Effect of Risks Management on the Financial Performance of Listed Deposit Money Banks in Nigeria

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

This study examined the effect of risk management on the financial performance of listed DMBs in Nigeria. Adopting correlation research design, the target population was all the listed DMBs in Nigeria as at 31st December, 2022 and were nineteen (19) in number. Out of the 19 banks, 16 were purposively selected as sample based on the criteria that, the bank must have been listed before 31st December 2017 and also have complete annual report and account over the period of five years from 2018-2022. The study used descriptive statistics and panel regression analysis to analyze the data collected, and the results of the analyses revealed that, credit risk management, market risk management and capital adequacy risk management have positive and significant effect on the financial performance of the listed DMBs in Nigeria over the period of the study. However, liquidity risk management was found to have negative but insignificant effect on the financial performance of the banks. Hence, the study concluded that; effective risk management have

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positive and significant effect on the financial performance of listed DMBs in Nigeria. Based on these findings, this study recommends that; the management of listed DMBs in Nigeria should improve and strengthen their liquidity management strategies, while keeping adequate watch on credit risk, market risk, and capital adequacy risk to further improve their financial performance. Therefore, further studies could look into the effect of effective risk management process (risk identification, assessment, monitoring, and controlling process) on the financial performance of DMBs. Also, future studies could consider the impact of the adoption of IFRS on risk management and financial performance of listed DMBs in Nigeria.

1. INTRODUCTION

"Banks are the key player in any economic development through effective financing of economic activities. One of the fundamental functions of banks is to mobilize and direct available savings and funds to economic areas that have liquidity deficits and demand for these savings through credit activity. Thus, their performance is critical in discharging this responsibility" [1,2]. However, in recent years, banks, both locally and internationally, are faced with numerous challenges such as capital base problem, insufficient liquidity, market instability, political and other economic issues [3,4]. In this respect, studies such as Ahmed et al. [5] and Ishaq et al. [6] were of the view that, "one of the most devastating challenges is ineffective risk management". "Bank operations are prone to risk such as liquidity risk, market risk, credit risk, capital risk, interest rate risk, exchange rate risk, and other types of risks" [7].

Risk management is described by Wajid et al. (2022) as the procedures that an enterprise adopts to manage uncertainties. These procedures include identification, assessment, monitoring, and control of uncertainties [5]. "Risk arises due to uncertainty concerning outcomes of economic decisions. Hence, an effective risk management is believed to have a significant relationship with bank performance" [8]. Considering this, Ahmed et al. [5] stated that, effective risk management could result to increase in assets efficiency and maximization of firms' value. Furthermore, if effectively managed, it could reduce costs, improve both business operation, and guarantee competitive advantage [9].

Given the importance of banks and the implication of risk, studies such as Asima et al. [1] and Mamari et al. (2021) concluded that, "there is paucity in empirical studies that established the impact of risk management on

financial performance". Furthermore, the few studies such as Ishaq et al. [6] in Saudi Arabia, Ahmed et al. [5] in Pakistan, and Mohammad and Basel [10] in Bahrain were of foreign context. "Hence, their findings could not be applicable in the Nigerian context given the differences in economic, business, political, and social way of life" [4]. "Therefore, it is important to examine the effect of risk management in the Nigerian context given the recent rate of collapse of financial institutions in Nigeria" [2]. Even though studies were conducted on risk management and financial performance, recent studies on financial performance are from the perspectives of the corporate performance, audit committee and International Financial Reporting Standards (IFRS) without due consideration to the concept of risk management in Nigeria. Furthermore, previous studies such as Erin et al. [11], Erin et al. [12] and Olayinka et al. [2] "on risk management were limited to either the area of enterprise risk management or credit risk management without holistically considering the comprehensive measures of risk management such as market risk management, capital adequacy risk management, credit risk management, and liquidity risk management with their effect on financial performance of Deposit Money Banks (DMBs) in Nigeria". These constitutes the gap that motivates this study to examine the effect of risk management on the financial performance of listed DMBs in Nigeria over a period of five years (2018-2022).

In order to achieve the above stated objectives of the study, the following hypotheses were developed to guide the study.

H_{o1}: Credit risk management has no significant effect on the financial performance of listed DMBs in Nigeria.

H_{o2}: Liquidity risk management has no significant effect on the financial performance of listed DMBs in Nigeria.

H$_{o3}$: Market risk management has no significant effect on the financial performance of listed DMBs in Nigeria.

H$_{o4}$: Capital adequacy risk management has no significant effect on the financial performance of listed DMBs in Nigeria.

The novelty of this study is in its contribution to the literature by examining the effect of risk management on the financial performance of listed DMBs in Nigerian context. The outcome of this study reinforces the main argument of this study that, effective risk management in the area of identification, assessment, monitoring and control would significantly improve firm's financial performance.

2. LITERATURE REVIEW

2.1 Financial Performance

The concept of financial performance was described by Olayinka et al. [2] as both financial and non-financial indicators that show improvement in shareholders' value. It indicates the extent to which financial target of a firm is achieved [6], and also indicates the efficiency of management and the total financial health of an enterprise. Hence, Harrison [13] was of the opinion that, the banks financial performance, stems from the fact that, it seeks to determined banks' strength and its weaknesses. Banks with high performance are seen as a stronger bank to withstand internal and external forces that might affect the going concern of the bank. Therefore, management are required to adopt various strategies that will improve bank financial performance [14]. Thus, the need for effective risk management [2].

2.2 Risk Management

Risk is inherent to every business operation. Even the most carefully planned project can run into risk (Bpayne & Watt, 2019). Hence, Ghulam and Emad [15] defined risk as the adverse influence on profitability of various discrete causes of uncertainty. Effiong and Enya [4] described risk as unfavorable events that affect the achievement of business objective. These unfavorable events need to be effectively and efficiently managed to ensure improved business performance, since shareholders' wealth is determined by the trade-offs between risk and return. Therefore, the concept of the higher the risk the higher the returns (Nghiem, 2015).

Risk management is described by Wajid et al. (2022) as the procedures that an enterprise adopts to manage uncertainties. These procedures include identification, assessment, monitoring, and control of uncertainties [5]. Risk management arises due to uncertainty concerning outcomes of future decisions. Hence, an effective risk management is viewed by Din et al. [8] as one of the most important managerial skills to guarantee high corporate performance. Risk management is of great importance because balancing the risk leads to effective management of any organization. Considering this, Ahmad et al. [5] stated that, effective risk management could result to increase in assets efficiency and maximization of firms' value. The effective risk management strategy would help management to manage and forecast the risk, and also reduce costs, improve business operation and competitive advantage [9]. Thus, Asima et al. [1] and Mamari et al. (2021) stated that, banks could be exposed to diverse risks such as liquidity risk, market risk, credit risk, and capital adequacy risk.

Liquidity implies the amount of money available to banks for investment [4]. Hence, banks are exposed to liquidity risk when they grant loans for the long-term from their short-term deposit [5]. This would create liquidity gap which is the difference between banks' cash inflow and demand for cash. It would also result to insufficient cash to meet up with the financial need of banks as they fall due. This liquidity gap could result to adverse sales of assets that could weaken banks' capital base. Thus, to forestall this, there is a need for effective liquidity management strategy. Effective liquidity management would enable banks to meet its obligation as well as improve its performance. Therefore, El-Ansary and Megahed [16] believed that, liquidity management is principally a cost-benefit trade-off as effective liquidity management has a potency of improving banks performance.

Market risk is defined by Murithi [17] as the risk to an institution resulting from movement in market price, changes in interest rate, and commodity price. In the view of Stimson (2021), market risk arises when bank accept financial instrument exposed to market price volatility as collateral for loans. In this respect, Samtomero (2017) believed that, market risk by its nature can be hedge but not diversified. "However, in respect to capital adequacy risk, it was described as the bank's capacity to cover volatile assets"

[18]. "It is measured as the difference between asset market prices and equity liabilities. Capital plays the most imperative role against any possible danger, particularly when protections are insufficient, then central banks have turned to raise capital base of banks to ensure that all stakeholders, especially depositors, have the margin of protection" [19]. In short, 'capital vulnerability is equity that is inversely commensurate with risks' [20]. Hence, Mohammad and Basel [10] were of the view that, effective capital adequacy risk management would have a significant influence on financial performance of firms.

Jamil and Omar [7] described "credit risk as the risk that a borrower defaults on his debt and does not honor his obligation to pay that debt totally or partially as agreed for any reason". "This risk could take the form of outright default or alternatively, losses from changes in portfolio value arising from actual or perceived deterioration in credit quality" [21]. It is the uncertainty associated with borrowers' loan repayments. It is one of the main risks that banks encounter all the time due to the nature of their activities. Hence, Iwedi and Onuegbu [22] stressed that "banks play an important role in achieving banking stability and contributing to reducing credit risk not only for themselves by examining the feasibility and profitability of their business ventures, but also for the banking system through effective credit risk management and the effective use of funds available to them in different economic sectors". Hence, Effiong and Enya [4], and Olayinka et al. [2] believed that, effective management of credit risk would significantly influence the profitability of banks.

2.3 Empirical Review

Alian et al. [23] assessed "the impact of operational risk management on the financial performance of three selected mainstream commercial banks in Cameroon. Using survey research design, the required data was collected through structured questionnaire administered to 250 respondents, and was analyzed through structured model. The result of the analysis revealed that risk management have positive and significant impact on the financial performance of the selected banks".

Asima et al. [1] examined "the effect of credit risk management and bank specific factors on the financial performance of 19 South Asian Commercial banks over a period of 10 years (2009-2018). Using secondary data obtained

from the annual reports and accounts of the banks, the data collected was analyzed using regression analysis. The result of the analysis revealed that, non-performing loan, cost efficiency ratio, and liquidity ratio have negative and significant effect on financial performance of the banks, while capital adequacy ratio, and average lending rate have positive and significant effect on the financial performance of the banks". In their study, Sima et al. (2021) studied "risk management and financial performance of 8 listed banks in Sultanate of Oman. Using Partial Least Square, they analyzed the data collected from the annual reports and account of the banks. The study documented positive and significant effect of risk management on the financial performance of the banks".

Mohammad and Basel [10] studied "the effect of risk management on the financial performance of 7 listed Bahrain commercial banks over a period of 5 years from 2015 to 2019. Data collected was analyzed using panel regression and, the study reported an insignificant relationship between capital risk, liquidity risk, market risk and financial performance of the banks". Sathyamoorthi et al. [24] examined "the impact of financial risk management on the financial performance of 10 commercial banks in Botswana over a period of 8 years from 2011 to 2018. Using regression analysis, they analyzed the data collected and, the result of the study revealed that; market risk and credit risk had negative and significant effect on the financial performance of the banks".

Jacob et al. [21] studied "credit risk management and financial performance of 7 listed banks in Ghana over a period of 10 years from 2007 to 2016. Using regression analysis to analyze the data collected, the study documented a positive and significant effect of credit risk management on financial performance of the banks". In their study, Effiong and Enya [4] examined "liquidity risk management and financial performance of 10 consumer goods companies over a period of five years from 2013 to 2017. Using regression analysis to analyze the data collected, the study reported a positive and significant effect of liquidity risk management on the financial performance of the banks".

2.4 Theoretical Review

Several theories were used by previous scholars to analyze the concepts of risk management and financial performance. Some of the theories as mentioned by Sathyamoorthi et al. [24] and Jamil

and Omar [7] include Finance Distress Theory, Shift-ability Theory of Liquidity, The Commercial Loan Theory, The Anticipated Income Theory, The Credit Risk Theory, and The Liability Management Theory. However, this study is anchored on Anticipated Income Theory.

"The anticipated income theory was proposed by Prochanow in 1944 in USA to explain the practice of extending term loans by commercial banks. The theory was further expanded in 1949 by Prochanow through the study on loans and bank. Anticipated Income theory focus mainly on long-term-loans and advances" (Soyibo et al. 2004). Hence, Afriyie and Akotey [25] were of the view that, "regardless of the borrower's character and the business nature, the bank plans to repay borrowers their loans through their expected profits and not by monetizing or selling their assets as in the commercial loans theory or by transferring or selling existing loans to other lenders". "However, Anticipated Income theory assumes that banks should lend to their applicants based on their expected income and not based on the current values of their assets. The main stand of this theory is its view of the future of loans and banking facilities that are being repaid or transferred to liquidity through cash flows or expected profits of the borrower's business and projects" [26]. It aims to respond to the principle of commercial loan theory but did not compete with the shift-ability theory or capacity theory. It did not question the fact that the source of liquidity for any bank is the optional or secondary reserves but came to focus the attention of banks and banking system on the types of loans best suited to the bank.

3. METHODOLOGY

This study adopted correlation research design to define the structure and strategy of the study. The target population consisted of all the listed Deposit Money Banks in Nigeria as at 31st December, 2022, and were 19 in number. The study further used purposive sampling techniques, to select 16 out of the 19 banks as sample based on the criteria that, the bank must have been listed on or before 31st December 2017 and have complete annual reports and accounts over the period of the study (2018-2022). The required data was collected from the annual reports and accounts of the selected banks and was analyzed using descriptive statistics and panel regression analysis.

A panel regression model was developed based on the model used by Jacob et al. [21] to test the hypotheses raised. The variables used are risk management (CRM, MRM, LRM, KRM) as independent variable, financial performance (ROA) as dependent variable, while firm's characteristics (FMS, FML) as control variable. Thus, the model is presented as follows.

$$ROA_{it} = \beta_0 + \beta_1 CRM_{it} + \beta_2 MRM_{it} + \beta_3 LRM_{it} + \beta_4 KRM_{it} + \beta_5 FMS_{it} + \beta_6 FML_{it} + \mu_{it}$$

Table 1 presents the study variables which gives information with respect to the proxies used and their various sources.

4. RESULTS AND DISCUSSION

Descriptive statistics was conducted to analyze the pattern and properties of the data collected using mean, standard deviation, minimum and maximum values, and the result is presented in Table 2.

The descriptive statistics result in Table 2 revealed a mean value of 0.0518 of ROA with a standard deviation of 0.0173, while minimum and maximum values were 0.0253 and 0.1203 respectively. In respect to explanatory variables, the mean of CRM is 0.0466, minimum value is 0.0376, and standard deviation is 0.1269, while maximum values was 0.1975. MRM mean is 0.0135, standard deviation 0.0248, minimum value 0.0188 and maximum value 0.0248. 0.6959 was revealed as the mean value of LRM, standard deviation 0.2467, minimum value 0.5548 and maximum value 1.3301. furthermore, the mean value of KRM is 0.2340, with standard deviation of 0.1254, minimum value of 0.0165, and maximum value of 0.1231. The descriptive statistics of the banks characteristics shows a mean value of 0.0834 and 0.0219 with standard deviations of 0.0117 and 0.0328 for FMS and FML respectively. While the minimum values FMS and FML were 0.0412 and 0.0201 respectively and maximum values of 0.1231 and 0.2145.

Given the results of the descriptive statistics which analyzed the properties and pattern of the data collected, Table 3 contained correlation analysis which was carried out using Pearson moment correlation to determine the correlation between the variables of the study.

The result of the correlation analyses in Table 3 revealed a strong correlation between capital adequacy risk management (KRM) and return on assets, capital adequacy risk management

Table 1. Variable identification and measurement

SN	Label	Variable	Description	Source
1	ROA	Firms' profitability	Profit Before Tax (PBT) at the year-end divide by total assets	Ahmed et al. [5]
2	CRM	Credit risk management	Total non-performing loan to Total loans for the year	Asima et al. [1]
3	MRM	Market risk management	Net loans to total assets	Ahmed et al. [5]
4	LRM	Liquidity risk management	Total loans divide by total deposit	Mohammad & Basel [10]
5	KRM	Capital adequacy risk management	Total capital to total assets	Jamil & Omar [7]
6	FMS	Firm's size	Natural logarithms of total assets	Fadun & Oye [27]
7	FML	Firms leverage	Debt to equity ratio	Muriithi [17]

Table 2. Descriptive Statistics

Variables	Mean	Std. Div.	Min. Value	Max. Value
ROA	0.0518	0.0173	0.0253	0.1203
CRM	0.0466	0.1269	0.0376	0.1975
MRM	0.0135	0.0248	0.0188	0.0248
LRM	0.6959	0.2467	0.5548	1.3301
KRM	0.234	0.1254	0.0165	0.4159
FMS	0.0834	0.0117	0.0412	0.1231
FML	0.0219	0.0328	0.0201	0.2145

Source: STATA 13 Descriptive Statistics Results (2024)

Table 3. *Correlation Matrix*

	ROA	CRM	MRM	LRM	KRM	FMS	FML
ROA	1						
CRM	-0.4642	1					
MRM	0.0321	0.5032	1				
LRM	0.3032	-0.2217	-0.3457	1			
KRM	0.5358	-0.5594	-0.6023	-0.4412	1		
FMS	0.1250	0.1128	0.0034	0.3580	0.0234	1	
FML	0.2871	0.0045	0.3287	0.5345	0.0024	-0.5630	1

Source: Correlation Matrix-STATA 13 (@ 5% Level of Significant)

(KRM) and credit risk management (CRM), market risk management (MRM) and credit risk management (CRM), firms leverage (FML) and liquidity risk management (LRM), and firms leverage and firms size. However, a moderate correlation was established between credit risk management (CRM) and return on assets (ROA). Furthermore, the correlation between market risk management (MRM) and return on assets (ROA), liquidity risk management (LRM) and return on assets, firms leverage (FML) and return on assets, liquidity risk management (LRM) and credit risk management (CRM) were found to be low.

However, with respect to the direction of correlation, the correlation between market risk management and return on assets, liquidity risk management and return on assets, capital adequacy risk management and return on assets, market risk management and credit risk management, firms size and returns on assets, firms leverage and returns on assets, firms leverage and credit risk management firm size and credit risk management, firms size and market risk management, were found to have positive correlation, while others exhibited negative correlation.

The correlation results in Table 3 further shows that, there was no problem of multicollinearity among the variables of the study, since the highest correlation coefficient of 0.6023 is the correlation between capital adequacy risk management and market risk management is less than 0.800 critical level of multicollinearity problem [28].

To carry out regression analyses, a diagnostic test was conducted using variance inflation factor, standard skewness, standard kurtoses, and Durbin Watson test statistics, and the results presented in Table 4.

The diagnostic result in Table 4 shows that, the data collected were normally distributed given all the values of standard skewness and standard kurtoses of the explanatory variables are less than ±1.96 at 5% significant level (Haniffa & Hudaib, 2006). Furthermore, the results of VIF and tolerance coefficient are not above the standards of 10 and 1 respectively, thus no multicollinearity case [28]. With respect to the issue of auto correlation, the result of Durbin Watson test statistics of 1.5423 is less than the standard value of 2, thus no problem of autocorrelation among the variables of the study (Adefila, 2014). The value of Hausman model

specification test of 0.000 is significant, thus, random effect was rejected for fixed effect.

Given that, the data collected were normally distributed, and there was no problem of autocorrelation and multicollinearity, the regression analysis was carried out and the result presented in Table 5.

The regression results in Table 5 revealed a coefficient of determination (R^2) of 0.5420 and adjusted R^2 of 0.4461. This implies that, about 54.2% of the variation in return on assets of the banks could be explained by the explanatory variables included in the model, while 45.8% could be explained by other factors. The intercept p-value of 0.0017 at 5% significant level, is significant, thus the model is significant and has a good predictive power.

In regards to the effect of risk management indicators on returns on assets, the regression results in Table 5 indicates that, credit risk management, market risk management, and capital adequacy risk management have positive and significant effect on returns on assets of the banks. Furthermore, firms' size and firms leverage exhibited positive and significant effect on return on assets of the banks. However, liquidity risk management was found to have negative but insignificant effect on return on assets of the banks over the period of the study.

The aim of any risk management strategy is to identify, assess, monitor, and control the effect of risk on either business operation, business assets, or business performance. However, no business exists without being exposed to risk. Given the result of regression analysis in Table 5, credit risk management, market risk management, and capital adequacy risk management have positive and significant effect on the financial performance of the banks. This implies that, improved effective risk identification, assessment, monitoring, and control would positively and significantly improved financial performance of the banks. These results are in support of the earlier results of the studies such as Sima et al. (2021) and Jacob et al. [21] who also reported a positive and significant effect of credit risk management, market risk management, and capital adequacy risk management on financial performance. However, it is contrary to the findings of the studies such as Asima et al. [1] and Sathyamoorthi et al. [24] that documented negative relationship between the proxies of risk management and financial performance. The variation in these results may be at the result of the risk management policies

Table 4. *Result of VIF, Standard Skewness, Standard Kurtosis, and Durbin Watson test*

	VIF	1/VIF	Std. Skewness	Std. Kurtosis
CRM	2.3124	0.4325	0.1719	0.0468
MRM	4.1230	0.2425	0.4470	0.1975
LRM	1.6783	0.5958	0.1366	0.0246
KRM	2.3632	0.4232	0.0854	0.1417
FMS	3.4620	0.2889	0.2325	0.8843
FML	4.1294	0.2422	0.5431	0.4521
Durbin Watson test = 1.5423				
Chi²-prob. = 0.0000				

Source: STATA 13 Output @ 5% significant level

Table 5. *Regression Results*

	Coefficient	p-value
Intercept	0.1749	0.0017
CRM	0.1598	0.0000
MRM	0.5247	0.0214
LRM	-0.0212	0.6042
KRM	0.4138	0.0321
FMS	0.3932	0.0216
FML	0.0842	0.0528
R^2 = 0.5420	**Adj. R^2 = 0.4461**	

Source: STATA 13 Output @ 5% Significant Level

applicable in the Asian countries and Botswana regards to commercial banks.

Furthermore, the regression results in Table 5 shows that, liquidity risk management have negative but insignificant effect on the financial performance of the banks. These results supported the earlier studies of Effiong and Enya [4] who also documented negative effect of liquidity risk management on financial performance. However, it contradicts the results of Jamil and Omar [7] that reported positive but weak effect of liquidity risk management on the financial performance of commercial banks in the United Arab Emirate [29,30].

5. CONCLUSION AND RECOMMENDA-TIONS

This study examined the effect of risk management on the financial performance of listed DMBs in Nigeria. Using various relevant statistical tools to analyze the data collected, the study found that, credit risk management, market risk management, and capital adequacy risk management have positive and significant effect on the financial performance of the banks over the period of the study. However, liquidity risk management was found to have insignificant negative effect on the financial performance of the banks. Thus, the study concluded that, effective risk management have positive and significant effect on the financial performance of listed DMBs in Nigeria.

Given the findings of this study, the study recommends that; The management of listed DMBs in Nigeria should improve and strengthen their liquidity management strategies, while keeping adequate watch on credit risk, market risk, and capital adequacy risk to further improve their financial performance. Therefore, further studies could look into the effect of effective risk management process (risk identification, assessment, monitoring, and controlling process) on the financial performance of DMBs. Also future studies could consider the impact of the adoption of IFRS on risk management and financial performance of listed DMBs in Nigeria.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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