Effects of Risk Management on Financial Performance of Deposit Money Banks in Nigeria

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Abstract

Risk management in the banking sector have greater effects on performanceof banks, and also on national economic growth and general business development. The study examines the risk management implications on the performance of deposit money banks in Nigeria. Risk management is a core of lending function in the banking industry. So many Nigerian banks had failed in the past due to inadequate risk exposure. The risk management comes from those risks which can lead to underperformance. This study focuses on those risk management practices and bank's financial performance in Nigeria. Secondary data sourced was based on a 7year progressive annual reports and financial statements of 5 banks and a panel data estimation technique adopted, was found to be positive and significant. Similarly it suggests the higher the managed funds by banks the higher the performance. The study concludes a significant relationship between banks performance and risk management. Hence, the need for banks to practice prudent risks management in order to protect the interests of investors.

Keywords: Risk management, Credit Risk, Financial Performance, Bank, Deposit Money Bank

INTRODUCTION

Many financial institutions have either collapsed and or are facing near collapse because of badly functioned subprime mortgage lending to firms and people with bad and unreliable credit. Banking crises in Nigeria have shown that not only do banks often take excessive risks but the risks differ across banks. Most banks quality of assets has deteriorated as a result of significant dip in equity market indices. The CBN governor in 2009 maintained that some banks were faced with liquidity constraints. Thus their activities were reduced because of their response to the perceived risk of lending to each other making profits and returns to suffer. This led to liquidity and credit shortages and a significance loss of public confidence in banks andalso negatively affects the entire financial system and the economy. The fact remain that banks have a dominant position in developing economic financial systems and are engines of economic growth (King and Levine, 1993; Levine, 1997). Risk management is the quality control of finance. It is a broad term used in different senses in different organisations but basically it involves identification, analysing and taking measures to reduce or eliminate the exposures to loss by a business organisation.Frank Knight (1921), the most famous scholar to formalize definition of risk and make a distinction between risk and uncertainty. (Holton, 2004) defines risk as situations where the outcome of a given action is unknown but the odds are measurable. Recent global economic crisis has revealed that, it is difficult for institutions to accurately capture the riskiness of their activities.

It is important to manage risks, rather than trying to hedge against risk, there is a strategic step to determine the risks to avoid, the ones to reduce or eliminate and those ones to exploit in order to take advantage of opportunities to achieve the objectives of the organisation. Increasing exposures to some risk is an integral part of business success and any entity that wants large rewards must be ready to take considerable amount of risk (Damodaran, 2017). For any business venture of which the DMBs are part of, Audu (2014) submitted that it is difficult to ignore risk altogether because without taking some level of risk, the returns from operations will no doubt be compromised and therefore Audu advocated avoidance of risks as much as it is feasible saying that the rational approach to risk, is at the very least to restrict exposure to it. Financial risks are subset to the overall firm risk. One of the main reasons for financial risk management is to reduce the instability of earnings and cash flow due to financial risk exposure (Dhanini, 2007). The reduction enables the firm to perform better forecasts (Vaughan & Vaughan, 2008). This

would guaranteethe availability of sufficient funds in the company for investment and dividends payment (Sarkis, 1998). Another reason for management of financial risks is to avoid financial distress and the costs connected with it (Triantis, 2000; Drogt& Goldberg, 2008). Lastly, the interest of management towards risk management may be directed to stabilizing earnings or keeping a constant tax level (Dhanini, 2007). Risk management can be structured, focussing either on minimizing volatility or avoiding large losses (Sarkis, 1998). Reduced instability in cash flows or earnings and prevention of losses allow better planning of liquidity needs (Eichhorn, 2004). The main aim of management of firms is to maximise expected profits taking into account its volatility. Risk management is important because organisations want to avoid low profits, which force them to seek external investment opportunities. When this happens, it results in sub-optimal investments and hence lower shareholders' value since the cost of such external finance is higher than the internal funds due to capital market imperfections.

Organisations are faced with risks such as credit risk (which is the analysis of the financial soundness of borrowers); interest rate risk (which is founded on the variations of interest rates); foreign exchange risk (which occurs when a firm engage in international business transactions leading to cash flows been influenced by exchange rates); capital management risk (associated with the cost of investment financing); and liquidity risk (arising as a result of the inability of a firm to efficiently accommodate the redemption of deposits and other liabilities and to cover funding increases in loan and investment portfolio) (Ogilo, 2012). Thus, the minimization of these risks in business could place the firm on the track of performance improvement. Financial performanceon the other hand consists of many different methods to assess how well an organization is managing its assets to generate income (Richard, 2009). Financial performance comprises of operating income, earnings before interest and taxes, and net asset value. It is very importance to note that a single measure of financial performance is not sufficient to draw conclusion of risk affecting the performance. Rather, a thorough evaluation of a company's performanceand many other measures of its performance. The two most popular measures of financial performance are return on equity (ROE) and return on assets (ROA). ROE measures accounting earnings for a period per naira of shareholders' equity, while ROA measures return of each naira invested in assets. Thus, risk management could therefore be in correspondence with the improving the financial situation of the firm. Thus, this study seeks to investigate the effect of risk management on the financial performance of deposit money banks (DMBs) in Nigeria, considering their susceptibility to risks as a result of the lending nature of the industry, which could amount to huge losses.

LITERATURE REVIEW

Concept of Risk

Risk has diverse meanings; scholars have described risk in numerous ways. Hansel (1999), sees risk as likelihood of loss; odds of casualty. Mordi (1989) posits risk to be the chances of inaccuracy, odds of an event occurring or not. These descriptions point to a particular direction (loss or mishap). With respect to this research work, we express risk as the likelihood of financial loss. In every country, the health of the financial sector is very crucial to its survival, growth and development as its failure can disrupt economic development of the country (Das &Ghosh, 2007). Firms in the financial sector are said to be performance financially well if they are able to generate new resources, from daily operations over a given period of time and it is gauged by net income and cash from operation. However, risk may be a hindrance towards effective financial performance hence; adequate management of risk is inarguably the quality control of finance. Risk management involves the identification of risks, analyses of same, and taking into consideration measures to reduce or eliminate the exposures to loss by an organisation.

According to Stulz (1984) and Froot, Scharfstein and Stein (1993), managers should concern themselves with the active management of risks in their organizations (especially those in the banking industry) to maximise expected profits taking into consideration their variability/volatility. Risk management is pursued because banks want to avoid low profits which force them to seek external investment opportunities. When this happens, it results in sub-optimal investments and hence lower shareholders'

value since the cost of such external finance is higher than the internal funds due to capital market imperfections. Financial risks are classified into credit risk, interest rate risk, foreign exchange risk, capital market risk and liquidity risk.

Credit Risk

The analysis of the financial soundness of borrowers has been at the core of banking activity since its inception. This analysis refers to what nowadays is known as credit risk, that is, the risk that counterparty fails to perform an obligation owed to its creditor. It is still a major concern for banks, but the scope of credit risk has been immensely enlarged with the growth of derivatives markets. Another definition considers credit risk as the cost of replacing cash flow when the counterpart defaults. Greuning and Bratanovic (2009) define credit risk as the chance that a debtor or issuer of a financial instrument whether an individual, a company, or a country will not repay principal and other investment-related cash flows according to the terms specified in a credit agreement. Inherent to banking, credit risk means that payments may be delayed or not made at all, which can cause cash flow problems and affect a bank's liquidity.

Interest Rate Risk

Interest rate risk is founded on variations on interest rates and can be perceived in different forms. The first methods refer to variation in interest rates in joining with variable loans and short-term financing. An increase in the interest rate leads to higher interest payments for the variable rate loan and more expensive follow-up funding. These decreases the company's earnings and can in worst case lead to financial distress. Secondly, the vice versa case refers to cash positions of the company with a variable interest rate. A fall in this rate leads to a loss in earnings.. It can be summarized that the more corporate debt and especially short-term and variable rate debt a company has, the more vulnerable it is to changes in the interest rate (Dhanini, 2007).

Foreign Exchange Risk

Exchange risk occurs when a company is involved in international business and the cash in or outflows are in a foreign exchange rate. As this rate is not fixed and cannot be fully anticipated a possible change in a foreign exchange rate leads to the risk of changes in the amount of a payable / receivable and by that a change in the amount of money the company has to pay / will receive. This risk is measured by the concept of transaction exposure (Okotha, 2003).

Liquidity Risk

According to Greuning and Bratanovic (2009), a bank faces liquidity risk when it does not have the ability to efficiently accommodate the redemption of deposits and other liabilities and to cover funding increases in the loan and investment portfolio. These authors went further to propose that a bank has adequate liquidity potential when it can obtain needed funds (by increasing liabilities, securitising, or selling assets) promptly and at a reasonable cost. The Basel Committee on Bank Supervision consultative paper (June, 2008) asserts that the fundamental role of banks in the maturity transformation of short-term deposits into long-term loans makes banks inherently vulnerable to liquidity risk, both of an institution-specific nature and that which affects markets as a whole, (Greuning and Bratanovic, 2009).

Capital Management Risk

Capital requirement is of great importance under the Basel Accords and these set the guide lines for the financial institutions. It is internationally accepted that a financial institutions should have capital that could cover the difference between expected losses over some time horizon and worst case losses over the same time horizon. Here the worst case loss is the loss that should not be expected to exceed with the some high degree of confidence. This higher degree of confidence might be 99% or 99.9%.The reason behind this idea is that expected losses are normally covered by the way a financial institution prices its

products. For instance, the interest charged by a bank is designed to recover expected loan losses. The firm wants to be flexible and at the same time lower the costs for financing .The period of loans is significant in joining with the assets, which are funded with the loan. Here, often a disparity between the durations can be detected. Long-term assets are then funded with short-term and regulating rate loans, leading to a shortfall in cash flows in times of rising interest rates. This element again can lead to an inferior ranking of the company and inferior conditions to get future problems regarding follow-up financing over the rest of the lifetime of the asset can occur. Vice versa long-term financing of short-term assets might lead to access financing when the asset is no longer existing. This causes of needless interest payments for the company (Vickery, 2006).

Concept of Financial Performance

According to Husni (2011) the determinants of banks financial performance are normally consisting of factors that are within the control of commercial banks. They are the factors which affect the revenue and the cost of the banks. Some studies classified them into two categories namely the financial statement variables and non-financial variables. External factors are said to be the factors that are beyond the control of the management of commercial banks. The external determinants of commercial banks profitability are indirect factors, which are uncontrollable, but have an enormous impact on bank's profitability. According to Anthony and Ameyaw (2010) macro-economic variables have been major components of the external profit determinants in most studies. The most external factors that have been presented in most studies include competition, market share, firm size, inflation, gross domestic product (GDP), growth and interest rate (Sudin, 2004).

Financial Risk Management

Financial risks can be of different forms. On one hand there are external financial risks depending on changes on financial markets. On the other hand there are internal financial risks, where the company itself is the source of the risks (Eichhorn, 2004).External financial risks are based on the risk factors of exchange and interest rates as well as commodity prices (Schönborn, 2010).
Financial risk management has received increased attention over the past years (Okotha, 2003). The reasons for this is that financial risks, though they are not a core competency of non-financial firms, also influence their business operations to a large extend (Triantis, 2000). The five types of financial risks that will be assessed include credit risk; interest rate risk; foreign exchange rate risk; capital management risk and liquidity risk.

Empirical Review

Several empirical studies conducted by many scholars in this area of study revealed the relationship between risk management factors and financial performance of deposit money banks showing variability of these findings from various contexts and perspectives. Tanveer, Muhammad and Sadaf (2017) examined the impact of risk management practices on banks' financial performance in Pakistan for the period 2004 to 2016 using panel data regression analysis revealed a significant effect of risk management practices on financial performance of Pakistani banks categorised into large, medium and small banks. It was found to be statistically significant at 5% and positively impactful on ROE, while Liquidity risk (measured by interest sensitive asset/total asset), NPLR, interest rate risk was statistically significant at 5% and influence ROE negatively. However, for small banks, liquidity risk impacted ROE positively. Adeusi et-al (2013) investigated RM and FP of banks in Nigeria. They employed secondary data based on ten selected DMBs for a period of four years. Panel data was employed and least squares estimation served as the method of data analysis. The results show that financial performance of banks was negatively related to doubtful loans. Consequently, they concluded that banks` financial performance is significantly related to risk management. In the work of Harelimana (2017) on The Role of Risk Management on Financial Performance of Banking, Institutions in Rwanda: case study Unguka Bank Limited, both quantitative and qualitative techniques were employed. The result of the interviews from

43.3% response rate identified the key determinants of risk management as credit risk, operational risk, interest rate risk and liquidity risk. Findings from the multiple regression analysis of the secondary data showed that there is a strong positive relationship between risk management indicators (credit risk, liquidity risk, interest rate risk, operational risk and loan default risk) and financial performance. Same result was obtained from the research work of Li &Zou (2014) on the impact of credit risk management on profitability of commercial banks in Europe which showed a positive relationship between credit risk management and profitability.

Another study was conducted by Olusanmi, Uwuigbe&Uwuigbe (2015) to investigate the Effect of Risk Management on Bank's Financial Performance in Nigeria using ordinary least squares regression model on data obtained from audited financial statements of 14 banks listed on the Nigerian Stock Exchange. The period of study was from 2006 to 2012. The result gave a non-significant, indirect relationship between risk management and financial performance measured by ROE.Specifically, non-performing loan, loan to deposit, risk disclosure, and total asset showed an inverse non-significant relationship with ROE, while capital risk revealed a positive, insignificant relationship with ROE. A study was carried out by Bassey& Moses (2015) on bank profitability and liquidity management of some selected deposit money banks in Nigeria.The period covered was 2010 to 2012. Using ordinary least squares (OLS) technique, the empirical results revealed a statistically significant relationship between bank liquidity and ROE. However, the relationship between bank liquidity and profitability became insignificant when ROA was used. Specifically, the results showed a negative relationship between cash to deposit ratio and ROA, and a positive relationship between loans to deposit ratio and ROE. Similar results were obtained when ROA was used as a measure of profitability.Some observed gaps in literature show that despite the attraction of many scholars in this area of study, their approaches have come from different perspectives. Generally, focus was more on few risk factors and their effects on financial performance without considering the interplay of those risks (Li &Zou, 2014; Hussain, Ihsan&Hussain, 2016;Harelimana, 2017; Ofosu, 2016; Olusanmi, Uwuigbe&Uwuigbe, 2015; Adebisi&Oladunjoye, 2014). Such factors like risk asset diversification, interbank funding, and asset-liability maturity mismatch and the effects they have on interest rate spread and consequently profitability was not considered. Risk assets are the most profitable assets of a bank since bulk of reported profit comes from interest income. In order to achieve higher profit, banks need to increase their interest margin and a key factor to achieving this is to reduce as much as possible their cost of funds. An optimal mix of asset and liability portfolios within regulatory constraints is important to minimize cost of funds and increase income.

Some empirical work understands risk management as an organizational and social practice, and has compiled sufficient evidence to suggest that risk management practices vary considerably across firms, even within an industry (Stulz, 1996; Richard, 2009). In some firms, risk management takes the form of complex financial transactions (Pagano, 2001) in others, it follows a more holistic assessment of financial and non-financial risks (Nassauer&Pausenberger, 2000) bridging functional silos. However, most of these studies concentrated on credit risk and liquidity risk as the majors concerns of banks and thus examined risk management from the point of view of liquidity and credit risk management. Given that the principles guiding bank operations are, profitability, liquidity and solvency, the authors of this article believe that the exclusion of solvency risk from the previous studies is a significant omission. The desire to bridge this gap in knowledge formed the basis of this study.

METHODOLOGY

The methodology used was a longitudinal study of the financial performance indicators of commercial banks in Nigeria using Access Diamond Bank, United Bank for Africa Plc, Guarantee Trust Bank, First Bank and Zenith Bank as focus. Since the study relied solely on secondary data, all the data requirements were obtained from the relevant secondary sources. Specifically, the secondary data used were the annual reports of Access/Diamond Bank, UBA, GT Bank, First Bank and Zenith Bank for the period 2013 – 2020. Thus, a panel data of 5 cross sections for 8 years was employed. The key information include Earnings after Tax, loans and advances, non-performing loans, total assets, equity, total deposits, current

assets, current liabilities and net sales, which are all integral components of the financial statements. From these, liquidity, loans to deposit, capital adequacy, non-performing and profitability ratios were computed.

Financial performance of banks is measured by return on average assets (ROaA) and return on average equity (ROaE). Three major risk indicators were used; the risk indicators and their proxies (ratios) are: Liquidity risk (loans to deposit and current ratio), credit risk (Non-performing loans ratio) as well as leverage risk (capital adequacy ratio). Leverage risk was measured by capital adequacy ratio because capital inadequacy is stimulated by excess leverage. The model specifications of this study are as follows:

ROaA = f (LDR, CR, CAR, NPLR) and
ROaE = f (LDR, CR, CAR, NPLR)

Specifically, the model Equations are:
$$ROaA = b_o + b_1LDR + b_2CR + b_3CAR + b_4NPLR + e_1 \qquad (1)$$
$$ROaE = \alpha_o + \alpha_1LDR + \alpha_2CR + \alpha_3CAR + \alpha_4NPLR + e_t \qquad (2)$$
Where:

ROaA = return on average assets (Profitability)
ROaE = return on average equity (Profitability)
LDR = loans to deposit ratio
CR = Current ratio
CAR = Capital Adequacy Ratio
NPLR = non-performing loans ratio (credit risk)
b0 = proportion of the change in return on average Assets (ROaA) that is not explained by changes in the explanatory variables, LDR, CR, CAR and NPLR
b1 = Slope of LDR; b2 = Slope of CR; b3 = slope of CAR and b4 = slope of NPLR and e = random error.
Also αo = proportion of the change in return on average equity (ROaE) that is not explained by changes in the explanatory variables, LDR, CR, CAR and NPLR α1 = Slope of LDR; α2 = Slope of CR; b3 = slope of CAR and b4 = slope of NPLR.

Bearing in mind that the efficacy of any Time Series analysis is conditioned on stationarity of the data; the research data were adjusted for stationarity. Specifically, since most non-stationary time series data become stationary after integrating them once (Engel & Granger, 1987; Iyoha&Ekanem, 2004; Inegbedion, Obadiaru&Adeyemi, 2020), the variables were tested for panel stationarity using the augmented Dickey Fuller test and the two dependent variables were stationary at level while all the independent variables were stationary at first difference. Panel cointegration test was further carried out using Johansen`s technique and the variables were found to be cointegrated. Arising from the model specification, generalized method of moments (GMM) was used to analyze the research data owing to its suitability in the context of semi parametric models for finite-dimensional parameters whose distribution function are unknown. Vector error correction modelling was also employed following the long run relationship between the variables revealed by the results of the cointegration test.

RESULTS AND DISCUSSION

The panel statistic had a calculated value of -5.095 and a significant probability of $P < 0.001$, thus indicating that the null hypothesis of no cointegration be rejected at the 99% level of confidence. The implication is that a long run relationship exists between financial performance of commercial banks in Nigeria (measured by ROaA and ROaE) and the risk factors - liquidity, leverage, capital adequacy and leverage. (see Table 1)

Table 1. Cointegration Test Pedroni Residual Cointegration Test
Alternative hypothesis: common AR coefs. (within dimension)

Weighted

		Statistic		Prob.		Statistic		Prob.
Panel PP- Statistic			-5.094723	0.0000		-5.519753		0.0000
Panel ADF-Statistic			NA	NA		NA		NA

Phillips-Peron results (non-parametric)

Cross ID	AR(1)	Variance	HAC	Bandwidth	Obs
1	-0.488	6.857606	1.279871	6.00	7
2	-0.112	6.118028	6.593982	2.00	7
3	-0.191	10.07294	2.980355	6.00	7
4	-0.604	10.26784	3.273493	6.00	7
5	-0.488	2.987080	0.893354	6.00	7

Results of the test of financial performance (using ROaA) and risk factors show that the calculated Durbin-Watson statistic is 1.6, which is within the permissible range of du- 4-du for "no serial correlation. The adjusted R-square value is 0.483 thus suggesting that 48.3% of the variation in return on average assets is explained by variation in the explanatory variables (loans to deposit ratio, liquidity risk, capital adequacy risk and credit risk). Furthermore the t test for significance of the model parameters shows that the calculated t values and associated asymptotic significant probabilities were -0.04 [0.94]; -0.21 [0.83]; 3.01 [0.0047] and -3.53 [0.0011] for LDR, CR, CAR and NPLR respectively. The results indicate an inverse relationship between ROaA and three of the explanatory variables (Loans to deposit ratio, liquidity ratio, and Non-performing loans ratio) but only the Non-performing loans ratio was significant among the ratios that are inversely related to return on average assets. Furthermore, there is a direct relationship between ROaA and capital adequacy ratio; the direct relationship was significant (see Table 2).

Table 2. Return on average assets and financial risks Dependent

Variable: ROaA
Method: Panel Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LDR	-1.66E-05	0.000236	-0.070159	0.9445
LQR	-0.006003	0.028113	-0.213547	0.8321
CAR	0.166338	0.055241	3.011156	0.0047
NPLR	-0.209877	0.059386	-3.534117	0.0011

R-squared	0.483142	Mean dependent var	1.861350	
Adjusted R-squared	0.440070	S.D. dependent var	2.184282	
S.E. of regression	1.634465	Akaike info criterion	3.915148	
SS resid	96.17312	Schwarz criterion	4.084035	
Log likelihood	-74.30295	Hannan-Quinn criter.	3.976212	
D-W stat	1.59250			

Results of the test of financial performance (using ROaE) and risk factors show that the calculated Durbin-Watson statistic is 1.7, which is within the permissible range of du - 4-du for "no serial correlation. The adjusted R-square value is 0.38.13 thus suggesting that 38.13% of the variation in return on average equity is explained by variation in the explanatory variables (liquidity risk, capital adequacy risk and credit risk). Furthermore the t test for significance of the model parameters shows that the calculated t values and associated asymptotic significant probabilities were -0.25 [0.81]; 2.03 [0.0496]; 0.89 [0.38] and -3.26 [0.0024] for liquidity risk (LDE, CR), leverage risk (CAR) and credit risk (NPLR) respectively. The results

indicate an inverse relationship between ROaE and two of the explanatory variables (Loans to deposit ratio and Non-performing loans ratio) but only the Non-performing loans ratio was significant among the two ratios that are inversely related to return on average Equity. Furthermore, there is a direct relationship between ROaE and two of the explanatory variables, liquidity ratio and capital adequacy ratio but only the relationship between ROaE and Liquidity ratio was significant (see Table 3).

Table 3. Return on average equity and financial risks
Dependent Variable: ROAE
Method: Panel Least Squares
Cross-sections included: 5
Total panel (balanced) observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LDR	-0.000341	0.001385	-0.246372	0.8068
LQR	0.334950	0.164821	2.032203	0.0496
CAR	0.289201	0.323866	0.892966	0.3778
NPLR	-1.135163	0.348168	-3.260390	0.0024

R-squared	0.381319	Mean dependent var	14.16848
Adjusted R-squared	0.329762	S.D. dependent var	11.70488
S.E. of regression	9.582558	Akaike info criterion	7.452406
Sum squared resid	3305.715	Schwarz criterion	7.621294
Log likelihood	-145.0481	Hannan-Quinn criter.	7.513470

Results of the error correction model present the long run equilibrium relations. The first cointegration equation is estimated as: ROaA–1.682 - 0.227 LDR – 0.5493 CR + 0.225 CAR + 0.073NPLR = 0;

Thus, ROaA = 1.682 + 0.227 LDR + 3.549 CR - 0.225 CAR - 0.073 NPLR
The second cointegration equation is estimated as:
ROAE–17.03 - 3.477 LDR – 1.512 CR + 3.47 CAR - 0.264NPLR = 0;
Thus, ROAE = 17.03 + 3.477 LDR + 1.512 CR + 3.47 CAR - 0.264 NPLR
The results show that liquidity risk (LDR, CR), leverage risk (CAR) and credit risk (NPLR) are significant long-run predictors of ROaA and ROAE.

Discussion of Findings

The results indicate that there is significant inverse (negative) relationship between ROaA (dependent variable) and liquidity risks, leverage risk and credit risk and all the relationships were significant. The implication is that increases in credit risk leads to reduction in a bank's investible funds and hence reduction in its average assets. This is not unconnected with the fact that increases in a firm's credit risk reduce its liquidity and thus impact on its ability to acquire assets. The implication is that credit risk is very significant to ROaA. Also, increases in liquidity risk lead to reduction in a bank's investible funds and hence reduction in its average assets. There is also a significant positive relationship between ROaA and CAR. This implies that the more a bank is able to absorb the debt component of its capital structure through equity capital, the higher it is able to generate funds for investment in assets and hence adequate ROaA. The results are consistent with the findings of Oyedele, Adeyemi and Fasesin (2018), Okere, Isiaka and Ogunlowore (2018), Chukwunulu, Ezeabasili and Igbodika (2019), Etale and Ujuju (2018),

Olaleye and Wan, 2016), Kolapo, Ayeni, and Oke (2012), Oluwafemi, Adebisi, Simeon and Olawale (2013) and Obalola, Akpan and Abass (2014)

The results further indicate that there is significant inverse (negative) relationship between ROaE (dependent variable) and liquidity risk and credit risk and the two relationships were significant; thus implying that increases in credit risk and liquidity risk lead to reduction in a bank's ability to reward equity shareholders and that liquidity risk and credit risk are very significant to ROaE. There is a significant positive relationship between ROaE and CAR. This implies that the more a bank is able to absorb the debt component of its capital structure through equity capital, the higher it is able to generate funds to reward equity shareholders. Again, the results are consistent with the findings of Oyedele, Adeyemi and Fasesin (2018), Okere, Isiaka andOgunlowore (2018), Chukwunulu, Ezeabasili and Igbodika (2019), Etale and Ujuju (2018), Olaleye and Wan, 2016), Kolapo, Ayeni, and Oke (2012), Oluwafemi, Adebisi, Simeon and Olawale (2013) and Obalola, Akpan and Abass (2014). A comparison of the panel GMM test with the ECM shows some slight differences. While the GMM shows that NPLR and CAR are predictors of ROaA, the ECM shows that LDR, NPLR, CAB and CR significantly influence ROaA in the long run while CR significantly influences it in the short run. On the other hand, GMM shows that NPLR and LQD have significant influence on ROAE while the ECM shows that LDR, CR, CAR and NPLR influence ROaE in the long run while only CR influences ROAE in the short run. Given the fact that ECM is applicable to time series analysis when the variables under investigation are cointegrated, the results of the ECM supersede those of the GMM. Again LDR does not influence financial performance in the long run while current ration does; this shows that not all facets of liquidity have a short-run influence on financial performance

In view of the findings, a model of risk management and financial performance was suggested. The model indicated that effective management of liquidity risk in the short run as well as management of credit risk, leverage risk, capital adequacy risk and liquidity risk in the long run is what banks require to enhance performance. The implication is that liquidity risk is critical to bank performance since its management is required in the short run and in the long run. The results indicate the need for stakeholders to take cognisance of the short-term and long-term impact of liquidity risk (measured by current ratio) on financial performance (ROaA and ROaE) of banks as well as the long-term influence of solvency risks measured by LDR, CAR and NPLR on financial performance of banks. While a short-term effect may trigger technical insolvency, a long-term influence may precipitate bankruptcy directly or indirectly through a poorly managed state of technical insolvency. Due cognisance by concerned stakeholders will enable them take proactive steps towards risk management and prevent them from being taken unaware.

CONCLUSION AND RECOMMENDATION

The research conclusions are: liquidity risk has significant short-term influence on financial performance of banks; Liquidity risk (current ratio and Loans to deposit ratio), lavage risk (capital adequacy ratio) and credit risk (non-performing loans ratio) have significant long-run influence on financial performance. To this end, adequate risk management, especially management of liquidity risk, leverage risk and credit risk will serve to enhance financial performance in the banking sector. This study has made significant contribution to knowledge in management science and financial management literature. Although several studies have attempted to explain the relationship between risk management and financial performance of banks, the point of departure of this study from most previous studies is the conspicuous observation that while most of such studies identified relationships between financial performance and risk factors, it is doubtful if any of them segregated such effects into short run and long run effects. This study has been able to show that liquidity risk (measured by current ratio) has a short-term and long term influence on financial performance (ROaA and ROaE) of banks while leverage risk and credit risk have long run influence on financial performance of banks. Furthermore, most previous studies on the research problem employed least square method in data analysis, thus ignoring the short-run and long-run influence of the predictors. This study bridged this gap by employing vector error correction model. Lastly, this study showed that all facets of liquidity do not exert the same influence as seen in the long-run effect of loans to

deposit ratio on financial performance while current ratio has short-run and long-run influence on financial performance.

The study is not without some limitations that suggest the need for further studies. The performance indicators (return on average assets and return on equity) as well as the risk proxies that served as explanatory variables (loans to deposit ratio, current ratio, capital adequacy ratio and non-performing loans ratio) included in the study were randomly selected from a host of financial performance indicators and risk factors. The extent to which these variables are or are not exhaustive representatives of the actual performance indicators and risk factors respectively poses some limitations. Besides, the choice of the five banks used in this study was largely influenced by the availability and accessibility of their annual financial statements for the period studied. The inability of the researcher to include other banks in the study owing to non-availability of their financial reports for some of the period investigated poses some limitation because of incomplete randomization in the choice of banks. The above limitations indicate the need for further studies to include some other performance and risk variables. Of particular importance is the need to enlarge the scope by including more banks in order to find out whether there will be any significant deviation from the results of this study.

In view of the problem definition and research findings, it is suggested that strategic managers in banks take risk management as a priority, especially liquidity, leverage, and credit risks. They should be mindful of the short-run and long-run influence of liquidity risk on financial performance. Effective management of risks will enhance their performance and hence their ability to properly manage their assets and equity shareholders. Furthermore, policymakers in government should formulate economic and financial policies with due cognisance of factors that can affect a bank's performance. This requires a holistic view to policy formulation to ensure that cost trade-offs are considerably minimized in all strata of the economy. Specifically, macroeconomic policies that impact on banks' performance, especially interest and inflation rates should be formulated with the interest of the banks and other financial institutions in mind.

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