Effect of Risk on Financial Performance of Money Deposit Banks in Nigeria

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Abstract
This study analyzed effect of risk and performance of deposit money banks in Nigeria. The specific objectives were to examine the effect of liquidity risk, operational risk, interest rate risk exchange rate risk on the performance of deposit money banks in Nigeria. Panel Least Squared (PLS) method of data analysis was used. Secondary sources of data were employed; the interested variables were sourced from the annual report of the quoted deposit money banks. The variables were return on assets as the dependent variables while liquidity risk, operational risk, interest risk and exchange risk. The study employs descriptive statistics, correlation and regression analysis in the analysis. From the analysis result the study found that. Liquidity risk has no significant effect on the performance of deposit money banks in Nigeria. (T-test 0.278158, p=0.7816). Operational risk has no significant effect on the performance of deposit money banks in Nigeria. (T-test -1.162347, p=0.2483) Interest rate risk has significant effect on the performance of deposit money banks in Nigeria. (T-test 2.245644, p=0.0065) The researcher recommends that it was recommended that banks in Nigeria should increase concentration on strategies to increase customer deposit and the banks should use scientific methods in detecting the strengths and weaknesses points of liquidity risk. The bank management should also pay less attention to operational risk though not completely as the result revealed that operational risk has a significant negative effect on the performance of banks. Bank should venture into business with higher interest rate but should establish a mechanism to monitor market movement of interest rate, as any rise in interest rates causes banks problems.

Keywords: *Risk, Financial Performance, Liquidity Risk, Foreign Exchange Risk, Interest Rate Risk and Operational Risk*

1.1 Introduction

Risk is the primary factor driving financial behavior (Shukla, 2016). In its absence, the system will be greatly simplified (Njiru, 2020). It is however present in the realistic world. It is therefore, the responsibility of financial institutions to manage risk efficiently to ensure their survival in a world full of uncertainties. The future of banking stems on the dynamics of risk management (Ayeni and Emeka, 2021). It is only institutions that have efficient risk management system that will ensure their survival in the long run (Ahmed, 2015) The term financial risk may be used like an umbrella term for multiple types of risk associated with financing, including financial transactions that include company loans in risk of default. Al-Tamimi, and Al-Mazrooei (2017) Say that financial risk arises from possible losses in financial markets due to movements in financial variables. This study will used the term financial risks to broadly cover credit risk, market (price) risk, interest rate risk, liquidity risk and foreign exchange risk. Financial risk may be caused by variation in interest rates, currency exchange rates, variation in market prices, default risk and liquidity gap that affect the cash flows and, therefore its financial performance and competitive position in product markets (Omondi, 2019). Indeed most of the deposit money banks in nigeria outline credit risk, liquidity risk, market risk, interest rate risk and foreign exchange risk as the most important types of financial risks they face as their challenges.

Risks are uncertainties that are always evident in all business establishments that are in place with the sole aim of making profits. Financial institutions in their part are exposed to various kinds of risks among them credit risk, interest rate risk, liquidity risk, market risk, foreign exchange risk, currency risk, commodity risk and operational risk which are the most applicable risk to the banks (Cooperman et al, 2010). Credit risk, also called default risk, is the risk associated with a borrower going into default that is not making payments as promised. There is always the possibility for the borrower to default from his or her commitments for one or the other reason resulting in crystallization of credit risk to the bank. These losses could take the form of outright default or alternatively, losses from changes in portfolio value arising from actual or perceived deterioration in credit quality that is short of default. Foreign exchange risk arises from rapid and extreme changes in value due to: smaller markets; differing accounting, reporting, or auditing standards; nationalization, expropriation or confiscatory taxation; economic conflict; or political or diplomatic changes. Liquidity risk is the risk that a given security or asset cannot be traded quickly enough in the market to prevent a loss or make the required profit. There are two types of liquidity risk: Asset liquidity which arises when an asset cannot be sold due to lack of liquidity in the market and Funding liquidity risk which arises when liabilities: cannot be met when they fall due, can only be met at an uneconomic price and can be name-specific or systemic (Claudiu, 2019).

The past decade has seen the world witnessing one of the most shocking financial meltdowns. The effects of the crisis were pervasive and hit almost every sector of global businesses; the most affected sector was the financial services industry, especially the banking sector. The banking sector did not only witness the dramatic disappearance of the most renowned institutions it also became a regular target for tougher regulations, public anger and academic criticism. There are numerous explanations on the causes of the current financial crisis. One factor that has received significant attention during this crisis is risk management discourse. It seems that risk management has become an important tool, from which banks try to achieve legitimacy in the eyes of the public and regulators, (Metzmakers, 2015). Organizations that have financial risk exposure have a possibility of loss but also an opportunity for gain or

profit. Financial risks exposure may provide strategic or competitive benefits to companies that critically analyze their market performance. The main reasons for managing financial risk are the same as those for implementing a risk management.

The following extant studies were conducted from developing economy Atiso, Koranteng and Boakye (2020) examine the effects of financial risk management practices on financial performance of banks in Ghana. The study finds risk management practices to be positively related to financial performance. Muinde, (2018) examined the effect of financial risk on performance of insurance companies listed at Nairobi Securities Exchange and interprets the result by relating with the regulations. Financial leverage had a negative and statistically insignificant relationship with financial performance while firm size was positively related with ROA but statistically insignificant. Omondi, (2019) investigated the effect of financial risk on the Kenya's commercial banks financial performance. From the study findings it can be substantively concluded that interest rate risk have a positive and significant effect on the banks' financial performance. Okeyo and Miroga (2020) determined the effects of financial risks on performance of commercial banks in Kenya. The study concluded that the banks involved in the study had well managed their liquidity and that bank earnings were positively influenced by higher interest rates.

The following extant studies were conducted in Nigeria Adeusi, Akeke, Adebisi and Oladunjoye (2014) focused on the association of risk management practices and bank financial performance in Nigeria. The result implies an inverse relationship between financial performance of banks and doubt loans, and capital asset ratio was found to be positive and significant. Ayeni and Emeka (2021) investigated the effect of financial risks on the performance of manufacturing firms in Nigeria. It was discovered that leverage risk, liquidity risk, firm size have adverse and significant effect on return on asset while age of firm has positive and insignificant effect on return on asset. Akinleye and Olanipekun (2021) investigated risk management and financial performance of manufacturing firms. Specifically, the study analyzed liquidity risk and market risk effect on after tax profit of manufacturing establishment in Nigeria. This study concluded that efficient and effective risk management will positively affect performance of quoted firms in Nigeria,
Most studies concentrated on construction companies' oil and Gas, and manufacturing companies, no study to the best of my knowledge looked at the deposit money bank in 2021. In our own study, we focused on the deposit money bank in Nigeria. The main aim of the study is to determine the financial risk and performance of deposit money banks in Nigeria. Specifically, the study sought to;

1. Examine the effect of liquidity risk on the performance of deposit money banks in Nigeria.
2. Assess the effect of operational risk on the performance of deposit money banks in Nigeria.
3. Evaluate the effect of interest rate risk on the performance of deposit money banks in Nigeria.
4. Evaluate the effect of exchange rate risk on the performance of deposit money banks in Nigeria.

2.0 Conceptual Review

2.1 Financial Risks

According to Arif and Showket (2015) financial risk refers to the possibility that shareholders may lose their monies because of the company's use of debt where the company's cash flows are insufficient to meet its financial obligations. According to Panigrahi (2013) financial risk is the corporate inability to meet expected and unexpected demand for cash through generated cash flows. The financial risk is the risk at which the corporate institutions do not have enough cash to use for its own obligation. It is a term used to explain a situation where a company does not hold enough cash to pay suppliers, banks, and other parties on time. These risks may range from technical provision risk, liquidity risk, reinsurance risk, credit risk, solvency risk and underwriting risk and many more (Boermans, 2011). The challenge of the financial risks exposure is still a major issue as the mitigation against the risks has not been successfully attained. This is due to the fact that settling on a model that can consolidate all these factors and offer an appropriate tool for mitigation all at once is yet to be achieved (Ernst et al., 2010). Underwriting risk is the main financial risk faced by insurance firms where the cost incurred to cover a claim may exceed total premium paid. Therefore, underwriting and effective claim management function might significantly minimize expenses and losses that might in turn boost performance (Mirie, 2015).

2.1.1 Liquidity Risk and Bank Performance

This indicates a firm's ability to meet its financial obligations as and when they mature without disrupting the normal operations of the business (Saunders and Cornett, 2018). Regulators examine liquidity ratios to determine whether the company is complying with its legal requirements. A low overall liquidity ratio could indicate that the insurance company is in financial trouble whether from poor operational management, risk management or investment management. However, a high overall liquidity ratio may not be good either especially if current assets represent a high percentage of total assets. Liquidity risk is the possibility that over a specific time period, the bank will become unable to settle its obligations with immediacy (Zaphaniah, 2013). It is a risk arising from a bank's inability to meet its obligations when they come due without incurring unacceptable losses (Drehmann & Nikolaou, 2010). Liquidity risk is a serious threat to the performance of banks which when unchecked would lead to the total collapse of banks. It is also a snare to banks with an unsound risk assessment and control policy (Coyle, 2010).

Liquidity risk is the risk that a firm, though solvent, either does not have sufficient financial resources available to meet its obligations as they fall due or can secure them only at excessive cost. It occurs when, in spite of holding a higher level of assets than liabilities, the firm's assets are illiquid and cannot be easily converted into cash. In life insurance, liquidity risk can result in a mass surrender of policies that arise due to a loss in the confidence of the financial strength of the firm. This was experienced by the life insurance company – Equitable Life when it received an adverse legal ruling by the House of Lords on its guaranteed annuity liabilities in 2001. Due to this, surrenders rose sharply. In 2001, its net claims arising from surrenders and maturity rose to £6.2bn from £3bn it experienced in 2000 (Barlett, Kelliher, Chaplin, Dowd and O'Brien, 2015).

2.1.2 Operational Risk and Bank Performance

Operational risk is the risk of a change in value caused by the fact that actual losses, incurred for inadequate or failed internal processes, people and systems, or from external events (including legal risk), differ from the expected losses. It can also include other classes of risk,

such as fraud, security, privacy protection, legal risks, physical (e.g. infrastructure shutdown) or environmental risks. In similar fashion, operational risks affect client satisfaction, reputation and shareholder value, while increasing business volatility. Operational risks refer to the various risks that can arise from a company's ordinary business activities. The operational risk category includes lawsuits, fraud risk, personnel problems and business model risk, which is the risk that a company's models of marketing and growth plans, may prove to be inaccurate or inadequate. Operational risk can be classified into Fraud Risk and Model Risk. Fraud risk arises due to lack of controls and Model risk arises due to incorrect model application. Operational risk is the risk of a change in value caused by the fact that actual losses, incurred for inadequate or failed internal processes, people and systems, or from external events (including legal risk), differ from the expected losses. It can also include other classes of risk, such as fraud, security, privacy protection, legal risks, physical (e.g. infrastructure shutdown) or environmental risks (Omaliko & Onyeogubalu, 2021).

2.1.3 Interest Rate Risk and Bank Performance

Interest rate is a percentage of the principal the borrowers pay to use the money they borrow from creditors. In the context of financial institutions, commercial banks being inclusive, the borrower-lender relationship is arrived at from two angles. The interest rate risk is proxied by Net Interest Margin (log of NIM) and it is adjusted for change in interest rate as used by Aruwa and Musa (2014). Murthy and Rama (2013) as cited by Odeke and Odongo (2014) indicated that change of interest rates by banks has direct impact on the interest earned on loans and investments and the interest paid on deposits Interest rate risk exposures involves managing the net interest margin (interest income minus interest expense) and controlling the risk posed by changing interest rates while trying to take advantage of changing interest rates. Murthy and Rama (2013) stated that even when interest rates change a bank can control interest rate risk by matching the re-pricing maturities of assets and liabilities.

However, the rate from the perspective of commercial banks is that of a key determinant of their financial performance. The variables used in this case are normally the interest rate spread. Note that the interest spread refers to the difference between the borrowing rate of commercial banks from central bank and the lending rate to the clients. The general statement is that low interest rate spread affects the profitability of commercial banks.

2.1.4 Foreign Exchange Risk and Bank Performance

This is a financial risk posed by an exposure to unanticipated changes in the exchange rate between two currencies. Investors and multinational businesses exporting or importing goods and services or making foreign investments throughout the global economy are faced with an exchange rate risk which can have severe financial consequences if not managed appropriately. If foreign exchange markets are efficient such that purchasing power parity, interest rate parity, and the international Fisher effect hold true, a firm or investor does not need to protect against foreign exchange risk due to indifference toward international investment decisions. A deviation from one or more of the three international parity conditions generally needs to occur for an exposure to foreign exchange risk. Variance represents exchange rate risk by the spread of exchange rates, whereas standard deviation represents exchange rate risk by the amount exchange rates deviate, on average, from the mean exchange rate in a probability distribution. A higher standard deviation would signal a greater currency risk. Economists have criticized the accuracy of standard deviation as a risk indicator for its uniform treatment of deviations, be they positive or negative, and for automatically squaring deviation values. Alternatives such as average absolute deviation and semi variance have been advanced for measuring financial risk. Value at risk can be used to

examine the tail end of a distribution of returns for changes in exchange rates to highlight the outcomes with the worst returns. Banks in Europe have been authorized by the Bank for International Settlements to employ VAR models of their own design in establishing capital requirements for given levels of market risk. Using the VAR model helps risk managers determine the amount that could be lost on an investment portfolio over a certain period of time with a given probability of changes in exchange rates.

2.1.5 Corporate Performance

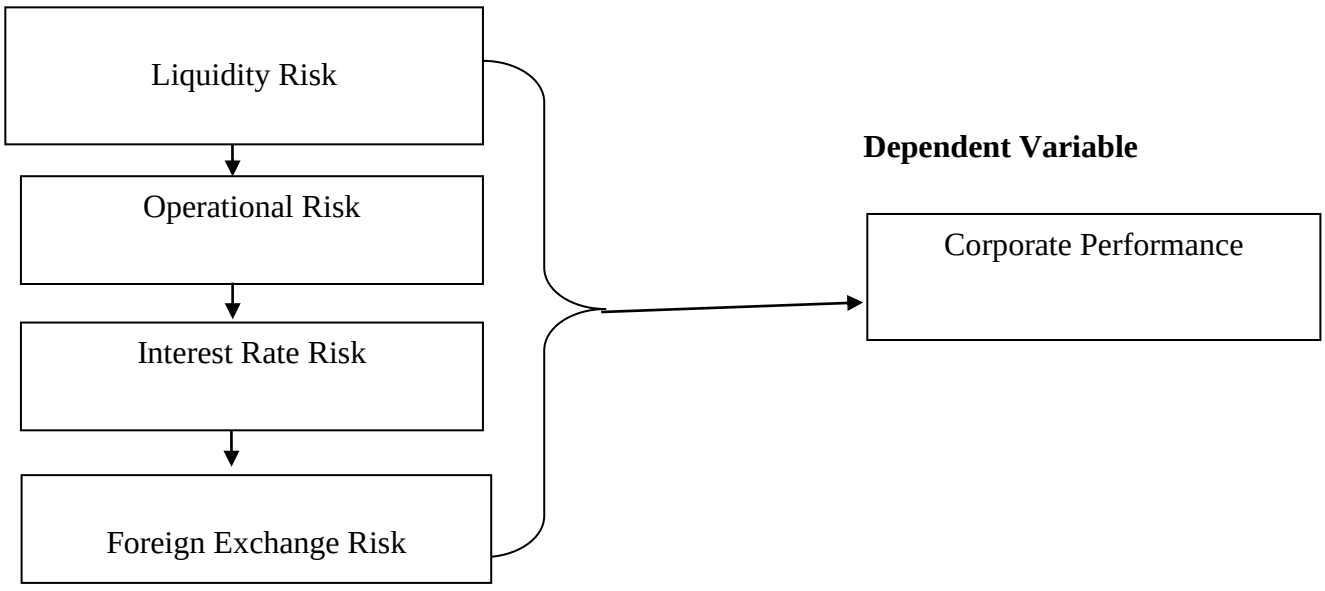
Performance comprises the actual output or results of an organization as measures against its intended output (or goals and objectives). It is one of the most important variables in the field of management research today. Although the concept of organizational performance is very common in academic literature, its definition is not yet a universally accepted concept (Gavrea, Ilies & Stefan 2011). Richard (2006) view organizational performance as encompassing three specific areas of from outcomes: financial performance (profits, return on assets, return on investment.), product market performance (sales, market share); and (shareholder return (total shareholder return, economic value added). Specialists in many fields are connected with organizational performance including strategic planners, operations, finance, legal, and organizational development. In recent years, many organizations have attempted to manage organizational performance using the balanced scorecard methodology where performance is tracked and measured in multiple dimensions such as financial performance (shareholder return), customer service, social responsibility, internal business processes and employee stewardship (Omaliko & Okpala, 2023).

Richard and Shelor (2009) defines organizational performance as the organization's ability to attain its goals by using resources in an efficient and effective, manner; effectiveness being the degree to which the organization achieves a stated goal, an efficiency being the amount of resources used to achieve an organizational goal.

The diagram below represented conceptual framework of the study

Independent Variables

Fig. 1



Source; Researcher's Concept (2023)

2.2 Theoretical Framework

Portfolio Theory

This study is anchored on portfolio theory, the theory is propounded by Markowitz (1952). The theory is based on the following assumptions:
1. Investors are rational and behave in a manner as to maximize their utility with a given level of income or money.
2. Investors have free access to fair and correct information on the returns and risk.
3. The markets are efficient and absorb the information quickly and perfectly.
4. Investors are risk averse and try to minimize the risk and maximize return.
5. Investors base decisions on expected returns and variance or standard deviation of these returns from the mean.
6. Investors choose higher returns to lower returns for a given level of risk.

A portfolio of assets under the above assumptions is considered efficient if no other asset or portfolio of assets offers a higher expected return with the same or lower risk or lower risk with the same or higher expected return. Diversification of securities is one method by which the above objectives can be secured. The unsystematic and company related risk can be reduced by diversification into various securities and assets whose variability is different and offsetting or put in different words which are negatively correlated or not correlated at all Markowitz postulated that diversification should not only aim at reducing the risk of a security by reducing its variability or standard deviation, but by reducing the covariance or interactive risk of two or more securities in a portfolio. As by combination of different securities, it is theoretically possible to have a range of risk varying from zero to infinity.

Markowitz theory of portfolio diversification attaches importance to standard deviation, to reduce it to zero, if possible, covariance to have as much as possible negative interactive effect among the securities within the portfolio and coefficient of correlation to have – 1 (negative) so that the overall risk of the portfolio as a whole is nil or negligible.

Relevance of the theory to the study

Based on the changes identified, credit identification, credit review, and credit risk rating system management can make necessary modifications to portfolio strategies or increase the supervision of credits in a timely manner. While the asset-by-asset approach is a critical component to managing credit risk, it does not provide a complete view of portfolio credit risk, where the term risk refers to the possibility that actual losses exceed expected losses. Therefore, to gain greater insight into credit risk, companies increasingly look to complement the asset-by-asset approach with a quantitative portfolio review using a credit model (Mason and Roger, 1998). Companies increasingly attempt to address the inability of the asset-by-asset approach to measure unexpected losses sufficiently by pursuing a portfolio approach. One weakness with the asset-by-asset approach is that it has difficulty identifying and measuring concentration. Concentration risk refers to additional portfolio risk resulting from increased exposure to credit extension, or to a group of correlated creditors (Richardson, 2002).

2.3 Empirical Review

Ishaq Abir and Khadra (2021) examined the impact of liquidity risk management on the financial performance of selected conventional banks in Saudi Arabia for the period of 2002-2019. The independent variables were on Liquidity risk is measured with the loan to deposit

ratio (LTD) and cash to deposit ratio (CTD) while dependent variables were financial performance is measured by the Return on Equity (ROE). Equity to total asset ratio (ETA) is used as the control variable. The study was anchored on credit risk theory. The study uses the panel data method (Pool, Fixed-effects and Random-effects) for testing the study hypothesis. The results show that liquidity risk has a significant negative impact on the financial performance measured by Saudi Arabian banks.

Nasratullah (2016) examined the risk management practices used by Malaysian banks. A content analysis was conducted on 26 commercial banks listed in Bursa Malaysia. This study tries to ascertain the transparency and public disclosure and the understanding of the bank's risk profile. Furthermore, Malaysian banks have implemented some effective risk strategies and risk management frameworks. In addition, credit risk exposure methods are still underused by Malaysian banks. Similarly, collateral and guarantees continue to be the most commonly used risk mitigation methods to provide support to credit facilities in Malaysian banks. The study was anchored on Agency theory, risk theory, moral hazard The study discusses and analyses the current practices in risk management of Malaysian banks. It identifies the tools used in managing credit risk, market risk, liquidity risk, and operational risk by Malaysian banks.

Abdulla, Nor, Siti and Saleh, (2021) examined the liquidity factors and liquidity risk management to improve financial performance in the Islamic banking system in the United Arab Emirates. The study provides insights for policy makers and practitioners to select appropriate liquidity factor measures for Islamic banks in the UAE, which could eventually enable them to support their own liquidity factor policies, in a way that would expand their client base according to the aspects of liquidity factors, and not just the religious ones. The study was anchored on USA's Harold G. Moulton theory. The study concluded that liquidity factors have a positive and important impact on financial performance. Therefore, it is recommended that banks in the UAE establish sound systems of governance and risk management by developing strategies and policies for liquidity factors that are well integrated into risk management practices as well as putting in place a contingency financing plan to address any liquidity shortfalls during periods of stress or emergency while ensuring that active liquidity control financing needs to avoid any liquidity risk management challenge that may lead to a crisis in banks, is addressed immediately.

Okeyo and Miroga (2020) determined the effects of financial risks on performance of commercial banks in Kenya. In particular, this study aimed at determining the impact of liquidity risks on return of assets (ROAs) of commercial banks in the country. Questionnaires were also used to source for data. Internal consistency checks of data were performed using Cronbach's alpha to check for the reliability of data. Financial performance on commercial banks was assessed on terms of return on assets. The study uncovered that liquidity risks have a positive and significant effect on performance of the commercial banks. The study concluded that the banks involved in the study had well managed their liquidity and that bank earnings were positively influenced by higher interest rates. This study recommended that commercial banks should have a proper methodology for the measurement, identification, and control of financial risks.

Adeusi, Akeke, Adebisi and Oladunjoye (2014) examined the association of risk management practices and bank financial performance in Nigeria for the period of 2006-2009. Secondary data sourced was based on a 4year progressive annual reports and financial statements of 10

banks and a panel data estimation technique adopted. The result implies an inverse relationship between financial performance of banks and doubt loans, and capital asset ratio was found to be positive and significant. Similarly it suggests the higher the managed funds by banks the higher the performance. The study is anchored on agency theory. 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.

Ayeni and Emeka (2021) investigated the effect of financial risks on the performance of manufacturing firms in Nigeria. Data were sourced from the annual financial statements of manufacturing firms that are listed on the Nigerian Stock Exchange for the period 2010 to 2020. Panel regression technique based on fixed effect model was employed to establish the effect of leverage risk, liquidity risk, firm size and age of firm on return on asset. The study was anchored on agency theory. It was discovered that leverage risk, liquidity risk, firm size have adverse and significant effect on return on asset while age of firm has positive and insignificant effect on return on asset. Financial risk of manufacturing sector in Nigeria is on the rise, especially as a result of debt and increase in current liabilities over current assets which are constraints on general performance. It is recommended that manufacturing firms should avoid incurring excessive debt in order to avoid increase the risk of leverage. In addition, effective strategies should be employed to monitor and manage financial risks in order to reduce or eliminate the negative consequences of these risks.

Akinleye and Olanipekun (2021) investigated risk management and financial performance of manufacturing firms. Moreso, the study analyzed liquidity risk and market risk effect on after tax profit of manufacturing establishment in Nigeria. The study employed panel data over the period spanning from 2010-2019 across 10 firms. Secondary data were gathered through the annual reports of the selected firms. Correlation analysis and panel-based estimation techniques were used. The outcome showed that liquidity risk positively and significantly affects profit after tax while market risk (measured by interest rate risk) negatively and insignificantly affect profit after tax of sampled firms quoted in Nigeria. The study was anchored on Agency theory. This study concluded that efficient and effective risk management will positively affect performance of quoted firms in Nigeria, most specially management of internal risk such as the liquidity risk. Hence, firms should build an internal control system flexible in nature to harness the benefit of internal risk management and also normalize the negative effect of external risk such as the interest rate on performance.

3.0 Methodology

This study adopted ex-*post facto* research design, the study makes used of secondary data that were collected from the annual financial statement of the sampled firms. The population of the is 18 listed deposit money banks in Nigeria out which 9 were used as sample size using purposive sampling technique to select the sample size. The study employed the use of panel least square regression to analyzed the data.

3.1 Model Specification

The study adapted the model of of Atiso, Koranteng and Boakye (2020) examine the effects of financial risk management practices on financial performance of banks in Ghana.

ROA = (LR, MR, CR, OPR)

The model was modified to suit the variables under study. Hence the model for the study is

anchored on the specific objectives.

ROA =F (LR, OPR, INR, EXR)----------1

This can be econometrically expressed as

ROA = β0 + β1LRit + β2OPRit + β3INRit+ β4EXRit + μ ……..2

Equation 1 and 2 are the linear regression model used in testing the null hypotheses

Where
ROA = Return on assets
LR = Liquidity risk
OPR = Operational risk
INR = Interest rate
EXR = Exchange risk
β0 = Constant
β1,….. β4, = are the coefficient of the regression equation
μ = Error term
i = is the cross section of firms used
t = is the year (time series)

Decision Rule
Accept Null if P-Value is greater than 5% and reject Alternate Accept Alternate if P- Value is less than 5% and reject Null

4.0 Data Analysis

4.1 Descriptive Statistics Analysis

The descriptive statistics for the dependent and independent variables used in this study were presented in table1 below:
Table1: Summary of descriptive statistics for the variables employed in this study:

	ROA	LR	OPR	INR	EXR
Mean	0.291978	0.302418	0.373077	8.308462	247.7146
Median	0.170000	0.280000	0.290000	8.460000	253.4900
Maximum	2.250000	0.600000	7.000000	9.890000	359.4100
Minimum	0.010000	0.060000	0.010000	6.300000	150.3000
Std. Dev.	0.392794	0.159564	0.732150	1.051058	85.06802
Skewness	4.149850	0.334824	8.272740	-0.410710	0.082637
Kurtosis	20.46826	2.152384	75.42135	2.274673	1.305345
Jarque-Bera	1418.178	4.424421	20924.71	4.553149	10.99269
Probability	0.000000	0.109458	0.000000	0.102635	0.004102
Sum	26.57000	27.52000	33.95000	756.0700	22542.03
Sum Sq. Dev.	13.88584	2.291468	48.24394	99.42498	651291.1
Observations	91	91	91	91	91

Source: Researchers' computation (2023) from E-view 9

The table shows the descriptive of mean, standard deviation, Jarque-Bera (JB) Statistics normality test, minimum, median and maximum values of the variables used. The study used data for 91 years observations of annual reports from the Nigerian Exchange Limited for a period of 12 years spanning 2010 to 2021. From the table above, the dependent variable is

performance of deposit money bank while the independent variables were- liquidity risk, operational risk, interest risk and exchange risk. As shown in the table1 above, the average or mean value of return on asset stood at 29% while the median value was 17 and the standard deviation was 0.39% approximately. The maximum and minimum values stood at 2.25 and 0.01% respectively. The result provided some insight into the nature of the selected deposit money bank under study. Firstly, the great difference between the mean and median values of return on assets shows that the sampled firms differ greatly; this was also reaffirmed by the standard deviation value which indicates that the sampled deposit money banks are not dominated by banks whose performance is below average. It shows that half of the selected firm or 29% of the bank sampled has high performance on dependent variables. The variation in the maximum and minimum values of performance of selected banks revealed that our sampled firms are homogeneous and the selected estimation techniques must not take into consideration hetero-skedasticity problem. This therefore justifies the use of Panel Least Square (PLS) least squared regression techniques. In the same vein, liquidity risk (LR) stood at mean value of 0.30% approximately suggesting that half of the banks under study are have liquidity risk. Furthermore, we observed on the average that operational risk in our sampled banks is comprised of 29% while the maximum and minimum values stood at 0.84 and 0.01 respectively. Again, interest rate risk expressed in the bank indicates that on average 8.30 %, while the medium is 0.46, maximum and minimum is 9.89 and 6.30. Similarly exchange rate mean is 247.7 with minimum of 150.3 and maximum of a 359.4 respectively.

Lastly, in table 1, the Jarque–Bera (JB.) which test for normality or existence of outliers or extreme value among the variables shows that Return on Assets (ROA), Operational Risk (OPR), Exchange Rate (EXR) at 1% level of significance while Liquidity Rate (LR), Interest Rate (INR) is normally distributed at 5% level with exception of institutional ownership that are normally distributed at above 10% level of significance. This means that no variables with outlier, even if there are, they are not likely to distort the conclusion and are therefore reliable for drawing generalization. The descriptive statistics in general revealed that there is no sample selection bias or outlier in the data that would impair the generalization from this study. This also justifies the use of panel Least Square estimation techniques. Hence, any recommendations made to a very large extent would represent the characteristics of the true population of study.

4.2 Result of Pearson Correlation Matrix

Table 2

	ROA	LR	OPR	INR	EXR
ROA	1.000000				
LR	-0.112880	1.000000			
OPR	-0.064841	0.111232	1.000000		
INR	-0.018108	0.080690	0.036627	1.000000	
EXR	0.098420	0.169512	0.157637	0.420959	1.000000

Source: Researcher's summary of correlation analysis (2023).

From the correlation matrix table, the result shows that return on assets are negatively correlated with three variables liquidity rate (LR) operational risk (OPR) and exchange rate risk (EXR) but positively correlated with Interest rate risk (INR). The above results show that there exist a negative and strong association between return on assets and liquidity risk (ROA/LR=-0.11). There also exists a negative and very strong association between Return on Assets and Operational Risk (ROA/OPR =-0.06). In the case of interest rate risk and liquidity

risk, there exists a positive and strong association (INR & LR)=-0.08. There exists a negative and strong association between operational risk and interest rate risk (OPR/INT=-0.03). It was also observed that there exists a negative and very strong association INR/EXR (-0.42). However, none of the variables were found to be more than 0.90. ie no two exploratory variable were perfectly correlated. The highest correlation is between two variables which are GOO that are highly correlated with (EXR/INR=-0.42) which indicate that multi co linearity is not a serious problem that would distort the regression result in the model used for analysis. A close look at the value of the Pearson correlation coefficient results revealed that all the variables are strongly associated with return on assets.

Therefore, in checking for multicollinearity problem, the study noticed from the correlation table above that no two explanatory variables were perfectly correlated and thereby ruled out the case of having an outlier. This indicates the absence of multi-collinearity problem in the model used for the analysis. This also justifies the use of the Panel Least Square (PLS).

4.3 Test of Hypotheses and Discussion of findings

In order to examine the relationship between the dependent variable (Return on Assets) and the independent variables (LR, OPR, INR, EXR) and to test the formulated hypothesis, we employed a Panel Regression Analysis since the data had both time series (2010-2022) and longitudinal properties (7 quoted companies) our analysis is presented in table 4.3 below

Table 3: Summary of regression result

Dependent Variable: ROA
Method: Panel EGLS (Two-way random effects)
Date: 06/12/23 Time: 23:06
Sample: 2010 2022
Periods included: 13
Cross-sections included: 7
Total panel (balanced) observations: 91
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.374141	0.219209	3.706779	0.0005
LR	0.153755	0.552763	0.278158	0.7816
OPR	-0.325285	0.279852	-1.162347	0.2483
INR	0.090002	0.366392	2.245644	0.0065
EXR	-0.132255	0.101478	-1.303292	0.1960

Effects Specification		
	S.D.	Rho
Cross-section random	0.300020	0.4240
Period random	0.000000	0.0000
Idiosyncratic random	0.349689	0.5760

Weighted Statistics			
R-squared	0.636287	Mean dependent var	0.089743
Adjusted R-squared	0.608537	S.D. dependent var	0.344850
S.E. of regression	0.346318	Sum squared resid	10.31454

F-statistic	7.809539	Durbin-Watson stat	2.542528
Prob(F-statistic)	0.000461		
Unweighted Statistics			
R-squared	0.006112	Mean dependent var	0.291758
Sum squared resid	13.79787	Durbin-Watson stat	1.900656

Source: Researchers' summary of Panel Regression Result (2023) from E-view 9

H_{01}: liquidity risk has no significant effect on the performance of deposit money banks in Nigeria.

From the result report of our t-test in table 4.3 above, it was observed from liquidity risk the value is 0.278158 with the probability of 0.7816 which is more than the desired level of significant (0.005), we therefore reject alternative hypothesis and accept the null hypotheses and conclude that liquidity risk has no significant effect on the performance of deposit money banks in Nigeria..

Ho2: Operational risk has no significant effect on the performance of deposit money banks in Nigeria.

From the forgoing result we find out that computed value for Operational risk is -1.162347 while it's probability is 0.2483 this shown that the Operational risk is statistically insignificant. Based on this analysis we reject (H1) and accept (H0), which implies that Operational risk has no significant effect on the performance of deposit money banks in Nigeria.

Ho3: Interest rates have no significant effect on the performance of deposit money banks in Nigeria.

Drawing inference from our regression result in table 4.3, we found that the value of Interest rates is 2.245644 while its probability is 0.0065 this show that Interest rates has significant effect on the performance of deposit money banks in Nigeria.

Ho4: Exchange rate has no significant effect on the performance of deposit money banks in Nigeria.

From table 4.3 above, we find out that t-statistics value for Exchange rate is -1.303292 while it's probability is 0.1960 this showed that the Exchange rate is positive and statistically significant. Based on this analysis we reject (H1) and accept (H0), which implies that Exchange rate has no significant effect on the performance of deposit money banks in Nigeria.

4.4 Discussion of the Findings

Liquidity risk and return on assets

The study found that liquidity risk has insignificant positive effect on performance of deposit money bank in Nigeria. This implies that Liquidity risk has not contributed to significant on performance of deposit money banks in Nigeria. This study is in line with the study of Onyefulu, Okoye, & Orjinta (2019) who studied Financial Risk and Performance Of Deposit Money Bank: Evidence From West African Countries found that Liquidity risk was found to have insignificant effect in both Ghana and Nigeria banks.

Operational risk and return on assets

The regression results revealed that the Operational risk as depicted in Table 3 has a coefficient value of -1.162347 with a p- value of 0.2483 which is not significant. This indicates that Operational risk which has negative was also significantly affected the performance of the listed deposit money bank in Nigeria. This implies that for every one naira proportionate decrease in banking firm, it increases the performance of the listed deposit money bank in Nigeria. This finding is in line with the studies of *Adegbie and David (2019)* who studied operational risk management and financial stability of deposit money banks in Nigeria, the study found that operational risk management influences the financial stability of selected deposit money banks in Nigeria.

Interest risk and return on assets

The Interest risk as depicted in table 3 above has a beta value of 0.090002 with a p-value of 0.0065 which is significant at 5% significant level. This indicates that Interest risk has positively and significantly affected the performance of the listed deposit money bank in Nigeria. This implies that for every one naira proportionate increase in Interest risk of the banks under investigation, the return on assets will increase by 0.9 naira. interest rate may increase the chances of credit default. The rate of capital accumulation in the banking sector depends upon the control of quality and efficiency of its financial risk management. This finding is however in line with the study of Adewunmi, (2021) who studied the credit risk management and profitability (pat) of deposit money banks (DMBS) IN Nigeria, the study found that there is no significant impact between interest rate and profitability of deposit money bank in Nigeria.

Exchange rate risk and Return on Assets.

It was observed from the analysis that Exchange rate risk has significant effect on performance of deposit money banks in Nigeria. Based on the empirical findings, it can be said that the contribution of Exchange rate risk has not translate to meaningful growth of the performance position. The study is in line with the study of Abubakar (2020) who study the effects of exchange rate volatility on financial performance of deposit money banks in Nigeria, the study found that exchange rate has no significant effect on Return on Assets and ROCE. Based on this finding,

5.0 Conclusion:

This study examined the effect of risk and profitability of deposit money banks (DMBs) in Nigeria using panel multiple regression analysis. Given that banks are exposed to these diversifiable risks, the objective of this study was to evaluate the effect of risk volatility on the profitability of deposit money banks in Nigeria. The risk was measured with an interest rate risk, exchange rate of the Naira to the United States Dollar, liquidity risk and operational risk, while the proxy was used for the profitability of DMBs returned on assets (ROA). The theoretical inclination of the study was hinged on PLS, given its relevance in measuring quantitatively the extent to which risks affect performance. The non-diversifiable nature of risks makes it an important risk that needs to be watched by deposit money banks in Nigeria. The empirical result from this study suggests the existence of a positive relationship between interest risk, liquidity risk and profitability but an inverse relationship between exchange rate, operational risk, and profitability. This indicates that when interest rate risks are managed effectively, the profit of DMBs will appreciate. This also is similar to the volatile exchange rates risk and operational risk. With this in mind, it can be stated that risks showed a long-run effect on the profitability of DMBs in Nigeria, with positive effects from the interest rate and

negative effects from the exchange rate.

5.1 Recommendation

On the basis of the findings and conclusions of the study the paper recommends among others that:

1. The study recommends that the banks in Nigeria should increase concentration on strategies to increase customer deposit and the banks should use scientific methods in detecting the strengths and weaknesses points of liquidity risk,
2. The bank management should also pay less attention to operational risk though not completely as the result revealed that operational risk has a significant negative effect on the performance of banks.
3. Bank should venture into business with higher interest rate but should establish a mechanism to monitor market movement of interest rate, as any rise in interest rates causes banks problems.
4. Government should formulate policies that will be very consistent in controlling or managing exchange rate risk, as exchange rate risk has the capacity of distorting labour rate and other cost of material inputs.

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