They found that commercial banks with smaller Board size, number of female shareholders in board, shareholder equity, and long-term loan are associated with significantly lower credit risk levels. Larger number of supervisory board and short-term debt has relationship with lower credit risk levels.

Cornelius (2016) examined how credit risk management in commercial banks in Kenya is impacted by corporate governance. Findings indicate that large corporate practices, policies and rights of shareholders enhance credit risk management and such factors, when exploited, firm value is enhanced. Rose (2016) examined whether the presence of weak corporate

governance features leads to more credit risk acceptance. They study investigated the Danish banks and showed that increasing the remuneration of the board would increase the bank's credit risk. On the other hand, increasing the number of board members will reduce credit risk and make a stronger control system. Calomiris and Carlson (2016) studied the relationship between corporate governance and risk management in unprotected banks. They showed that the formal governance structure that has been selected internally creates a higher risk and has a higher effect on capital for risk management, but applies less managerial rights. Chen and Lin (2016) investigated the role of corporate governance on the relationship between credit risks, interest rates, and liquidity. They concluded that credit risks, interest rates, and liquidity are linked together and can reduce the interaction between them using corporate governance and laws. They stated that ownership affects the risk appetite of the bank. They also showed that credit risks, liquidity, and interest rates have an internal connection, and as a result, banks should pay attention to the simultaneity of these risks in risk management activities relating to their corporate governance.

Francesco, Vallascas et al. (2017) examined the impact of the board's independence on the risk taking of large banks following the global crisis of 2007-2009 for a sample of 262 large banks. Using Z-Score and ROA as two measures of risk, their main results showed that greater independence of the board of directors led to more conservative risk taking in banking. A similar study Abobakr and Elgiziry (2017) using a sample of 27 Egyptian banks studied the influence of board characteristics on risk-taking by banks. They found that the size of the board has a significant positive effect on risk taking by banks. Rose (2017) analyzed board structures in listed Danish banks and found important insights on which corporate governance variables have a significant impact on a bank's credit risk exposure.

Ali, Liu, and Su (2018) studied whether the quality of corporate governance affects the risk of default, emphasizing the role of growth opportunities and stock liquidity. They found that companies with more effective corporate governance have a significant relationship with more growth opportunities. Sameera and Wijesena (2018) investigated the impact of board structure on credit risk of banks listed in Colombo Stock Exchange in Sri Lanka. The overall results and findings statistically confirmed that the board size and board independence have significantly and negatively impacted on the credit risk. Board meeting frequency, firm size and financial leverage have no significant impact on credit risk. Akbarian, Ali, Nader and Rasool (2019) examined the impacts of corporate governance on credit risk in the Iranian banking industry. The results indicate that after adjusting the control variables namely the size, the financial leverage, the ratio of capital adequacy, the GDP and inflation, there is a significant negative relationship between corporate governance quality and the credit risk. In a similar effort, Djebali and Zaghdoudi (2019) studied the effect of banking governance on credit risk in Tunisia, and tests the relationship between bank governance mechanisms and liquidity risk. The results show that credit risk and liquidity risk are directly related to bank governance mechanisms.

Research Methodology

This study employed correlation research design in assessing the impact of risk committee on the relationship between board characteristics on credit risk exposure of listed financial

service firms in Nigeria. The population of this study comprises of all the 43 Deposit Money Banks and Insurance Companies listed on the floor of the Nigerian Stock Exchange (NSE) Market as at 31st December, 2019. However, all the banks and insurance firms that were not in the NSE listing for all the period (2010 to 2019) covered by the study were filtered out, because of the difficulties in accessing their data. Based on this, the population and sample size of the study is reduced to 29 firms (see appendix). The study used secondary data from the financial statements of the sampled firms for the period of ten years.

Method of Data Analysis and Model Specification

The study employed panel regression technique of data analysis, after addressing the effect of the problems of Heteroskedasticity in the data, Ordinary Least Squares is adopted. This is necessary, because the use of OLS in the presence of Heteroskedasticity provide spurious regression problem that can lead to statistical bias (Granger & Newbold 1974). Similarly, Gujarati (2004) opined that whatever conclusion we draw or inference we make may be very misleading. Therefore, estimation using robust OLS is capable of producing estimators that are BLUE (Best Linear Unbiased Estimators). The analysis is conducted using Statistics/Data Analysis Software (STATA 13.0). Therefore, the measurements of the variables used in the study are presented in Table 1;

Table 1: Variables Measurements

Variables	Measurement	Source/Empirical Support
Dependent variable		
Credit Risk for Banks	Non - performing loans/ Total gross loan	Pagano & Sedunov, (2016).
Credit risk for Insurance	(Premium Debtors +Due from Insurer + other Receivables)/Net Asset	Sisay (2017)
Independent Variables		
Board Size	The total number of the board of directors	Batool & Javid, (2014),
Board Diligence	The total number of meetings	Demeh & Mohammed (2013), Kurawa & Ishaku (2014)
Board Independence	Proportion of non-executive directors to the total directors on the board	Maniagi et al (2013)
Moderating Variable		
Risk Committee	Risk Committee Index	Al-Shaer & Zaman, (2016).
Control Variables		
Firms Age	Company Age	(Tang, Tian & Yan, 2015).
Firms Size	Natural log of total assets.	Wu, (2013), Toby (2014)
Leverage		Altman, 1968; Hillegeist et al., 2004).

The risk committee index was calculated by dividing score obtained by total score, from the attributes in table 2.

Table 2: Risk Committee Index

S/N	Risk Committee Attributes	Measurement
1	Risk Committee Existence	1 if a firm has a stand-alone risk committee and 0 if otherwise
2	Risk Committee Size	Total number of directors in the committee
3	Risk Committee Composition	Number of non-executive directors in the committee
4	Risk Committee Independence	Number of independence directors in the committee
5	Risk Committee Meeting frequency	Number of meetings held during the accounting period
6	Risk Committee Expertise	Number of directors with accounting and/or financial background in the committee
7	Risk Committee Gender Diversity	Number of female directors in the committee

Source: Generated by the Researcher based on Al-Shaer and Zaman (2016)

Models Specification

In order to measure the impact of the risk committee on the relationship between board of directors' attributes and credit risk exposure of listed financial service firms in Nigeria, the following econometric models are used;

Unmoderated Model:

$CRE_{it} = \beta_{0it} + \beta_1 BSZ_{it} + \beta_2 BIN_{it} + \beta_3 BMT_{it} + \beta_4 BGD_{it} + \beta_5 RC_{it} + \beta_6 FSZ_{it} + \beta_7 LEV_{it} + \beta_8 AGE_{it} + \varepsilon_{it}$……………………………………………………………………………………………i

Moderated Model:

$CRE_{it} = \beta_{0it} + \beta_1 BSZ_{it} + \beta_2 BIN_{it} + \beta_3 BMT_{it} + \beta_4 BGD_{it} + \beta_5 BSZ_{it}{*}RC + \beta_6 BIN_{it}{*}RC + \beta_7 BMT_{it}{*}RC + \beta_8 BGD_{it}{*}RC + \beta_9 RC_{it} + \beta_{10} FSZ_{it} + \beta_{11} LEV_{it} + \beta_{12} AGE_{it} + \varepsilon_{it}$……………….….ii

Where CRE_{it} is credit risk exposure of firm I in year t; BSZ_{it} is board size of firm I in year t; BIN_{it} is board independence of firm I in year t; BMT_{it} is board meetings of firm I in year t; BGD_{it} is board gender diversity of firm I in year t; RC_{it} is risk committee of firm I in year t; FSZ_{it} is size of firm I in year t; LEV_{it} is leverage of firm I in year t; AGE_{it} is age of firm I in year t. And $\beta_{0it}$is the intercept, while β_1- β_{12}, are the coefficients/estimators and ε_{it} isthe residuals.

Results and Discussion

Descriptive Statistics

The descriptive statistics is presented in Table 3 showing the minimum, maximum, mean, standard deviation, skewness, and kurtosis regarding the variables used in the study. The analysis covered both the moderated and unmoderated models of the study.

Table 3: Descriptive Statistics

Variables	Mean	Std. Dev	Min.	Max.	Skewness	Kurtosis	N
CRE	0.1029	0.1777	0.0001	0.9873	2.8026	11.264	290
BSZ	12.079	3.8036	6.0000	23.000	0.4210	2.3737	290
BIN	0.2075	0.0844	0.0800	0.5700	1.2838	4.6072	290
BMT	3.9689	0.6777	2.0000	7.0000	1.5076	11.936	290
BGD	2.4552	1.1763	1.0000	6.0000	1.3469	5.1981	290
RC	0.9998	0.2089	0.3790	1.5161	-0.4165	3.2446	290
FSZ	6.9920	1.1927	5.0528	10.086	0.5928	2.6318	290
LVR	0.5853	0.2891	0.0060	0.9984	-0.3595	1.7311	290
AGE	36.362	12.013	15.000	61.000	0.3089	1.8283	290
BSZ*RC	12.404	5.4827	2.6532	29.059	0.6266	2.6975	290
BIN*RC	0.2095	0.1006	0.0442	0.6481	1.3010	5.1903	290
BMT*RC	3.9861	1.0866	1.0102	7.9596	0.0539	4.4700	290
BGD*RC	2.5573	1.6227	0.5685	9.0967	1.7862	6.8055	290

Source: Descriptive Statistic Results Using STATA 13 (Appendix)

The table presents the summary descriptive results of both the unmoderated and moderated variables of the study and the control variables. The analysis begins with the unmoderated variables.

Table 3 shows that the average credit risk exposure (CRE) of the listed financial service firms is 0.1029, with the minimum and maximum values of 0.0001 and 0.9873 respectively. The mean value implies that the financial firms' average credit risk exposure during the period covered by the study is 10.29%. The standard deviation of 0.1777 indicated that the data is widely dispersed from both sides of the mean value by 0.1777. The values of skewness and kurtosis of 2.8026 and 11.2639 respectively, provide preliminary evidence that the data did not follow the normal curve. The results from table 3 shows that the average board size (BSZ) of the listed financial service firms is 12.079, with the minimum and maximum number of directors of 6 and 23 respectively. The mean value implies that the financial firms' average number of directors during the period covered by the study is 12. The standard deviation of 3.8036 indicated that the data is dispersed from both sides of the mean value by 3.8036. The values of skewness and kurtosis of 0.4210 and 2.3737 respectively, shows that the data did not follow the normal curve.

The descriptive results in table 3 shows that the average board of directors' independence (BIN) of the listed financial service firms is 0.2075, with the minimum and maximum values of 0.08 and 0.57 respectively. The mean value implies that the listed financial firms' average independent directors during the period covered by the study is 20.75%. The standard deviation indicated that the data is dispersed from both sides of the mean value by 0.0844. The values of skewness and kurtosis of 1.2838 and 4.6072 respectively, provide preliminary evidence that the data did not follow the normal curve. The table also shows that the average board size meetings (BMT) of the listed financial service firms is 3.9689, with the minimum and maximum number of meetings of 2 and 7 respectively. The mean value suggested that the listed financial service firms' average number of meetings during the period covered by the

study is 4. The standard deviation of shows that the data is dispersed from both sides of the mean value by 0.6777. The values of skewness and kurtosis of 1.5076 and 11.937 respectively, shows that the data did not follow the normal curve and hence not meet the normality assumption.

The descriptive results from the table shows that the average board of directors' gender diversity (BGD) of the listed financial service firms is 2.4552, with the minimum and maximum values of 1 and 6 respectively. The mean value indicates that the listed financial service firms' average number of female directors during the period covered by the study is 2. The standard deviation indicated that the data is dispersed from both sides of the mean value by 1.1763. The values of skewness and kurtosis of 1.3469 and 5.1981 respectively, provide evidence that the data did not follow the normal curve. Table 3 also shows that the average risk committee score (RC) of the listed financial service firms is 0.9998, with the minimum and maximum scores of 0.3790 and 1.5161 respectively. The mean value implies that the listed financial service firms' average risk committee score during the period covered by the study is 99.98%. The standard deviation shows that the data is dispersed from both sides of the mean value by 0.2089. The values of skewness and kurtosis of -0.4165 and 3.2446 respectively, shows that the data did not follow the normal curve as well as the normality assumption.

Moreover, the average risk committee score of 99.98% implies that there was a presence of risk committee in the listed financial service firms during the period, together with the other risk committee characteristics (risk committee size, risk committee composition, risk committee independence, risk committee meetings frequency, risk committee expertise and risk committee gender diversity). Table 3 indicates that the average firm size (FSZ) which is the natural logarithm of the scaled total assets of the listed financial service firms is 6.9220, with the minimum and maximum values of 5.0528 and 10.0858 respectively. The mean value implies that the listed financial service firms' average size of the firms during the period covered by the study is 7. The standard deviation shows that the data is dispersed from both sides of the mean value by 1.1927. The values of skewness and kurtosis of 0.5928 and 2.6318 respectively, shows that the data did not follow the normal curve as well as the normality assumption.

The descriptive results from the table also shows that the average leverage (LVR) of the listed financial service firms is 0.5853, with the minimum and maximum values of 0.006 and 0.9984 respectively. The mean value indicates that the listed financial service firms' average debt to total assets ratio during the period covered by the study is 58.53%. The standard deviation indicated that the data is dispersed from both sides of the mean value by 0.2891. The values of skewness and kurtosis of -0.3595 and 1.7311 respectively, provide evidence that the data did not follow the normal distribution. The table also shows that the average age (AGE) of the listed financial service firms is 36.362 years, with the minimum and maximum years of 15 and 61 respectively. The mean value implies that the listed financial service firms' average age from incorporation date during the period covered by the study is 36 years. The standard deviation shows that the data is widely dispersed from both sides of the mean value by 12.0131. The values of skewness and kurtosis of 0.3089 and 1.8283 respectively, shows that the data did not follow the normal curve and the normality assumption.

For the moderated variables of the study, Table 3 indicates that the average moderated board of directors' size (BSZ*RC) of the listed financial service firms is 12.4042, with the minimum and maximum values of 2.6532 and 29.0588 respectively. The mean value implies that the listed financial service firms' average size of their boards during the period covered by the study is 12 after moderation. The standard deviation indicated that the data is widely dispersed from both sides of the mean value by 5.4827. The values of skewness and kurtosis of 0.6266 and 2.6975 respectively, provide evidence that the data did not follow the normality. The results from Table 3 also indicate that the average moderated board of directors' independence (BIN*RC) of the listed financial service firms is 0.2095, with the minimum and maximum values of 0.0442 and 0.6481 respectively. The mean value implies that the listed financial service firms' average board independence during the period covered by the study is 20.95% after moderation. The standard deviation indicated that the data is dispersed from both sides of the mean value by 0.1006. The values of skewness and kurtosis of 1.3010 and 5.1903 respectively, shows that the data did not follow the normality assumption.

Similarly, Table 3 indicates that the average moderated board of directors' meetings frequency (BMT*RC) of the listed financial service firms is 3.9861, with the minimum and maximum values of 1.0107 and 7.9596 respectively. The mean value implies that the listed financial service firms' average number of boards meetings during the period covered by the study is 4 after moderation. The standard deviation indicated that the data is widely dispersed from both sides of the mean value by 1.0866. The values of skewness and kurtosis of 0.0539 and 4.4700 respectively, provide evidence that the data did not follow the normality criteria. The table also shows that the average moderated board of directors' gender diversity (BGD*RC) of the listed financial service firms is 2.5573, with the minimum and maximum values of 0.5685 and 9.0967 respectively. The mean value implies that the listed financial service firms' average number of female directors on the board during the period covered by the study is 3 after moderation. The standard deviation indicated that the data is dispersed from both sides of the mean value by 1.6227. The values of skewness and kurtosis of 1.7862 and 6.8055 respectively, shows that the data did not follow the normality assumption.

Although the analysis of the descriptive statistics suggested that the data collected for the variables of the study did not meet the normality assumption, as indicated by the standard deviations and the coefficients of skewness and kurtosis. A more specific test for normal data (Shapiro Wilk) test and the Jacque Bera test are applied to determine the normality of the data in the following sub-section, from the result in Table 4.

Table 4: Normality Test

Variables	W	V	Z	Prob>Z	N
CRE	0.6015	82.399	10.399	0.0000	290
BSZ	0.9644	7.365	4.679	0.0000	290
BIN	0.8926	22.210	7.266	0.0000	290
BMT	0.9209	16.351	6.548	0.0000	290
BGD	0.9155	17.478	6.705	0.0000	290
RC	0.9852	3.069	2.628	0.0043	290
FSZ	0.9553	9.241	5.211	0.0000	290
LVR	0.9026	20.128	7.035	0.0000	290
AGE	0.9426	11.865	5.797	0.0000	290
BSZ*RC	0.9583	8.612	5.046	0.0000	290
BIN*RC	0.9069	19.234	6.929	0.0000	290
BMT*RC	0.9594	8.401	4.988	0.0000	290
BGD*RC	0.8339	34.327	8.287	0.0000	290

Source: Results Using STATA 13 (Appendix)

Null hypothesis principle is used in the Shapiro-WIlk (W) test for normal data, under the principle; null hypothesis that 'the data is normally distributed' is tested. Table 4 indicates that data from all the variables of the model are not normally distributed because the P-values are significant at 1% level of significance (p-values of 0.0000). Therefore, the null hypothesis (that, the data is normally distributed) is rejected for CRE, BSZ, BIN, BMT, BGD, RC, FSZ, LVR, AGE, BSZ*RC, BIN*RC, BMT*RC, and BGD*RC. Moreover, The Jacque-Bera statistic test (see appendix) shows a p-value of 1% and 5% for all the variables implying that the data do not follow the normal distribution. This may lead to some bias results in OLS regression and, hence the need for a more generalized regression model.

Correlation Analysis

Table 5 shows the Pearson Correlation coefficients between the dependent and the independent variables. It also shows the relationship amongst the independent variables. The asterisk beside the correlation coefficient shows the level of significance of the coefficients.

Table 5: Correlation Matrix

	CRE	BSZ	BIN	BMT	BGD	RC	FSZ	LVR	AGE	BSZ*RC	BIN*RC	BMT*RC	BGD*RC
CRE	1.0000												
BSZ	-0.2739*	1.0000											
BIN	-0.1738*	-0.3681*	1.0000										
BMT	-0.0688	-0.0380	-0.1005	1.0000									
BGD	-0.2444*	0.4621*	-0.1163**	0.1654*	1.0000								
RC	-0.3446*	0.4126*	0.1164**	0.1257**	0.4187*	1.0000							
FSZ	-0.1448**	0.4451*	-0.2173*	0.0847	0.1289**	0.1539*	1.0000						
LVR	-0.0375	-0.4216*	-0.0036	-0.0349	-0.0407*	0.1763*	0.2994*	1.0000					
AGE	-0.0156	-0.0915*	-0.0119	0.2149*	-0.0276*	0.1267*	-0.0125	-0.0590	1.0000				
BSZ*RC	-0.3369*	0.9107*	-0.2159*	0.0174	0.5566*	0.7319*	0.3823*	0.3779*	-0.0257	1.0000			
BIN*RC	-0.2631*	-0.1483**	0.8890*	0.0037	0.0822	0.5236*	-0.1079**	0.0700	0.0476	0.1153*	1.0000		
BMT*RC	-0.2822*	0.2784*	0.0513	0.6515*	0.4124*	0.8249*	0.1621*	0.1016**	0.2299*	0.5544*	0.4102*	1.0000	
BGD*RC	-0.2895*	0.5106*	-0.0481	0.1478*	0.9457*	0.6559*	0.1631*	0.0539	-0.0137	0.6938*	0.2434*	0.5827*	1.0000

*Correlation is Significant at 1% Level **Correlation is Significant at 5% Level ***Correlation is Significant at 10% Level

Source: Correlation Matrix Results Using STATA 13 (Appendix)

Table 5 shows that credit risk exposure (CRE) is negatively correlated with board of directors' size (BSZ) of the listed financial service firms in Nigeria before moderation, from the correlation coefficient of -0.2739, which is significant at 1% level of significance. This implies that credit risk exposure has an inverse relation with the size of the board of directors during the period under review.

The results from Table 5 shows that there is a significant negative association between credit risk exposure and board of directors' independence (BIN) of the listed financial service firms in Nigeria before moderation, from the correlation coefficient of -0.1738, which is statistically significant at 1% level of significance. This implies that credit risk exposure reduces as the composition of independent directors in the board increase. The results also show that there is negative correlation between credit risk exposure and board of directors' meetings (BMT) of the listed financial service firms in Nigeria before moderation, from the correlation coefficient of -0.0688, which is not statistically significant at all levels of significance. This implies that credit risk exposure decreases as the board meeting frequency increases.

Table 5 indicates that there is a significant negative correlation between credit risk exposure and board gender diversity (BGD) of the listed financial service firms in Nigeria before moderation, from the correlation coefficient of -0.2444 which is statistically significant at 1% level of significance. This implies that credit risk exposure reduces as the composition of female directors in the board increase. The results also indicate that there is negative correlation between credit risk exposure and risk committee (RC) of the listed financial service firms in Nigeria, from the correlation coefficient of -0.3446, which is statistically significant at 1% level of significance. This implies that credit risk exposure decreases with the presence and attributes of risk committees increases.

For the control variables, the Table shows that credit risk exposure (CRE) is negatively correlated with firm size (FSZ) of the listed financial service firms in Nigeria, from the correlation coefficient of -0.1448, which is statistically significant at 5% level of significance.

This implies that credit risk exposure and size of firm move in opposite direction during the period under review. Similarly, there is an insignificant positive relationship between credit risk exposure (CRE) and firm leverage (LVR) of the listed financial service firms in Nigeria, from the correlation coefficient of 0.0375, which is not statistically significant at all levels of significance. This implies that credit risk exposure and firm leverage move in the same direction during the period under review. Additionally, credit risk exposure (CRE) is negatively correlated with firm age (AGE) of the listed financial service firms in Nigeria, from the correlation coefficient of -0.0156, which is not statistically significant at all levels of significance. This suggests that credit risk exposure and size of firm move in opposite direction during the period under review.

Table 5 on the other hand shows that credit risk exposure (CRE) is negatively correlated with board of directors' size (BSZ*RC) of the listed financial service firms in Nigeria after moderation, from the correlation coefficient of -0.3369, which is statistically significant at 1% level of significance. This implies that credit risk exposure has an indirect relationship with the moderated size of the board of directors during the period under review. The results from Table 5 also indicate that there is a significant negative association between credit risk exposure and moderated board of directors' independence (BIN*RC) of the listed financial service firms in Nigeria, from the correlation coefficient of -0.2631, which is statistically significant at 1% level of significance. This implies that credit risk exposure decreases as the moderated composition of independent directors increases. The results also show that there is negative correlation between credit risk exposure and moderated board of directors' meetings (BMT*RC) of the listed financial service firms in Nigeria, from the correlation coefficient of -0.2822, which is statistically significant at 1% level of significance. This implies that credit risk exposure decreases as the moderated board meeting frequency increases. Lastly, the table shows that there is a significant negative relationship between credit risk exposure and board gender diversity (BGD*RC) of the listed financial service firms in Nigeria, from the correlation coefficient of -0.2895, which is statistically significant at 1% level of significance. This implies that credit risk exposure decreases as the moderated board female members increases.

However, the analysis of the correlation results indicated some preliminary evidence that risk committee moderate the relationship between board of directors' attributes and credit risk exposure of the listed financial service firms in Nigeria. For instance, the strength of the association between credit risk exposure and board size, board independence, board meetings and board gender diversity increased after moderation.

Robustness Tests

This section presents the results from the robustness tests conducted. The robustness tests include: Multicollinearity test, Heteroscedasticity test and normality test of error term.

I. **Multicollinearity Test:** This was investigated using three tests; Correlation Matrix, Variance Inflation Factor (VIF) and the Tolerance Value (TV) as presented in Table 6.

Table 6: Multicollinearity Test

Unmoderated Model			Moderated Model		
Variables	**VIF**	**TV(I/TV)**	**Variables**	**VIF**	**TV(I/TV)**
BSZ	2.60	0.3849	BSZ	2.37	0.4213
BGD	1.60	0.6266	BGD*RC	2.29	0.4359
RC	1.54	0.6493	BMT*RC	2.01	0.4984
LVR	1.42	0.7036	FSZ	1.51	0.6617
BIN	1.40	0.7152	BIN*RC	1.50	0.6656
FSZ	1.30	0.7664	LVR	1.41	0.7087
BMT	1.15	0.8667	BGD	1.36	0.7342
AGE	1.10	0.9128	BMT	1.24	0.8085
MEAN VIF	1.51		AGE	1.13	0.8870
			BSZ*RC	1.09	0.9149
			BIN	1.07	0.9387
			MEAN VIF	1.54	

Source: Results Using STATA 13 (Appendix)

Table 6 indicated the absence of the perfect multicollinearity among the explanatory variables for both the moderated and unmoderated variables, as shown by the mean VIF of 1.51 for unmoderated and 1.54 for the moderated model. The decision criterion for the VIF is that a value of 10 and above implies the presence of perfect multicollinearity. Similarly, all the Tolerance Values for the unmoderated and moderated are more than 0.1 testifying the absence of multicollinearity in the models. On the other hand, the correlation matrix in Table 4 also indicated the absence of strong correlations among the independent variables.

ii. **Heteroscedasticity Test:** This is checked using the Breuch Pagan/Cook-Weisberg test for heteroscedasticity and Cameron and Trivedi's Test for heteroscedasticity using the results from Table 7.

Table 7: Heteroskedasticity Test

Unmoderated Model		Moderated Model	
Breusch-Pagan Test		**Breusch-Pagan Test**	
Chi Square	134.99	Chi Square	127.05
Prob>Chi Square	0.0000	Prob>Chi Square	0.0000
Cameron &Trivedi's IM Test		**Cameron &Trivedi's IM Test**	
Chi Square	108.04	Chi Square	140.46
P-Value	0.0000	P-Value	0.0000

Source: Results Using STATA 13 (Appendix)

Table 7 shows the presence of Heteroskedasticity in the models as indicated by the Breuch Pagan/Cook-Weisberg test for heteroskedasticity Chi-square of 134.99 with p-value of 0.0000 for unmoderated and 127.05 with p-value of 0.0000. Moreover, the Cameron and Trivedi's Test for heteroscedasticity also confirm the problem of heteroscedasticity in the models of the study, from the Chi-square of 108.04 with p-value of 0.0000 for unmoderated and 140.46 with p-value of 0.0000. This makes the interpretation of Ordinary Least Square (OLS) not suitable because of the violation of the classical assumptions of OLS. However, steps were taken to

correct it by estimating a robust standard error and conducting a normality test of the error term.

iii. **Normality of the Error Term (Kernel Density):** based on the kernel density test for normality of the error term, it was found that most of the residual of the error term showed that they were tolerably mild. As such, a high level of normality of the error term were attained for both the moderated model and unmoderated model of the study. In moderated model the kernel density estimate shows that it is normally distributed which is neither skewed to the right or left. For the moderated model, it was shown that the error term is normally distributed except that it is slightly skewed to the right (See Appendix).

Regression Result and Hypotheses Testing

In this section, the interpretation, analysis and discussion of the regression results in respect of the unmoderated and moderated models is presented. Comparison is made between the two results from the unmoderated and moderated models. Hypotheses formulated earlier in chapter one was tested based on the analysis.

Table 8: Summary of Robust Random-Effects (GLS) Regression

Unmoderated				**Moderated**			
Variables	**Coef.**	**t-stat**	**P-value**	**Variables**	**Coef.**	**t-stat**	**P-value**
BSZ	-0.0163	-4.36	0.000	BSZ	-0.0235	-0.88	0.380
BIN	-0.5838	-3.92	0.000	BIN	-1.2755	-1.56	0.119
BMT	-0.0291	-0.86	0.388	BMT	0.0365	0.48	0.632
BGD	0.0039	0.36	0.718	BGD	0.0039	0.08	0.934
RC	-0.1621	-2.60	0.009	FSZ	-0.0056	-1.02	0.307
FSZ	-0.0051	-0.91	0.363	LVR	0.1157	3.28	0.001
LVR	0.9026	3.52	0.000	AGE	-0.0001	-0.06	0.949
AGE	0.0001	0.11	0.909	BSZ*RC	0.0061	0.23	0.820
Constant	0.6294	3.69	0.000	BIN*RC	0.6903	0.83	0.408
R Square	0.2468			BMT*RC	-0.0809	-0.75	0.452
F-Statistic	52.82		0.0000	BGD*RC	-0.0038	-0.09	0.928
Hman Test	10.22		0.2499	Constant	0.5592	3.03	0.002
LM Test	15.96		0.0000	R Square	0.2414		
Test for Sig. Diff.				F-Statistic	68.97		0.0000
Chi Square	55.70			Hman Test	15.66		0.1544
Prob>Chi2	0.0000			LM Test	15.55		0.0000

Source: Results Using STATA 13 (Appendix)

The results from Table 8 shows that the Hausman specification test for choice between the Fixed-Effect Regression Model and Random-Effect Regression Model. The test confirms that for the unmoderated model, the Random-Effect Regression Model is the most suitable for the study, from the Hausman Chi-square value of 10.22 with p-value of 0.2499. However, the Breusch and Pagan Lagrangian Multiplier (LM) Test for Random Effects, which indicated that there is statistically significant variance among the units in the panel (Chi-square of 15.96 with p-value of 0.000) confirmed that Random-Effect regression model is appropriate for

interpretation. Table 8 on the other hand shows in respect of moderated model that the Random-Effect Regression Model is the most suitable for the study, from the Hausman Chi-square value of 15.66 with p-value of 0.1544. However, the Breusch and Pagan Lagrangian Multiplier (LM) Test for Random Effects, which indicated that there is statistically significant variance among the units in the panel (Chi-square of 15.55 with p-value of 0.000) confirmed that Random-Effect regression model is appropriate for interpretation.

The coefficient of multiple determination, R-square of 0.2468 for unmoderated variables, indicated that the independent variables jointly explained 24.68% of the total variation in the dependent variable (credit risk exposure). The F-Statistic (Wald Chi-Square) value of 52.82, which is statistically significant at 1% level of significance (p-value 0.0000), indicates that the model is fit at 99% confidence level. Based on the overall fitness of the model, the analysis of the regression estimators as well as the hypotheses testing would be conducted. With regard moderated model, the coefficient of multiple determination, R-square of 0.2414, indicated that the independent variables jointly explained 24.14% of the total variation in the dependent variable (credit risk exposure). The F-Statistic (Wald Chi-Square) value of 68.97, which is statistically significant at 1% level of significance (p-value 0.0000), indicates that the model is fit at 99% confidence level. Based on the overall fitness of the model, the analysis of the regression estimators as well as the hypothesis testing would be conducted.

Table 8 shows from unmoderated results that BSZ, BIN and RC have a significant statistical negative effect on credit risk exposure of listed financial service firms in Nigeria, from the regression coefficients of -0.0164, -0.5838 and -0.1621 respectively. They are all significant at a 1% level of significance. This implies that for every increase in the number of board members, number of independent directors and risk committee attributes, there is a significant decrease in the level of credit risk exposure by listed financial service firms during the period under review. The results show that BMT has an insignificant negative effect on credit risk exposure, while BDG has an insignificant positive effect on credit risk exposure during the period. From the control variables, FSZ has an insignificant negative effect, and LVR has a significant positive effect on credit risk exposure, while AGE has an insignificant positive effect on credit risk exposure of sample financial institutions during the period.

In contrast, Table 8 shows from the moderated results that BSZ and BIN have an insignificant statistical negative effect on credit risk exposure of listed financial service firms in Nigeria, from the regression coefficients of -0.0235 and -1.2755 respectively. They are all not statistically significant at all levels of significance. This implies that risk committee did not moderate the relationships between board size, board independence and credit risk exposure of listed financial service firms during the period under review. The results also show that BMT has an insignificant positive effect on credit risk exposure, while BDG also has an insignificant positive effect on credit risk exposure during the period. From the control variables, FSZ has an insignificant negative effect, and LVR has a significant positive effect on credit risk exposure, while AGE has an insignificant positive effect on credit risk exposure of sample financial institutions during the period. Table 8 also shows that all the moderated variables are not statistically significant at all levels, BSZ*RC, BIN*RC, BMT*RC and BGD*RC, from the p-values 0.820, 0.408, 0.452 and 0.928 respectively.

However, the test for significant difference, which recorded a chi-square value of 55.70 and p-value of 0.0000 (see Appendix), indicates that there was a significant difference recorded between the unmoderated and the moderated models. The direction of the moderated variables changes after the moderation except for board size, board independence and board gender diversity. In addition, the level of significance of the variables changes for all the variables as they became insignificant after the moderation. This implies that the variables are affected when they are moderated with the risk committee. Based on this evidence, the study rejects the null hypothesis one (H01) which states that risk committee has no significant effect on the relationship between board attributes and credit risk exposure of listed financial service firms in Nigeria.

Conclusion and Recommendations

Based on the findings, the study concludes that risk committee of the listed financial service firms in Nigeria has an effect on the relationships between board attributes and credit risk exposure. The study concludes that there was a significant difference recorded before the moderation and after moderation of board size, board independence and board meetings with risk committee. The direction of the moderated variables changes after the moderation except for board gender diversity. The study also concludes that the level of significance of the variables changes for all the variables as they became insignificant after the moderation. This implies that the variables are affected when they are moderated with the risk committee. The study therefore recommends that the CBN, SEC and the board of directors of listed financial service firms should review the structure and composition of the risk committees of financial institutions in Nigeria.

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