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Credit Risk and the Performance of Deposit Money Banks in Nigeria

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Abstract
This paper examined the impact of banking risks on the Performance of Deposit Money Banks (DMBs) in Nigeria. Changes in financial performance were examined based on the relative impact of credit risk. The study specifically focused on eighteen Deposit Money Banks (DMBs) listed on the Nigerian Stock Exchange, including a coverage period of nineteen years (2000 to 2018). Panel data fixed effect econometric statistical technique was used in the estimation of the specified model was used in the analysis of the data as well as investigating the hypotheses of the study. The results of the empirical analysis revealed that Credit risk does not have any significant effect on the performance of deposit money banks in Nigeria at the 5% level of significance. The only banking risk that negatively affected the performance of deposit money banks in Nigeria at the 5% level of significance is liquidity risk. Liquidity risk as measured by total loan to total asset ratio (LTAR) and total loan to deposit ratio (LDR) are the only factors that significantly affect the performance of Deposit Money Banks in Nigeria, within the period of investigation. Based on the results the study recommends among others that, management should continuously lay more emphasis on liquidity risk management in order to ensure that banks have adequate cash to meet the yearnings of depositors daily, and by so doing, prevent loss of confidence, panic withdrawals and eventual bank failure. Also, a more robust risk management that is fully in compliance with BASEL II and III accords and the prescribed ratio as provided by the regulatory institution (Central Bank of Nigeria), should be vigorously pursued in this regard. Doing this will go a long way to minimize the effect of banking risks on the overall performance of banks in Nigeria.

Keywords: Credit risk, Performance, Deposit Money Banks, Return on Asset, Non-Performing Loans, Loan Loss Provisions

JEL Classification Codes: G21, G32

1. INTRODUCTION

The financial intermediary theory of banking states that banks exist because they perform certain special functions that other financial intermediaries cannot replicate. These special functions are the intermediating roles between savers (depositors) and the borrowers; that is, mobilizing idle financial resources from the surplus units (the savers through the accounting systems and bills discounting), and making this financial resources available to the borrowers (that is, the deficit units) through loans and advances, and when they (the banks) invest in securities (Shanmugam& Bourke, 2015). These functions has remained the primary role and main business of every banking industry in the world. It has helped in accelerating the pace of a nation's economic growth and its long-term sustainability. But, in conducting these intermediating roles, the banks are invariably exposed to credit risk that may have a potential direct and indirect influence on their performance (Sufian& Chong, 2014; Olweng&Shiphon, 2016).

According to Greuningand Iqbal (2016), credit risk is the risk associated with losses caused by the default of borrowers. Default occurs when a borrower cannot meet his/her financial obligations or repays the loan contracted, also referred to as bad debt or doubtful loan. However, the primary economic function of banks involves taking on risks to achieve an appropriate balance between risks and returns. Therefore better knowledge of the effects of these risks on bank performance could contribute to the better functioning of the banking sector. This insight has forms the main basis and the major focus of this study.

Statement of the Problem

Banking is a business, and like all other businesses areset up to earn income and profit maximization. It must be emphasized that banks earn incomes from their intermediary functions. However, no investor can maximize his or her returns without engaging in risk; thus, as banks intermediate, they face a series of risks. If banks avoided these risks to minimize failure rates to zero, they would limit the purpose of the banking system to promote investors' market value, which at the same time would be detrimental to the sustainability of the financial system (Greuning and Bratanovic, 2016). In this regard, the study sought to establish the impact of credit risk on the performance of deposit money banks in Nigeria.

Furthermore, banking risk and performance are studies to show the simultaneous effects of risk and profit, because they are

interdependent. Their relationship is explained by Hawley (1893), in his risk theory of profit, and Bowman (1979), in his paradox theory of risk and return, which, in practice, are accurate. The question now is: does credit risk impact significantly on the performance of Deposit Money Banks in Nigeria?

Against the background of the question, the broad objective of this paper is to examine how credit risk impact on the performance of Deposit Money Banks in Nigeria.

Following the introduction, section two focuses on the review of related literature, section three is on methodology, followed by section four, which is

2.REVIEW OF RELATED LITERATURE
Conceptual Framework
Banking Risk
Banking risks are the challenges banks face when they extend credit to the economy, and are usually used to define the losses of several distinct sources of uncertainty. This outcome (uncertainty) could either result in a direct loss of earnings/capital or may lead to creating difficulties on bank's ability to meet its business objectives. Yi (2016), defined it as the possibility of losing profit based on the financial characteristics of the bank. The liquidity of financial institutions is typically at risk when their assets become impaired or that the banks' inability to meet customers' cash demands. Hence, it is essential to monitor the indicators that can affect the quality of their assets in terms of overexposure to specific risks trends in non-performing loans and other risks variables.

Banking risks include credit risk; credit risk creates liquidity risk (illiquidity) which together, contributes to the volatility in bank

performance (Tafri, Hamid, Meera& Omar, 2016; Dimitropoulos, Asteriou & Koumanakos, 2016).

Credit risk is inherent in lending, which is the major banking business. It involves the varying net worth of banks' assets due to failure of contractual debts of the counterparties to meet their obligation as they fall due. In other words, it arises when a borrower defaults on the loan payment agreement (Pyle, 2016). According to Ruziqa (2015), a financial institution whose borrower default on their payments may face cash flow problem which eventually can affect its liquidity position.

Credit risk is measured by Non-Performing Loan Ratio (NPLR) and Loan Loss Provisions (LLPs), (Ruziqa, 2015). Rekha and Koteshwar (2017), in their study, found that credit risk is the oldest risk that banks were exposed to by their nature of business. It is the main banking risk that hinders the performance of banks, especially in Africa.

Liquidity risk originated, among other factors, from bad debt or default in loan repayment (credit risk). This involves the inability of banks to reduce liabilities and increase assets. When there is a shortage of funds or cash to meet immediate cash demands by customers, this can creates problem to the banks. According to Al-Khouri (2016), liquidity risk is derived as the banks' liquid assets divided by the banks' deposits; this is indicated by total loan to total deposit (TL/TD) and total loan to total asset (TL/TA).

In an extensive body of literature, Tummala and Burchett(2010), argues that banking risks matter in financial institutions because it affect their performance. But, according to Parrenas (2011), banking risks are important

aspect of financial institutions because they result to creating value for shareholders and customers when they – the institutions, indulge in those activities such as loans and advances, involving risks.

Banks' Performance

Bank performance is also known as profitability; that is, the level of bank profits (Ceylan, Emre,&Aslt, 2017). According to Olteanu (2014), the global performance of banks is characterized by their overall results given by the profitability level; and this is measured in the form of ratios. These ratios according to Tafri et al., (2016), Qin and Pastory (2016), and Ruziqa (2015), isReturn on Equity (ROE), measured as Net income / Average Equity, Return on Asset (ROA),measured as Net income /Total assets,and Net Interest Margin (NIM). While Simpasa (2015), measured the value of performance using Return on Average Assets (ROAA), Return on Average Equity (ROAE) and Net Interest Margin (NIM).

Theoretical Review

The relationship between credit risk and performance of deposit money banks is a subject of different theories, ranging from the theory of financial intermediation to the risk theory of profit.

The theory of financial intermediation was advanced byAkerlof, Benson,and Diamond (1980). They view financial intermediation as the accumulation of money from the public and give it to borrowers on commercial conditions, hence exposure to banking risk (Rayberg, 2002). According to Diamond (1984), intermediation makes banks to mobilize deposits, provide credit and to meetthe bank's liquidity functions but characterized by default risks which can hinder the intermediation process. Thus, Allen and Santomero (2013), incorporated

risk managementin financial intermediation. They argued that risk management is an essential function in intermediary activity; that it enables efficient intermediation processes and facilitates risk transfer and dealings in financial instruments and markets.

TheRiskTheoryofProfit was developed by Hawley (1893). Performance and banking risk are two components that have a two-way interaction. Each part is essential to one another to sustain the operation of the firm. According to Hawley(1893), profit is considered to be the return to risk as an additional factor of production and have a positive relationship with risk. This idea is supported by Aaker and Jacobson (1987), who argued that risk has a positive correlation with Return on Investment. This idea became true when bank management takesa risk by relocating funds to high-risk-investments or loans with high returns; alternatively, the theory becomes a fantasy when banks face high risk and management fails to manage its occurrence thereby affecting returns. Conversely, Bowman (1979), in his paradox theory of risk and return, propounded that risk and return have a negative relation because managers aimed at increasing returns and reducing risk at the same time. In reality, this idea is true, when a bank fails to manage risk, the risk is high, and profit is low, and when the bank succeeds in managing risk, the risk is low, and the profit is high.

Instructively, the connection between banking risk and performance has been shown by much of the empirical literature.

Review of Empirical Literature

Sufiyan and Habibullah (2013), examined risks and profitability of Chinese banking sector during the China banking post-reform

period of 2000-2005, and that liquidity risk, credit risk and capitalization (capital risk) had a positive impact on the State-owned commercial banks (SOCB) profitability; while the impact of the cost was negative on profitability. Similarly, Ben-Naceur and Omran (2012)'s study of the Middle East and North Africa (MENA) countries about the influence of risks in commercial banks operations and profitability from 1995-2011; they found that bank's specific characteristics such as credit risk and bank capital havea positive and significant impact on their profitability.

Lake (2013), also examined the effect of banking risk on the profitability of commercial banks in Ethiopia. A total of eight commercial banks were used in the study, and the period of coverage was two years (that is, 2000-2011). The analysis was carried out with the Ordinary Least Square (OLS) method. The outcome of the study revealed that credit risk and liquidity risk have a negative and statistically significant relationship with banks' profitability.

Athanasoglou, Delis, and Staikouras (2016), studied the determinants of bank profitability in the South Easter Europe region over the period 2008-2012. They applied the random effect model (REM) for Generalized Least Square (GLS) estimation model since the Hausman test indicates insignificant P-value. The results of the study show liquidity risk have positive but not a significant effect on Return on Asset (ROA) of banks, while credit risk has a negative and significant effect on banks' ROA.

Credit risk and Bank Performance
Loans are the major output provided by banks, but the loan is a risk output. There is always a foreseen risk of non-repayment of

a loan before the loan will finally become non-performing which can be treated as undesirable output or cost to a bank and impact negatively on the bank. For every credit or loan issued by the bank, there is a perceived risk involved. This risk represents the possibility of non-payment of the obligation when it falls due.

Athanasoglou, Brissimis, and Delis (2014), in their study on bank-specific determinants, industry-specific determinants and macroeconomic determinants of bank profitability, used the GMM technique for a panel of Greek banks covering the period from 1995 to 2011. They discovered that a banking risk such as credit risk is a bank-specific determinant factor and that it negatively affects the performance of commercial banks. In the same vein, Tafri, Hamid, Meera and Omar (2016), study the effect of banking risk on the profitability of Malaysian commercial banks for the period of 2005-2014; by employing panel data regression analysis of Generalized Least Squares (GLS), they reported that credit risk has a negative and significant impact on ROA and ROE for both conventional banks and Islamic banks.

Hosna, Manzura and Juanjuan (2016) studied the relationship between a non-performing loan, capital adequacy ratios and profitability for four Swedish banks covering a period of 2006 to 2014. The study outcome indicates that the rate of the non-performing loan and capital adequacy ratios was inversely related to ROE though the degrees vary from one bank to the other. Such inverse relationships between profitability, performance and credit risk measures were also found in other studies.

Khamraj and Pasha (2015), observe that the high percentage of NPLs is often associated

to the performance problems of banks and financial crises in both developing and developed countries, and Fofack (2015), on his study also associated the incidence of banking crises to the massive accumulation of NPLs from time to time. He (Fofack, 2015), further observes that NPLs account for a major portion of total assets of insolvent banks and financial institutions.

Gizaw, Kebede and Selvaraj (2015); Kolapo, Ayeni, and Kolade, (2012); Rajanand Dhal, (2009); and Samad (2014), asserted that the presence of non-performing loans ratio (NPLR) in banking loan portfolio is a confirmation of commercial bank's credit risk. They find that NPLR which is the magnitude of credit default risk characterizes banking operations; this has showed a statistically significant negative effect on banks' profitability measured by ROA. In addition, Norman, Pervin and Chowdhury (2018), emphasized that lower NPL ratio is the evidence of the lower amount of loans being doubtful which in turn means a lower credit risk; that is, the lower the ratio, the better the asset quality, thus the lower the doubtful loans. Distinctively, the lower the credit risk, the better the performance of banks.

However, Kithinji (2015), study outcome revealed that the bulk of commercial banks' profits are not influenced by the amount of non-performing loans. In a similar view, Jha and Hui (2017), in their study, indicated a negative relationship between NPL ratio and ROA, but the coefficient is statistically not significant. While the study by Achou and Tenguh (2010), found that the NPL ratio has an indirect relationship with banks' profitability. But, on the contrary, the studies by Demirguc-Kunt (2010); Corsetti, Pesenti and Roubini (2010); Neal (2010); Ariff and Marisetty (2011); Cebenoyan and

Strahan (2014); and Kraft and Jankov (2014), indicates that non-performing loans (NPLs) are a major unsystematic factor that builds up credit risk and thus affects banks' performance.

Al-Smadi (2018), in his study entitled: factors affecting banks' credit risk, found that the coefficient estimate of the provision of loan losses (LLP) is positively correlated with credit risk as expected, but not significant. An increase of LLP level is an indicator of a determination of loan quality and potentially increased in credit risk. This result is similar to the findings of Cannata & Quagliariello (2014) and Eng&Nabar (2016).

Other empirical studies have shown a positive association between Loan Loss Provisions and banks' profitability (Greenawalt and Sinkey, 2018; Kanagaretnam, Lobo, and Yang, 2015); while others have found no relationship (Ahmed, Takeda, & Thomas, 2016).

Against the above background, we hypothesisein null form, that:
H_{01}: There is no significant relationship between credit risk and bank performance.
H_{02}: There is no significant relationship between liquidity risk and bank performance,

3. METHODOLOGY
The study aimed at examining the impact of credit risk on the performance of deposit money banks in Nigeria. To achieve this aim, the study adopted the ex-postfacto longitudinal research design involving both time series (historical data) and cross-sectional elements from 2000 to 2018 for DMBs.

The population of the study comprises of all the deposit money banks (DMBs) operating in Nigeria. As ofDecember $31^{st,}$ 2018, there were eighteen DMBs, with the exclusion of the Islamic banks (CBN, 2018). For the study, we took a census of all the deposit money banks in Nigeria. Secondary data were collected from the banks' annual financial reports for various years.

Data Estimation Technique
The balanced Panel data collection and estimation technique (statistical regression technique) were adopted. Panel data is defined as a data set with a cross-section and a time dimension. The observed units are followed over time (time-series effects), and taken together the repeated observations of one unit constitutes a panel. Panel data was adopted because it takes care of heterogeneity associated with individual banks by allowing for individual specific variables. Also, all the required data are available; thus, there is no need for projection or forecasting. By using both time series and cross-sectional observations, panel data give more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency; especially suitable to study dynamic of change, and minimize bias due to aggregation.

Apriori expectation
Notwithstanding the general lack of consensus in the literature of the impact of credit risk on the performance of deposit money banks, the theory suggests that increased exposure to credit risk is often associated with a decrease in bank profitability; hence, theapriori expectation in the model is that all the independent variables are expected to have a negative relationship on bank performance measured by Return on Asset (ROA). The

mathematical expression is represented as β_1-$\beta_4 < 0$ ($\alpha < 0$); implying that a unit increase in the independent variables will lead to a decrease in ROA by a unit.

The Model
The model for the study is derived from the general form:
$$Y = a + bx \text{ --------------eq. 1}$$
Where:
Y = dependent variable,
a = constant,
b = the coefficient of the independent variables, and
x = the independent variables.

In line with the general form of equation 1, the panel regression techniques is specified as follows:
$$P_{it}(ROA) = f(CR_{it}, LR_{it},) \text{ ----------eq. 2}$$

Equation 2 shows that potentially, DMBs' performance proxy by ROA is determined by banking risk which forms a plausible relationship; where:
ROA_{it} = is the performance of bank i at time t, and
CR_{it} =is the measures of credit risk ratios of bank i at time t, and
LR_{it} =is the measures of liquidity risk of bank i at time t.

From the above eq.2, and consistent with the study of Rao et al., (2007); and Saleem and Raheman, (2016), our model will maintain that bank performance proxy by ROA) is a function of credit risk proxy by:
Credit risk = f(NPLs, LLPs), and
Liquidity risk = f(TL/TD, TL/TA)

However, since one variable is to be used as the dependent variable in the study, and more than one variable as independent variables also in the study, the general form of panel multiple regression techniques

derived from equations 1 and 2 were adopted to suit the respective hypotheses. Thus, the empirical model specification to be estimated was stated as follows:

$$ROA = \alpha + \beta_1 NPLR + \beta_2 LLPR + \beta_3 TLTD + \beta_4 TLTA + eit$$

Where:

ROA   =Return on Asset;
NPLs   =Non-Performing Loans;
LLPs   =Loan Loss Provisions;
TLTD   =Total Loan to Total Deposit; and
TLTA   =Total Loan to Total Asset;
eit   =error terms.

Operationalization of Variables
ROA

In our study, the dependent variable was measured by bank performance; this was proxied by Return on Asset (ROA). ROA is measured as a percentage of net income over total asset; that is:

$$ROA = \frac{Net\ Income}{Total\ Asset} \quad OR \quad \frac{PAIT}{Total\ Asset}$$

Where:

ROA   = Return on Asset.
Net Income   =Profit after interest and taxes
PAIT   = Profit after interest and taxes.

Non-Performing Loan ratio (NPLr)

These are loans that are doubtful, bad debts and are not repayable. NPLr is computed as:

$$NPLr = \frac{NPL}{TL}$$

Where:

NPL = Non-Performing Loan, and
TL = Total Loan or Gross Loan.

Loan Loss Provisions (LLPs)

When more Naira is kept aside for loan losses, it reduces bank profits. In other words, the higher the LLPs ratio, the lower the profitability of banks. LLPr is measured as:

$$LLPr = \frac{LLP}{TL}$$

Where:

LLP   =   Loan Loss Provisions, and
TL   =   Total Loan.

LTA

Loan to Total Asset (LTA or LOANTA) measures the exposure level of the banks to liquidity

risk. LOANTA ratio is measure as:

$$LOANTA = \frac{LOAN}{TA}$$

Where:

LOAN = Total Loan of the bank, and
TA =   Total Asset.

LOANDEP (or LTD)

The ratio of loans to deposits (LTD) or total loan to total deposit (TL/TD) is used in this study as a measure of liquidity. The higher amount of loans against per Naira deposit increases bank liquidity risk. LOANDEP is computed as:

$$LOANDEP = \frac{TL}{TD}$$

Where:

TL   =   Total Loan, and
TD   =   Total Deposit.

4   ESTIMATION RESULTS AND DISCUSSION OF FINDINGS

Descriptive Statistics

Table 4.1: Descriptive Statistics

	Mean.	Med.	Max.	Min.	Std. Dev.	Skew.	Kurt.	J-B.	Prob.
ROA	0.0229	0.0187	0.7107	-0.44791	0.0694	4.2124	56.959	42501.1	0
NPLR	0.2351	0.1417	3.735149	0.00079	0.3435	6.499	63.639	54807.5	0
LLPR	0.0977	0.0519	1.2568	-0.3502	0.1394	3.0664	19.323	4332.9	0
LTAR	0.5383	0.3307	11.3792	0.0218	1.2061	6.7382	51.933	36708.7	0
LDR	4.2914	0.4232	381.7485	0.0301	35.097	10.111	105.45	155408.1	0

Source: Author's computation (2019)

The mean valueof return of asset is ₦0.0229 million Naira for the entire sample of 342. The data appears to be skewed to the right, which explains why the mean is greater than the median value of 0.0187. This was further confirmed by the skewness coefficient of 4.2124 which indicated that the distribution was positively skewed to the right, which was a common feature of the return on asset.

The maximum value of the entire sampled firms' performance was about ₦0.7107, while the minimum value is -0.44791. With this result, more firms are seen to perform very well within the periods, while others did not. This is while the minimum ROA (performance) value is less than -0.44791.

There appeared to be quite a lot of variations in the financial performance of the sampled banks; the standard deviation value of 0.0694 is very large compared to the mean value of 0.0229. This simply suggests a high level of variability of the pattern of financial performance either across the banks or overtime within banks.

The summary statistics forJaque-Bera (J-B) statistic value of 42501.1 for the financial performance variable is significant at the 1 percent level. It implies that the probability distribution of the sample for the variable is not normally distributed. This invariably suggests that the financial performance

across the sampled banks is heterogeneous and exhibit the firm-specific characteristic. This is one justification for the application of the panel data estimation technique in this study.

The descriptive statistics for the other variables in the study also present interesting outcomes. For the banks' credit risk factor represented by (NPLR and LLPR), the mean and maximum values (NPLR 0.2351,3.735149 andLLPR 0.0977, 1.2568) clearly show that on average, credit risk liabilities are higher than financial performance for the Nigerian banking industry. The degree of variability is also very high among the banks. However, the skewnessvalues of (6.499 and 3.0664) is positive, indicating that more banks are faced with higher credit risk than the reported mean value for the period of the sample. The J-B statistic values (54807.5 and 4332.9) for both variables representing credit risk are significant at the 1% level. These also indicate non-normal distribution, an indication of heterogeneity in the pattern of credit risk liability by the banks. Indeed, all the variables in the study had highly significant J-B values, clearly showing that individual firm/bank characteristics are quite important in the measurement of the variables.

The average bank liquidity risk as measured by loan to deposit ratio (LDR) and liquidity

ratio risk (LRR) for the sampled period is (0.5383, 4.2914) with corresponding high maximum values of (11.3792 and 381.7485). The standard deviation values of 51.933 and 105.45 also show that there is a large spread in liquidity risks among the sampled banks.

Hausman Test

The standard test for the method of panel analysis adopted was the Hausman test for random effects. The Hausman test reported

in table 4.2 was conducted (see appendix 3) to determine the best effects model to be adopted; the Chi-square statistic values for each of the models were significant. From the results, the statistic provides little evidence against the null hypothesis that there is no misspecification when the Fixed-effect model is employed for the estimates in values. Hence, the best method to apply for model estimation was the Fixed-effect approach.

Table 4.2: Hausman Test for Panel Effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. df.	Prob.
Cross-section random	23.0892	8	0.0033

Source: Author's computation (2019)

ModelEstimation with DMBs Performance and Banking Risk-Related Factors

Table 4.3: Banking Risks and Deposit Money Banks' Performance Estimates (Dependent Variable = ROA)

Variable	*Fixed Effects(EF)*			*Random Effects(RE)*		
	Coeff.	t-Stat.	Prob.	Coeff.	t-Stat.	Prob.
Constant	0.048496	1.367957	0.1723	0.017211	0.506908	0.6126
NPLR	0.000591	0.039761	0.9683	-0.011961	-0.854318	0.3935
LLPR	0.012774	0.311769	0.7554	0.028398	0.840112	0.4014
LTAR	0.027486	4.054654	0.0001**	0.029272	4.620770	0.0000
LDR	-0.000781	-3.772419	0.0002**	-0.000862	-4.248047	0.0000
R-squared	0.216			0.095		
Adj. R-squared	0.154			0.073		
F-statistic	3.4826	DW = 1.61			4.3602	DW = 1.49

Source: Author's computation (2019) Note: **1% level of sig; * 5% level of sig.

In the fixed effects (FE) estimates, the goodness of fit is not too impressive, with the R squared value of 0.216, indicating that over 21 percent of the systematic variations in deposit money bank performance is

captured by changes in the explanatory variables at any given period.

The adjusted R-squared value of 0.+154 percent is also very low, and it implies that the model has a weak predictive ability.

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However, given that the data set used a panel, the outcome of the adjusted R squared may not pose estimation threats to the results (Madalla, 2004; Woodridge, 1994). The F value of 3.4826 for the result is high and easily passes the significance test at the 1% or 5% level. This suggests a significant relationship between bank performance and all the independent variables combined.

The relevance of each of the variables in the model is determined by considering the individual coefficients of the variables in terms of significance and signs (Greene, 2002; Iyoha, 2004).

A close examination of the individual coefficients in the model revealed that credit risk measured by non-performing loans ratio (NPLR) and loan loss provisions ratio (LLPR) failed the significance test at the 5 percent level. Even though the coefficients are positive, they do not have any significant impact on deposit money banks' financial performance in the country. One probable reason for this insignificant effect is connected with the overwhelming response of banks to the findings of Basel accord (Bank Committee on Banking Supervision), that indicated credit risk as the greatest of the risks banks encountered in their operations. Thus banks overtime have taken drastic measures, set up modalitiesand techniquesto curb and reduces credit risk exposures in their investment loan portfolios.

Liquidity risk is in line with the positive apriori expectation in the model. The coefficient of total loan to total asset ratio (TLTAR) or loan to total asset ratio (LTAR) is rightly signed, which is in line with the positive apriori expectation in the model. However, the coefficient of total loan to total deposit ratio (TLTDR) or loan to deposit ratio (LDR) is negatively signed, which does not agree with the apriori expectation. In terms of the individual relevance, both variables (loan to total asset ratio (LTAR) and loan to deposit ratio (LDR)) are significant at the 1% level. This means that, in the determination of the performance of deposit money banks in Nigeria, liquidity risk (Lr) as measured by these two variables, is a relevant factor to be considered in this regard. Indeed, it is seen that a unit increase in the level of loan to total asset ratio (LTAR) leads to more than 0.027486% increase in the overall performance of banks. One probable reason for this, is not unconnected with the fact that DMBs in Nigeria overtime have been able to effectively utilize the loan portfolio of their total assets for more productive and assets yielding investments which in turn provided enough liquidity for the banks and hence, better performance. On the other hand, a unit increase in loan to deposit ratio (LDR) will decrease the bank's performance by -0.000781%. The reason for this could be that bank management is not efficient in the management of credit facilities to customers. Most of the loans issued to borrowers may have ended up as bad debt or irrecoverable loans or as non-performing loans; this further weakened the liquidity position of the banks; thus, resulting in negative performance. Hence, banks' management should, therefore, efficiently manage the loan aspect of their portfolio in relation to assets and deposit liabilities in order to achieve stated objectives.

The overall results obtained from the model estimation are effectively acceptable because the D.W. statistic value of 1.61 is appropriate and it indicates the absence of multicollinearity, meaning there is evidence of auto--colinearity among the variables in

the model. Thus, the results are applicable for structural analysis as well as policy directions.

Test of Hypotheses

H_{01}: that there is no significant relationship between credit risk (measured by non-performing loans ratio (NPLR) and loan loss provisions ratio (LLPR)) and the performance of deposit money banks in Nigeria. However, from the empirical analysis, it was observed that the performance of deposit money banks in Nigeria is not affected by credit risk. This presupposes that the null hypothesis holds. Thus, while we reject the alternative hypothesis, the null hypothesis is accepted in this regard.

H_{02}: that there is no significant relationship between liquidity risk (measured by loan to total asset ratio (LTAR) and loan to deposit ratio (LDR)) and the performance of deposit money banks in Nigeria. However, on the basis of the results obtained from the empirical investigation, it was observed that the two measures of liquidity risk were significant at the 1 percent level. This means that liquidity risk is a significant factor that determines the performance of deposit money banks in the country. Therefore, the null hypothesis is rejected while we accept the alternative hypothesis.

Discussion of Findings

The importance of the banking system is based on the fact that it ensures intermediation of funds or transferring necessary funds from the surplus unit to the deficit unit of the society. This process, therefore, imposes some inherent risks to the sector. These inherent risks come in different types, such as credit risk and liquidity risk, among others.

Now, with respect to credit risk, the empirical result has shown that there is no significant relationship between credit risk and deposit money bank performance. It is argued in the extant literature that, for every credit or loan issued by the bank, there is a perceived risk involved. This risk refers to the possibility of non-payment of the obligation when it falls due. In this study, credit risk was proxied by non-performing loans ratio (NPLR) and loan loss provisions ratio (LLPR). The study of Kroszner (2011) and Suitana (2011) also employed these variables as measure of credit risks in Japan; they concluded that non-performing loans are closely associated with banking crises. This stand was equally corroborated by Khamraj and Pasha (2012), arguing that a high percentage of NPLs is often associated with performance problems of banks and financial crises in both developing and developed countries. The findings from this current study, therefore, agree with those of Kithinji (2010) in Kenya who did not find a strong positive relationship between credit risk and financial performance of banks. The findings, however, disagreed with those of Chowdhury, Norman, and Pervin, (2018), Al-Mazrooei and Tamimi, (2017), Imad, (2018); Jamil, (2018); Ahamed-Kameel, FauziahHanim,Mohdazmi, and Zarinah, (2018);Hamid, Meara, Omar, and Tafri, (2016).

In relation to liquidity risk (proxied by loan to total asset ratio (LTAR) and loan to deposit ratio (LDR)), Ibe (2015) rightly argues that liquidity plays a vital role in the successful functioning of a business firm; firm should, therefore, ensure that it does not suffer from lack of or excess liquidity to meet its short-term compulsions. Also, the capacity of banks to perform their intermediation and credit creation roles in a manner that guarantees optimal profitability

and at minimum risk is greatly hinge on having adequate liquidity. This liquidity-profitability mix thus provides stability and confidence in deposit money banks (DMB). Thus, the empirical findings from this study have clearly shown that the two measures of liquidity risk, loan to total asset ratio (LTAR) and loan to deposit ratio (LDR) are the major factor influencing bank financial performance in Nigeria. Indeed, while the loan to total asset ratio (LTAR) is seen to be positively related, loan to deposit ratio (LDR) is negatively related to bank financial performance. This finding corroborated the studies of Tafri*et al.,* (2016), Sufiyan and Habibullah (2013), Jamil (2018), Saleem&Rehman (2016) who find a significant positive relationship between liquidity risk and bank performance, and those of Lake (2013), Davydenko (2013) and Ahmed *et al.* (2012) who find a significant negative relationship with bank performance. These findings, however, disagreed with those of FauziahHanim, Zarinah, Ahamed-Kameel, &Mohdazmi (2018), Akhtar (2011) and Said &Tumin (2014) who find no significant relationship between liquidity risk and bank financial performance in their respective countries.

5 SUMMARY, CONCLUSION AND RECOMMENDATIONS
The findings of this study revealed that the combined effects of banking risks do not influence banks' performance negatively. More specifically, the results from the empirical analysis revealed as follow, that:

Credit risk (measured by non-performing loans ratio (NPLR) and loan loss provisions ratio (LLPR) affects banks' performance, but does not have any significant relationship with the financial performance of deposit money banks in Nigeria. As it is

seen to have failed the 5% significance level, and that

Liquidity risk (measured by loan to total asset ratio (LTAR) and loan to deposit ratio (LDR) passes the 5 percent level of significance, and thus significantly affects banks' performance; meaning that this variable is a significant determinant of deposit money banks' performance in Nigeria in the period under investigation.

Based on our findings, the following useful recommendations for policy initiations, implementations, enforcements and directions were made:

That attention still needs to be directed to credit risk management that is entirely in compliance with CAMELs and the prescribed ratio as provided by the regulatory institution (Central Bank of Nigeria) to bring this risk to the barest minimum level. It is also recommended that the banks need to monitor the loan and advances to total deposits ratio frequently since it can also affect profitability. as finance distress theory states; the shareholders' wealth may be affected by the increase of return on asset at a decreasing rate,

In line with the recommendation of Chukwunulu, Ezeabasiliand Igbodika (2019), this study also recommendsthat bank's management and the Central Bank of Nigeria (CBN) should do more by taking proactive steps to enforce risk identification, assessment, measurement and necessary control mechanisms in line with global best practices in other to avoid the financial crisis

That banks should always ensure they maintained adequate cash to meet

depositors' daily demands and other short-term expenses to loss of confidence, panic withdrawals and eventual bank failure.To avoid liquidity crisis, the banks' policy should be centred on the use of derivative instruments specificallyauthorized that the derivatives should not be used for speculation purposes, but mainly as hedges or offset to an underlying asset or obligation only. That the derivatives should notexceed the term of the underlying assets or obligations and should not also exceed the amount of the underlying asset or obligation (except to adjust for differences in the treatment of the derivative transaction versus that of the underlying asset or obligation).

The study also recommended that Return on Equity (ROE), Return on Capital Employ (ROCE), Net Interest/Income Margin (NIM) and Basel Accord compliance should also be used to evaluate bank performance.

The paper aimed at credit risk and the performance of deposit money banks (DMBs) in Nigeria. Panel data model specifically the fixed effect for analysis was adopted; the finding revealed that credit risk does not have a significant impact on bank performance in Nigeria, but there is a relationship between credit risk and performance; while liquidity risk have a significant impact on bank performance.

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APPENDIX 1: DESCRIPTIVE STATISTICS

	ROA	NPLR	LLPR	LRR	LDR
Mean	0.022916	0.235104	0.097707	0.538254	4.291375
Median	0.01874	0.14169	0.05195	0.330749	0.4232
Maximum	0.7107	3.735149	1.2568	11.3792	381.7485
Minimum	-0.44791	0.000786	-0.3502	0.021807	0.0301
Std. Dev.	0.069435	0.343476	0.13935	1.206095	35.0976
Skewness	4.212428	6.49966	3.066409	6.738229	10.11149
Kurtosis	56.95884	63.6396	19.32343	51.93295	105.4542
Jarque-Bera	42501.12	54807.54	4332.94	36708.69	155408.1
Probability	0	0	0	0	0
Sum	7.837124	80.4056	33.41562	184.0828	1467.65
Sum Sq. Dev.	1.644047	40.22976	6.62164	496.0412	420057.8
Observations	342	342	342	342	342

APPENDIX 2: PANEL LEAST SQUARE
Dependent Variable: ROA
Method: Panel Least Squares
Date: 04/19/19   Time: 14:56
Sample: 2000 2018
Periods included: 19
Cross-sections included: 18
Total panel (balanced) observations: 342

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.048496	0.035451	1.367957	0.1723
NPLR	0.000591	0.014869	0.039761	0.9683
LLPR	0.012774	0.040972	0.311769	0.7554
LTAR	0.027486	0.006779	4.054654	0.0001

| LDR | -0.000781 | 0.000207 | -3.772419 | 0.0002 |

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.216012	Mean dependent var	0.022916
Adjusted R-squared	0.153987	S.D. dependent var	0.069435
S.E. of regression	0.063866	Akaike info criterion	-2.591087
Sum squared resid	1.288914	Schwarz criterion	-2.299552
Log likelihood	469.0759	Hannan-Quinn criter.	-2.474947
F-statistic	3.482690	Durbin-Watson stat	1.606084
Prob(F-statistic)	0.000000		

APPENDIX 3: HAUSMAN TEST

Correlated Random Effects - Hausman Test
Equation: Untitled
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	23.089220	8	0.0033

** WARNING: estimated period random effects variance is zero.

Period random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
NPLR	-0.022518	-0.011961	0.000014	0.0055
LLPR	0.011316	0.028398	0.000070	0.0405
LTAR	0.029777	0.029272	0.000004	0.7904
LDR	-0.000846	-0.000862	0.000000	0.7286