"Effect of board characteristics and risk management practices on the financial performance of listed non-financial firms in Nigeria"

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BUSINESS PERSPECTIVES

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EFFECT OF BOARD CHARACTERISTICS AND RISK MANAGEMENT PRACTICES ON THE FINANCIAL PERFORMANCE OF LISTED NON-FINANCIAL FIRMS IN NIGERIA

Abstract

Faulty board configurations associated with risk management practices are alleged to be the primary sources of most corporate failures. Therefore, experts have suggested that firms should adopt holistic risk management practices. This study investigates the interactive effect of board characteristics with risk management activities on the performance of listed Nigerian non-financial firms. The study is anchored on the agency theory perspective. It is designed as ex post facto inquiry with a population of 113 companies, from which a sample of 96 firms was drawn from firms with a complete set of data. Secondary data were extracted from the NSE Factbook and Thomson Reuter's DataStream for 2010–2019. The static panel regression technique was utilized to analyze and estimate the interaction between the variables. The findings show that all the independent variables positively impacted ROA of the listed firms. Nevertheless, concerning market evaluation (Tobin-Q), except for board financial experts and audit committee meetings, risk management committee meetings and the presence of chief risk officer showed an insignificant impact. The combined implication is that although firms have complied with the provision of the CG codes on risk governance structure, the improvements associated with risk management aimed at enhancing market evaluation are nonetheless not deeply embedded in these firms. Firms are suggested to implement effective risk management practices to achieve competitive advantages and substantiality. More studies are advocated to extend the literature by expanding the scope.

Keywords	risk management, board diversity, ROA, Tobin's q, non-financial firms
JEL Classification	M48, G34

INTRODUCTION

Risk management remains a subject that has recently generated much interest by researchers because the problems of uncertainty and risk in management are not new (Olson & Wu, 2020). These subjects and how they relate to corporate performance have become themes of scholarly debate for many decades (Oye, 2020). Risks in all ramifications are events that impact the firm's capability to realize its set objectives and might culminate in several mutually dependent outcomes which may either be damaging or successful (Stein et al., 2019). Various risks are encountered when taking advantage of available strategic opportunities (Yilmaz & Flouris, 2017). These risks may threaten the realization of the firm's objectives and need to be managed or mitigated (Erin et al., 2019). While it is widely accepted that most firms are established to maximize value for their owners, the events associated with value creation are risk-bearing (Erin et al., 2020).

The business sector is characterized by numerous forms of risk. These risks, if not well managed, have the capacity to crimple or create a substantial monetary and economic crisis not limited to the industry alone but the economy (Erin & Aribaba, 2021). For example, risk events such as the Global Financial Crisis in 2007–2008 were mainly prompted by the risk associated with subprime debtors that typically have a very high default rate. Also, another risk event is the COVID–19 pandemic and the consequential effects of the looming economic recession. In managing risk events, risk management activities and practices adopted by quite a number of firms are not adequate and effective in identifying the degree to which internal and contextual forces induce risk culture (Eryilmaz, 2018). Moreover, investors continue to buy the latest investments, devoid of appropriate risk management procedures. Therefore, the significance of an effective risk management program has often been downgraded as firms tend to focus primarily on corporate expansion decisions relegating the need to mitigate risks (Danisman & Demirel, 2019).

In Nigeria, risk management practices have always generated concerns because of big corporate scandals, as witnessed in Cadbury (Nig) Plc financial sector collapses. These risk events are not restricted only to Nigeria but are witnessed even in developed economies like the US and Europe (Ojeka et al., 2019; Erin & Aribaba, 2021). Thus, the Nigerian government adopted models from the developed countries and has, through the capital market and financial market regulators, introduced various corporate governance codes in which risk management has been listed and noted as among the cardinal duties of the firm's management (Salaudeen et al., 2018). Corporate risk management adoption in Nigeria is seen as an emerging strategic tool designed to help managers act on the present and future risks and manage seeming risks through a holistic method (Erin et al., 2020). Risk management is vital as it can help businesses to better comprehend, improve and suitably assess, manage or mitigate inherent risk (Lim et al., 2017; Slagmulder & Devoldere, 2018). The Nigerian CG code has equally mandated all the listed firms to adopt the risk management framework by constantly disclosing their risk appetite and reporting the establishment and activities of the risk management committee in their annual reports (Erin & Aribaba, 2021).

However, past studies focusing on board characteristics, risk management structure, and performance specifically in Nigeria are scanty (Salaudeen et al., 2018). Where these exist, most of the findings have signaled poor corporate governance and risk management in most listed Nigerian firms with poor performance (Kakanda et al., 2017). Furthermore, the current debate portends that the systemic weaknesses and weak financial performance of the Nigerian firms in the recent past are caused by the failures of boards and risk management practices. This situation emerged despite available regulatory interventions tailored to address poor corporate governance's challenges. In addition, firms still operate risk management practices that are lacking robust risk quality assessment.

1. LITERATURE REVIEW

Uncertainty and risk are two words often misconstrued to have the same meaning. Uncertainty is an instance of relative probability being numerically unspecified and non-comparable to other likelihoods of occurrence (Davidson, 1988). On the contrary, risk is when decisions are taken under situations with known probabilities of occurrence (Knight, 1921). Rowe (1977), however, viewed risk from a different perspective. He asserted that risk is the odds of occurrence of undesirable negative consequences of an event. Risk is expressed as a set of situations associated with outcomes and expectations (Kaplan, 1991). It is this likelihood that differentiates risk from uncertainty.

The focus on risk management has recently shifted from a silo-based approach to enterprise risk management (ERM) (Parast & Shekarian, 2019). This is because growing complexities, uncertainties, and ambiguities have, without doubt, attracted the firms' attention resulting in a transition from the silo-based to an inclination toward holistic risk management (McShane, 2018). ERM is an all-inclusive risk management model requiring the recognition, evaluation,

and management of risk holistically and systematically (Erin & Aribaba, 2021). ERM is a framework outlined as a monitoring tool for managing business activities risk (Salaudeen et al., 2018). It is a package that evaluates and manages risks encountered to conform to the standard for compliance required by the creditors, rating organizations, regulating bodies and stock exchanges, and to achieve its objectives (Meidell & Kaarbøe, 2017). ERM comprises risk governance, on the one hand, which is a coordinated mechanism for addressing the agency problem of over or under-management risk, and, on the other hand, risk aggregation: a synchronization through evaluation of the information relating to the problem of risk management (Jankensgård, 2019).

Some views in favor of ERM support the notion that it enhances firms' decision-making and capital allocation processes (Meidell & Kaarbøe, 2017; Khan & Ali, 2017). It has also improved results because it supports firms to avoid failures, insolvency, and brand losses (Florio & Leoni, 2017). Also, the acceptance of ERM framework has been noted to lower earnings variability and prevent undesirable surprises in the financial and capital markets. Furthermore, ERM is considered to have enhanced decision-making practices as it relates to selecting optimum investment opportunities. This school of thought supports the notion that ERM positively impacts firm performance (Khan & Ali, 2017). To them, the implementation of ERM has helped the board and management to recognize the risks in the business, define the firms' risk policy, state the risk appetite, outline the boundaries within which to take a risk, and evaluate the effectiveness of the whole risk management practices put in place (Pierce & Goldstein, 2018). All these are in contrast to those who believe that risk management is cost-bearing and has not positively impacted performance (Shima et al., 2013; Danisman & Demirel, 2019).

1.1. Agency theory

Agency theory, as it relates to board and risk management, is concerned with managing the two problems arising from the principal-agent relationship. On the one hand, there is the problem of agency cost of monitoring the agent's behavior by the principal. On the other hand, there is the issue of the varied approaches of the principal and agents concerning risk (Eisenhardt, 1989).

The principal is presumed to be risk-neutral, but the agents are risk-averse (Eisenhardt, 1989). The outcome of this problem is what Jensen and Meckling (1976) refer to as agency costs suffered by principals/owners in an attempt to make sure that agents/managers act in the principals' interest (Salaudeen et al., 2018). Agency theory has been effective in reducing these problems by a contractual approach. This is because firms are considered legal bodies established by a contract term. The contract aims to align the interest of both the principal and agent (Jensen & Meckling, 1976). The responsibility is to adopt an optimal incentive package aimed at marshaling the behavior of the managers/agents with the interest of the principals. The significant issue is whether an outcome-oriented contract (accounting-based and market evaluation performance) is preferable to a behavioral-based contract (such as salaries and wages, corporate governance). Accessibility to complete information is a tiebreaker in the decision of choice of an optimal contract. Where it is practically possible to completely monitor the agent's behavior, the optimal contract should be behavioral-based. In contrast, if it is impossible to fully observe the agent's behavior, an outcome-oriented result is better (Lundqvist & Vilhelmsson, 2018). However, the weaknesses in using contracts to resolve agency problems gave room for the use of governance mechanisms, specifically, the board committees and subcommittees in aligning the interest of the principal with those of the agent (Berry-Stölzle & Xu, 2018).

In assessing the impact of board traits and risk management structures in Nigeria, some views support the notion that the peculiarity of the country's institutional setup impacts its overriding model. A framework of risk management practices coupled with the dearth of empirical research in the region, in particular, presents the prospect of contributing to the existing repository of knowledge (Mardessi & Arab, 2018). For example, Salaudeen et al. (2018) assessed the influence of ERM on the ROA of listed consumer sector firms. The study found debatable outcomes. In addition, Ojeka et al. (2019) analyzed the implications of the CFO function in risk management programs in some Nigerian financial sub-sector firms. The study indicated an insignificant impact but was accentuated by potential oversight as it re-

lates to the variables used. Furthermore, most of the studies from the Nigerian context had gauged the performance of the studied firms from the ROA perspective, with few reflecting the Tobin-Q, which is considered an ideal measure of firm value. Thus, this study aims to explore:

1. Influence of risk management committee meetings on the financial performance of listed non-financial firms in Nigeria.

2. Influence of audit committee meetings on the financial performance of listed non-financial firms in Nigeria.

3. Influence of board characteristics as represented by the proportion of financial experts on the financial performance of listed non-financial firms in Nigeria.

4. Influence of the presence of a chief risk officer on the financial performance of listed non-financial firms in Nigeria.

1.2. Empirical evidence

Zemzem and Kacem (2014) discovered that activities of the RMC in the firms have a striking negative effect on performance. Danisman and Demirel (2019) examined the joint impact of firms' risk management strategies, using variables such as financial and operational risk assessment, on firm value in a developing economy. It was highlighted that risk management did not significantly boost the value of a firm. Furthermore, Jonek-Kowalska (2019) analyzed central European countries, namely the effect of risk management programs on firm productivity. The outcomes accentuate the view that even with corporate risk management systems adoption, none of the firms showed excellent financial outcomes and improved firm value. Finally, Kaya (2018) investigated the efficiency of internal control and risk management structure in creating firm value. It was discovered that firm performance and value are improved by effective and robust ERM adoption and implementation.

The majority of risk management structural studies have focused on diverse components of risk governance variables. They are the chief risk of-

ficer (Salaudeen et al., 2018; Ojeka et al., 2019), the risk management committee (Florio & Leoni, 2017; Yilmaz & Flouris, 2017), the audit committee and the board members with financial expertise (Salaudeen et al., 2018).

Thus, the literature from other contexts on the area discussed is inadequate on the scope of the variables of risk management (Tubis & Werbińska-Wojciechowska, 2018; Wang et al., 2018; Saeidi et al., 2021; Silva et al., 2018). Moreover, while some are lacking in the methodological approach adopted (Salaudeen et al., 2018; Shad et al., 2019), others use small sample sizes (Zemzem & Kacem, 2014; Yilmaz & Flouris, 2017), or even varying choice of the proxies of company performance used (Khan & Ali, 2017). This renders generalization practically impossible because of the divergent findings from these studies. Therefore, there is a necessity and motivation to further contribute to the literature on risk management with a specific focus on the Nigerian listed non-financial firms.

Salaudeen et al. (2018) and Erin and Aribaba (2021) found a positive relationship between financial performance and risk management committees. However, Salaudeen et al. (2018) and Awwad et al. (2019) observed a negative relationship between audit committees and performance. On the contrary, Danisman and Demirel (2019) and Jonek-Kowalska (2019) could not produce evidence of the link between these variables and firm performance.

Similarly, some studies found positive links between financial experts on the board and firm performance (Salaudeen et al., 2018; Durst et al., 2019; Erin et al., 2019), while others found no such evidence (Danisman & Demirel, 2019). Likewise, others point out that an increased proportion of financial experts could be damaging to firm performance (Jonek-Kowalska, 2019).

Furthermore, from the agency theorists' perspective, the chief risk officer is a c-level officer in the firm strategy and, therefore, an agent of the principal. The chief risk officer's responsibility lies in overseeing the risk management function of the business and must be visible in the activities of the risk management committee (Salaudeen et al., 2018). Therefore, his/her role should be clear and

distinct from those of the chief internal auditor or the chief financial officer, who is in some cases predominantly interested in achieving profitability measures as a key performance indicator of losses (Florio & Leoni, 2017). However, the chief risk officer has been found to undertake risk management functions for the chief finance officer (Ojeka et al., 2019). This should not be so; the chief risk officer should undertake this function for the board (Karanja, 2017) to protect their investment in the short and long run. This separation of roles is considered good corporate governance for risk management practice. Empirically, studies have also presented mixed results regarding the effect CRO (chief risk officer) on financial performance (Ojeka et al., 2019; Saeidi et al., 2021; Erin & Aribaba, 2021).

Because of the inconsistencies in findings from these studies, the following null hypotheses are formulated:

H01: *Risk management committee meetings do not significantly influence the financial performance of listed non-financial firms in Nigeria.*

H02: *Audit committee meetings do not significantly influence the financial performance of listed non-financial firms in Nigeria.*

H03: *Proportion of financial experts on the boards does not significantly influence the financial performance of listed non-financial firms in Nigeria.*

H04: *Presence of chief risk officer does not significantly influence the financial performance of listed non-financial firms in Nigeria.*

2. METHODOLOGY

The study is a quantitative approach inquiry based on ex post facto research. The static panel data requires the use of longitudinal and cross-sectional time-series data. These data aid observation of the behavior of entities under study across time. Using the panel data is an improvement over some past studies which used a cross-sectional method (Mburu et al., 2015). The use of the design is consistent with Florio and Leoni (2017) and Jonek-Kowalska (2019).

The study sample was 96 firms selected from 113 non-financial NSE-listed firms. For a firm to be selected for this study, it has to meet these listed criteria: the primary listing must be in the NSE platform, and at least ten (10) complete sets of its annual financial statements and reports from 2010 to 2019 must be accessible from the Nigerian Exchange Factbook and/or Thomson Reuter DataStream. Also, the boards' financial education characteristics and risk management variables must be available in the financial statements, companies, or other websites. In effect, the sample size of 96 firms presents the likely representation of what is obtainable in the firms and can characterize the entire targeted population (Table 1).

Table 1. Sample characteristics

Source: Authors' compilation extracted from NSE Factbook.

| Industry | Firms | Target | | | | Actual | | | |
| | | Sample Size | | No of firm − Years | | Sample Size | | No of firm − Years | |
	No	No	%	No	%	No	%	No	%
Agriculture	05	05	4.42	50	5.21	05	5.21	50	5.21
Conglomerates	06	06	5.31	60	6.25	06	6.25	60	6.25
Construction	09	03	7.96	30	3.13	03	3.13	30	3.13
Consumer Goods	21	19	18.58	190	19.79	19	19.79	190	19.79
Healthcare	10	10	8.85	100	10.41	10	10.41	100	10.41
Info & Comm Telec	07	04	6.19	40	4.17	04	4.17	40	4.17
Industrial Goods	14	14	12.39	140	14.58	14	14.58	140	14.58
Natural Resources	04	04	3.58	40	4.17	04	4.17	40	4.17
Oil and Gas	12	11	10.62	110	11.46	11	11.46	110	11.46
Services	25	20	22.12	20	20.83	20	20.83	20	20.83
Total	113	96	100.00	960	100.00	96	100.00	960	100.00

The study is structured as a static panel data regression patterned along the model used by Salaudeen et al. (2018) as specified:

$$ROA_{it} = \beta_0 + \beta_1 RCM_{it} + \beta_2 BFED_{it} +$$
$$+ \beta_3 CRO_{it} + \beta_4 ACM_{it} + \beta_5 FS_{it} + \varepsilon_{it}, \quad (1)$$

$$TQ_{it} = \beta_0 + \beta_1 RCM_{it} + \beta_2 BFED_{it} +$$
$$+ \beta_3 CRO_{it} + \beta_4 ACM_{it} + \beta_5 FS_{it} + \varepsilon_{it}, \quad (2)$$

where β_0 = constant; β1-β4 = coefficient of the risk management practices and board characteristics variables; *RCM* = Risk management committees Meetings; *BFED* = Board Financial Expertise Diversity; *CRO* = Presence of Chief Risk Officers; *ACM* = Audit Committees Meetings; *FS* = Firm Size; ε = error term.

3. RESULTS

The study validated the data to apply the static panel data regression analysis estimation of the relationship between the regressors to explain the regressands. The result depicts the robustness of the model being fit for regression estimation. Table 2 shows the descriptive statistics.

From the descriptive statistics estimates, a mean of 0.927 shows that 92% of firms have a risk management committee, whereas 8% do not have, depicting a deviation of 26%. Also, the average of 40% of the firms have financial experts measured by experts with accounting/finance background on the board, and a mean of 72% represents the presence of chief risk officer, and those without showed a deviation of 49.6%. This finding is not too different from Salaudeen et al. (2018), who indicated a mean of 95% for RMC, 41% for finan-

cial experts, and 28% for the existence of CROs in the firms. Nevertheless, this result may be due to some firms' non-implementation of robust enterprise risk management at the initial time frame of the study. This is even though the Nigerian government mandated all listed companies to comply with the corporate governance codes specifying risk management committee and audit committee using capital market regulators.

Furthermore, the firms have an average of 4 audit committee members; the deviation for this variable is 84% being the highest among the study variables. This signifies that audit committees have fewer members and may not have complied with the extant provisions of section 359(4) of the Companies and Allied Matters Act, LFN, 2004 (as amended). The Act provided that listed firms must have at least 6 members made up of at least 3 each from the shareholders and directors. Hence, this finding may impact the efficiency of the audit committee in bringing about the needed oversight on behalf of the board and governance function. The results from the dependent variables, return on assets (ROA), has a mean of 40%, while Tobin-Q has 17%. The mean for ROA is above those revealed by Shima et al. (2013) and Grody and Hughes (2016), who found a mean of 7.68%, and Salaudeen et al. (2018), with a mean of 7.8% for ROA.

3.1. Multivariate analysis result

The study initially conducted the Hausman test, which signifies that $p < 0.05$ indicated that the fixed effect is the appropriate and suitable model for estimating the results of the static panel regression. The utilization of this method conforms to testing the hypotheses developed to determine which of the effects should be utilized (Florio &

Table 2. Descriptive statistics

Source: Authors' computations.

Variables	Mean	Median	Minimum	Maximum	Std. Dev.	Skewness	Ex. kurtosis
RCM	0.927	1.000	0.000	1.000	0.260	−3.285	8.793
BFED	0.407	0.400	0.000	3.000	0.144	6.267	107.94
CRO	0.720	1.000	0.000	1.000	0.496	1.372	25.248
ACM	4.092	4.000	2.000	6.000	0.841	0.026	−0.422
ROA	0.414	0.426	−7.073	5.436	1.037	−0.841	10.491
TobinQ	0.171	0.874	0.001	2.378	2.166	3.665	22.386
Fsize	6.01E+10	6.01E+10	0.0882	4.66E+12	2.030E+11	10.25	235.847

Note: N = 960.

Leoni, 2017; Jonek-Kowalska, 2019). Therefore, the estimates are the result of the fixed effect panel regression.

Table 3. Panel regression result: board characteristics, risk management practices, and ROA

Source: Authors' computations.

Details	ROA	Tobin's Q
No of Observation	960	960
R_-Squared	0.2450	0.534
Adjusted R_-squared	0.2346	0.530
F -Stat	23.614	146.499
P-value(F)	00000	0.000

Table 3 shows that the multiple determination coefficients, which indicate the explanatory power of the predictor variables, are 24.5% and 53.4 % for ROA and Tobin-Q, respectively. These interpret to about 23.46% of the variation in Return on Assets (ROA) and 53.4% Tobin-Q performances are because of the risk management practices variables. The F-statistics for both are significant at (0.000), confirming the models' fitness. This set the stage for hypotheses testing using models 1 and 2.

Table 4. Regression estimates for model 1: fixed effects

Source: Authors' computations.

Variables	Coefficient	Std. Error	t-ratio	p-value
const	−17.443	2.244	−7.772	0.0001
RCM	6.093	1.615	3.773	0.0017***
ACM	1.620	0.385	4.207	0.0003***
BFED	11.404	2.318	4.919	0.0001***
CRO	6.475	0.745	8.695	0.0001***
Fsize	5.746	0.535	5.986	0.00132***

Note: Number of observations: 960; Dependent variable: ROA; sig at 1% (***); 5% (**); 10% (*).

Table 5. Regression estimates for model 2: fixed effects

Source: Authors' computations.

Variables	Coefficient	Std. Error	t-ratio	p-value
econst	0.6998	0.381	1.836	0.0667
RCM	−0.194	0.216	−0.900	0.3683
ACM	0.349	0.086	4.041	0.0006***
BFED	−0.730	0.357	−2.047	0.0409**
CRO	0.083	0.119	0.696	0.4863
Fsize	0.563	0,753	0.4235	0.2453

Note: Number of observations: 960; Dependent variable: Tobin-Q; sig at 1% (***); 5% (**); 10% (*).

RCM signifies by the estimated values (*t-stat* = 3.773 and *p-value* = 0.0017 for ROA while *t-stat* = 0.216 and *p-value* = 0.3683 for TQ) as highlighted in Tables 4 and 5, respectively. Since the p-value is < 0.05 for ROA but $p > 0.05$ for TQ, these provide mixed evidence of the interplay between RCM and financial performance. It is safe to therefore conclude there is an inconclusive relationship between RCM and firm financial performance.

Furthermore, ACM indicates with the estimated values (*t-stat* = 4.207 and *p-value* = 0.0003 for ROA; *t-stat* = 0.086 and *p-value* = 0.0006 for TQ) as seen in Tables 4 and 5, respectively. Since both $p < 0.05$, the study has sufficient evidence to reject the null hypothesis and thus, concludes that audit committee meetings have a significant relationship with financial performance.

Also, BFED result showed that *t-stat* = 4.919 and *p-value* = 0.0001 for ROA while *t-stat* = 0.357 and *p-value* = 0.0409 for TQ, as indicated in Tables 4 and 5, respectively. Since both $p < 0.05$, the study also rejects the null hypothesis and, hence, settles that the proportion of financial experts on the boards significantly impacts the financial performance of the firms.

The estimates of CRO findings are depicted by *t-stat* = 8.695 and *p-value* = 0.0001 for ROA while *t-stat* = 0.753 and *p-value* = 0.4863 for TQ, as indicated in Tables 4 and 5, respectively. The p-value is < 0.05 for ROA but $p > 0.05$ for TQ, thereby providing mixed evidence of nexus between CRO and financial performance. The study, therefore, concludes with evidence of an inconclusive relationship.

Underpinned by the agency cost argument posited by Jensen and Meckling (1976) that inadequate risk management is value-destroying occasioned by opportunistic behavior of managers and self-centered behavior of controlling/powerful stockholders, the examination results of the interplay between board characteristics, risk management practices, and financial performance depict mixed evidence while controlling for the moderation effect of firm size. The study also establishes contrasting moderation effects of firm size because of the mixed results from the estimates of the different measures of performance.

The study results revealed that the independent variables significantly impact accounting-based performance ROA. These findings support the agency theorist perspectives and empirical studies by Ahmed and Manab (2016), who used PLS-SEM path modeling for analysis of the listed firm in the Nigerian financial sector. Florio and Leoni (2017) conducted a similar study from the Italian context that used panel data regression. Moreover, Silva et al. (2018) used the Brazilian context to study the effectiveness of risk management programs. Ekundayo and Ilori (2019) examined the audit committee's effectiveness in Nigeria. Finally, Erin and Aribaba (2021) focused on the financial sector of the Nigeria Exchange.

The results are contrary to the findings by Şenol and Karaca (2017), who assessed the impact of the implementation of the ERM in Turkey. The significant relationship with ROA was because most of these are concerned with generating quality accounting-based results, which in most cases is the basis of measuring the KPI performances. From the market valuation measure of firm performance, chief risk officer and risk management activities exhibited insignificant impact on the market evaluation as measured by Tobin's Q, whereas audit committee meetings and board expert diversity are significant with Tobin's Q. This supports the findings of Florio and Leoni (2017) and Erin et al. (2020) but is contrary to Siddiqui and Jameel (2021). It, therefore, portends that when a firm has a risk management governance structure in place, it presents a competitive edge over competitors to convert risk management into a value-increasing capability (Silva et al., 2018).

Because corporate risk management requires managing all risks across a firm, regulators have been compelling/encouraging firms to put in place a workable risk management framework. The board and management execute and monitor risk management framework and ensure that it is incorporated into routine business activities. However, the paper demonstrated a mixed interplay between board financial education diversity, risk management practices, and firm performance, therefore, the board and management should ensure sufficient resources and promote board effectiveness and risk management program. A firm with robust risk management programs will also enhance stakeholders' value more positively than those that failed to comply with the CG code recommendations. The existence and development of policies and effective execution of the risk management framework coupled with better synchronization of firms' activities will result in building enduring risk management capacities.

Some proxies of firms' risk management practices in focus on the market evaluation (Tobin-Q) performance are insignificant. The study, therefore, highlights that the aspects of risk management practices that exhibited low power and cannot explain the disparity in firm performance in the Nigerian listed firms should be enhanced. The study evidence upheld that risk management innovations in the listed firms are yet to be deeply rooted. The practices of cost-saving board composition with financial experts, effective risk management committee, chief risk officer, and proactive audit committee would mitigate the negative effects on performance and, thus, enhance performance since corporate governance and risk management are imperative for directing and governing listed firms in Nigeria. Therefore, to improve performance and create value for stakeholders, firms should ensure that optimum risk management practices are put in place to enhance competitive advantage.

3.2. Robustness analysis

The study performed regression diagnostic tests to verify the data compatibility for the regression analysis before the model acceptance and to avoid spurious results.

Table 6 confirms the heteroscedasticity problem. However, it is noteworthy that the problem of heteroscedasticity can be handled with the aid of standard error techniques (Gujarati, 2003). Table 7 reveals that data do not suffer autocorrelation issues. Also, Table 8 indicates that data are collinear because all the VIF value is below the benchmark point of 10.

Table 6. Breusch-Pagan/Cook-Weisberg test

Model 1	Model 2
Test statistic: TR^2 = 64.548092,	Test statistic: TR^2 = 53.142925,
with *p*-value = P (Chi-square (96) > 64.548092) = 0.00411	with *p*-value = P (Chi-square (96) > 53.142925) = 0.000432

Table 7. Wooldridge test (auto correlation test)

Model 1	Model 2
with p-value = P (Chi-square (96) > 356.6647) = 0.004	with p-value = P (Chi-square (96) > 345.775) = 0.004

Table 8. Multicollinearity result for the variables (test for multicollinearity)

Variables	VIF
RCM	1.049
ACM	1.088
BFED	1.043
CRO	1.053
Fize	1.9875

CONCLUSIONS

The study investigated how effective the risk management practices are for the firms' accounting and market evaluation performance. It used a sample of 96 Nigerian non-financial listed firms from 2010 to 2019. The study is patterned along a relatively emerging line of a significant study examining in what ways attention toward risk management practices (namely, activities of risk management committees, audit committees' meetings, presence of chief risk officers, and board characteristics as represented by financial experts' diversity) affected firm performance. The demand for this inquiry stems from the activities of regulators, practitioners, and academics following the global financial scandals. Furthermore, with a focus on the Nigerian context, the study brings attention to African countries that have witnessed some corporate scandals. The various regulatory interventions accentuating the important role of risk management practices in the corporate governance system as obtained in the US and Europe is a reason for adopting the risk management practices in Nigeria. Nigeria, to a large extent, has small-sized firms with an emerging capital market associated with weak investors' protection compared to the US and Europe; this presents it as an alternate context of the study.

This study revealed that the governance structures for risk management are greater predictors of accounting performance than market evaluation performance in Nigeria. These findings possess some implications for firms' risk management practices. The significant contribution played by these practices in refining risk governance structure and roles in improving performance, therefore, has implications for the composition and activities of the risk management committees, audit committees, board characteristics, and qualified chief risk officer. Also, further findings are that the application of knowledge and skills by risk governance members will be instrumental for better firm performance and has implications for the board's risk management in committee members' selection. Therefore, firms must undertake an audit of their existing risk management structure and ensure a diverse collection of knowledge and skills, and constituting the right balance on the board and committee membership. Businesses should be required to carry out annual audits of risk, audit committee members, and chief risk officers and publish this information in their annual reports.

The contributions to the study on risk management are in several ways. Firstly, it investigates a set of risk governance tools to explain risk management effectiveness. Secondly, it revealed that the performance

of risk governance structure predicts firm performance. Thirdly, it supports the need for a multi-theoretical approach to enterprise risk management and governance. Fourthly, it has some implications for board and management practice and policy. Precisely, the findings on the significance of the appropriate constitution of risk and audit committees and the application of knowledge and skills by financial experts on the board will show the effectiveness and efficiency of firms. The presence of chief risk officers and financial experts highlights the need for the board and management to provide a suitable environment to stimulate critical risk assessment and the significance of managing risk with a different range of knowledge and skills. In conclusion, it offers propositions and prospects for research on enterprise management in risk aggregation and risk sophistication variables or proxies not captured in this study and replication of this study in other African countries with different corporate governance systems.

AUTHOR CONTRIBUTIONS

Conceptualization: Martins Abu, Abbas Ibrahim, Taiwo Muritala.
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