

## EVALUATING CREDIT RISK AND THE PERFORMANCE OF DEPOSIT MONEY BANKS LISTED ON NIGERIA EXCHANGE GROUP

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### ABSTRACT

*This study evaluated the effect of credit risk on the performance of deposit money banks listed on the floor of Nigerian Exchange Group. Net asset per share was used as a proxy for the the dependent variable, performance while market quality ratio and assets quality ratio served as proxies to the independent variable, credit risk management. A sample of 12 deposit money banks were used for the period of eleven years spanning 2012 to 2022. The study employed ex-post facto and longitudinal research design. Data were collected from annual reports of the selected deposit money banks and five (5) specific objectives and hypotheses were subjected to some preliminary data tests like descriptive statistics. Pearson correlation analysis and Variance Inflation factor (VIF) were analyzed using panel regression analysis. Using a sample of 132 banks-year observations, the result revealed that management quality ratio has statistical significant effect on market performance of deposit money banks in Nigeria. It was also discovered that asset quality ratio has negative and insignificant effect on market performance of deposit money banks in Nigeria which was statistically insignificant at 5% level of significance. It was therefore concluded that banks engaging in risk projects can either lose or gain and that informed decisions need to be adhered to in such scenarios. Based on these findings, the study recommended that banks should fully concentrate on the loan assessment procedure, polices and quality of loans and liquidity management. Nigeria banking industry should inculcate a balance credit risk management culture to mitigate risks and shocks..*

**Key words:** Asset Quality Ratio, Credit risks, performance, Management Quality Ratio.

### INTRODUCTION

Bank failures in Nigeria and other emerging economies have been attributed to improper lending practices, lack of experience, organizational and informational systems to adequately assess credit risk in the falling economy among others (Ogbulu & Eze, 2016). Akintoye (2019) documented the list of financial scandals among Nigerian banks to include: Afribank (2006) N6.9billions, Oceanic Bank (2010) N150billions, Bank PHB (2011) N25.7billions, Access Bank (2011) US\$19million or N6.84billion, Intercontinental Bank (2012) N400billion, and Skye Bank (2018) N126billion. Yisa, Ishola and Folajimi (2020) also noted that the federal government of the federation through the intervention of the Central Bank of Nigeria (CBN) on September 24th, 2018 rescued the depositor's funds, by converting the Skye Bank Plc to Polaris Bank Plc. The demise of Oceanic Bank Plc, Bank PHB Plc,

Intercontinental Banks Plc, Mainstream Bank Plc, Savannah Bank Plc, and Enterprise Bank are still fresh in investors' memory. In the year 2019, both the Access Bank Plc and the Diamond Bank Plc merged into one corporate entity. While the public are being told that the move is a merger decision, investors saw the move as an acquisition decision by the management of Access Bank Plc.

High incidence of non-performing loans in the balance sheet reduces bank's profitability and thereby affects performance of banks (Uwalomwa, Uwuigbe & Oyewo, 2015; Kolapo, Ayeni & Oke, 2012). Regarding corporate credit risk management practices in Nigeria, Federal Government of Nigeria established Asset Management Corporation of Nigeria (AMCON) to provide a lasting solution to the recurring of non-performing loans that bedeviled Nigerian banks. Other efforts made by Central Bank of Nigeria (CBN) to ensure sound and efficient financial institutions performance are the recapitalization policy of July 2004, issuance of Prudential Guidelines, establishment of Nigeria Deposit Insurance Corporation (NDIC) in 1988 to protect depositors' funds, Fines and Sanctioning of Management, withdrawal of Licenses among others. Koch and MacDonald (2014) lamented that banks face many risks due to its dynamic structure and complex nature of the economic environment in which they operate. Hence, the risks faced by banks can be classified into six (6) categories. These categories are; credit risk, liquidity risk, market risk, operational risk, nominal risk, and legal risks. Each of these risks especially the credit risk may lead to negative impacts on financial institutions profitability, market value, liabilities, and equity. However, the primary source of income of the banking sector consists of loans granted by them.

The Basel Committee on Banking Supervision (2011) viewed credit risk as the probability of partial or total loss of outstanding loan due to non-payment of the loan on time. An increase in credit risk raises the marginal cost of debt and equity. Correspondingly, the cost of the banks funding increases. As a bank exposure to credit risk increases, banks tendency to experience a financial crisis increases. Prior studies on credit risk management and banks performance in Nigeria produced mixed results thereby leaving the academia and policy makers in quandary. For instance, the studies of Hamza (2017), Ajayi and Ajayi (2017), Adebawo and Enyi (2014), Ejoh, Okpa and Egbe (2014), Epure and Lafuente (2013) amongst others found evidence that credit risk management does not impact positively on banks profitability while Ogbulu and Eze (2016), Abiola and Olausi (2014) found evidence that credit risk management indicators significantly impact banks performance. Against this backdrop, the present study deems it pertinent to evaluate the effect of credit risk on the performance of deposit money banks listed on Nigerian Exchange Group.

## **Objectives**

The main objective of this study is to evaluate the effect of credit risk on the performance of deposit money banks listed on Nigerian Exchange Group. Specifically, the study:

1. determine the effect of management quality ratio on performance of deposit money banks listed in Nigeria.
2. investigates the effect of asset quality ratio on performance of deposit money banks listed in Nigeria.

## **Hypotheses**

In view of the specific objectives of the study, the following hypotheses were formulated:

- H<sub>01</sub>: Management quality ratio does not have significant effect on market performance of deposit money banks listed in Nigeria.
- H<sub>02</sub>: Asset quality ratio does not have significant effect on market performance of deposit money banks listed in Nigeria.

## **LITERATURE REVIEW**

### **Credit Risk Management**

Credit risk depicts the delinquency and default by borrowers. It is a failure to make payment as at when due or to make payment by those owing the firm (Sheeba, 2017). Donald and Ronald (2016) define credit risk simply as the potential that a bank borrower or counterpart will fail to meet its obligations in accordance with agreed terms. The need to include delinquency derives from the importance usually attached to the time value of money in financial analysis: one naira received today is worth more than one naira received in the future. While delinquencies indicate a delay in payment, default denotes a failure to make payment, and if the former is unchecked, it leads to the latter. The exposure to credit risk is particularly large for financial institutions such as commercial and merchant banks (Onyenwe, 2019). When firms borrow money, they are in turn, exposed to credit risk. However, credit risk arises from non-performance by a borrower, this may arise from either an inability or unwillingness to perform in the contracted transactions. credit risk can affect the entity holding the loan contract as well as other lenders to the creditors. As a consequence, borrowing exposes the firm's owners to the risk that the firm generally will have to pay more to borrow money because of credit risk. According to Berger and Christa (2019), lending operations are core banking activities and the most profitable asset of credit institutions. In many markets, banks have to operate in the economic environment that is characterized by the existence of obstacles to good credit management. Where credit is not properly channeled, controlled and

administered, it leads to a devastating effect on the banks, reducing its performance, profitability and further into bank distress and failure.

Credit risk emanates from a bank dealing with individuals, corporations, financial institutions or a sovereign. Deposit money banks are exposed to credit risk through their trading, financing and investing activities and, in cases where they act as intermediaries on behalf of customers or other third parties or issue guarantees. The amount of credit risk exposure is represented by the carrying amounts of the loans and advances on the balance sheet (Drigă, 2012). Naomi (2011) views credit risk as the potential variation in the net income from non-payment or delayed payment of credit facilities granted to customers. The Global Risk Management Group 1999 conceded in its report that credit risk is the possibility that a bank borrower will fail to meet obligations in accordance with the agreed terms.

### **Management Quality Ratio**

According to Bishnu (2019), management quality ratio assesses the effectiveness and efficiency of a company's management team in utilizing its resources. It measures how well a company's management utilizes its assets to generate profits. It relates to the soundness of the board of directors over the resources of the bank in order to protect shareholders interest. This component rating is reflected by the management capability to point out, measure, look after and control risks of the institutions daily activities. Management quality covers managerial ability to ensure the safe operation of the institution as they comply with the necessary and applicable internal and external regulations.

Management quality ratio measures the ability of an institutions management team to identify and then react to financial stress. This depends on the quality of a bank's business strategy, financial performance, and internal controls. In the business and finance literature the management quality ratio is the ratio of operating income to total assets which looks at the institutions performance over a period of time.

This is mathematically expressed as thus:

$$\text{MQR} = \frac{\text{Operating Income}}{\text{Total Asset}}$$

### **Asset Quality Ratio**

Asset Quality Ratio (AQR) reveals an organization's financial health and the riskiness of its assets. Additionally, it is very important in determining both the present state and potential future financial capacity. The left side of a bank's balance sheet relates to the quality of its

assets. To prevent credit risk the bank's top management typically cares most about the quality of the loans they have given to their clients because those loans generate revenue for the institution. Although the terms "asset quality" and "loan quality" have the same meaning, they are most frequently used interchangeably. Low-quality assets typically have a higher likelihood of becoming non-performing assets which are prone to more credit risk. Bad debts that are in default or on the verge of default typically fall under the category of non-performing assets. A lower asset quality ratio shows higher bank performance of the bank. The management of the banks is usually concerned with the quality of their assets due to their vital role in profitability. Banks with large amounts of non-performing assets usually need to maintain larger provisions.

Cheruiyot (2016) came to the conclusion that asset quality positively impacted Kenyan banks' ROA and suggested that asset quality would decrease when default rates decreased, and vice versa. Ogbulu and Eze (2016) found a strong positive link between asset quality and performance. Masood, O. (2016) et al. (2016) used the CAMEL model to discover the profitability of impacted by the quality of their credit used such as the asset quality as a variable to assess credit risk level which are used as a yardstick for credit risk management and This is mathematically expressed as thus:

$$\text{AQR} = \frac{\text{Total Loan}}{\text{Total Asset}}$$

### **Market Performance**

The "Performance" is a word which originated from the old French word Parfournir whose meaning is to bring through, to carry out, to do or to bring forth. Performance is an act of performing, implementing, achieving, and fulfilling of the given tasks that needs to be measured against defined sets of precision, money, fullness and timing (Dada, 2014). In finance, it refers to the measurements of the company's policies, activities and operational results in financial terms. It is used to check a company's success, compliance and financial position. These results are reflected in the firm's return on investment, assets, equity, capital employed and profitability (Dare & Sola, 2010).

Frich (2013) argues that performance is a general term applied to a part or to all the conducts of activities of an organization over a period of time often with reference to past or projected cost efficiency, management responsibility or accountability or the like. Thus, not just the presentation, but the quality of results achieved refers to the performance. Performance is used to indicate firm's success, conditions, and compliance. A firm's performance is a

measure of how well it generates revenues from its primary mode of business. There are a multitude of measures used to assess a firm's performance, with each group of stakeholders having its own focus of interest (Dev & Rao, 2016). According to Ali (2012), the financial performance of firms can be measured in terms of growth of its size (total assets), profitability (return on assets, return on equity, earnings per share) and market-based proxies (market price per share, net assets per share etc.).

## **Theoretical Review**

### **Theory of Multiple Lending**

The Theory of Multiple Lending was propounded by Kahneman and Tversky in 1979, which states that the more debt owed, the less likely it is to be repaid. In this theory, deposit money banks are allowed to be less inclined to share lending which is in other word, referred to as loan syndication. The theory can operate where there is a well-developed equity market and after a process of consolidation. It is also noted that, both outside equity and mergers and/or acquisition enhance lending capacity of banks, thus minimizing the need for greater diversification and monitoring through share lending. The theory is highly applicable in deposit money banks because their primary job is lending. In line with the theory of multiple lending, it is fundamental for deposit money banks to assess their lending capacity prior to advancing any credit to prospective borrowers. Hence, the study is anchored on both Modern Portfolio Theory and Theory Multiple Lending theory as it explains the inter-relationship between credit risk management and market performance.

### **Empirical Studies**

Omasete (2012) scrutinized the effect of risk management on the financial performance of insurance companies in Kenya between 2008 to 2012 using both descriptive and regression procedures, establishing that risk management practices adopted by most insurance companies in Kenya have a strong effect on their financial performance. The study further inferred that risk identification is the most influential procedure in risk management affecting the financial performance of insurance companies in Kenya during the period of the study.

Adebawo and Enyi (2014) examined the impact of credit risk exposure on the market value of Nigerian Banks from 2006 to 2012 using correlation and Ordinary Least Square (OLS). Credit risk exposure model was used to predict the impact of credit risk exposure on the performance of the 18 banks listed on the Nigerian Stock Exchange as at December 31, 2012 including the 3 nationalized banks together with secondary data which were tested statistically. The findings revealed that banks credit risk exposure did not have a strong

influence on their market value and performance at  $F = .793$  with P value of .513 significance. Conclusively, banks risk analysis is an indispensable aspect of credit assessment and the credit risk exposure model developed for the study was found to be effective in predicting credit risk exposure for all the banks. The study recommended that banks management should comply fully with statutory provisions.

Kodithuwakku (2015) examined the association of credit risk and performance of eight (8) Sri Lankan banks. Five (5) year panel data from 2009-2013 were collected from the selected banks. Profitability which was measured as return on assets represented the banks' performance while non-performing loans to overall loans, loan provision to overall loan, loan provision to overall assets and loan provision to non-performing loans, on the other hand, were used as a proxy for credit risk. Results from the study using regression model revealed that credit risk significantly impacted on performance of the banks.

Ogbulu and Eze (2016) investigated the impact of credit risk management on the performance of deposit money banks in Nigeria using the ECM and Granger causality techniques in addition to the IRF and VDC methodology. Data for the study were sourced from the CBN Statistical Bulletin and the Annual Reports and Accounts of the NDIC for the period 1989 to 2013. The findings indicated that the selected credit risk management indicators significantly impacted on the performance of deposit money banks measured as return on equity, return on total assets, and return on shareholders fund respectively. However, the findings reported no evidence of significant granger causality relationship between the various credit risk management indicators and the various measures of performance except for a uni-directional granger causality relationship from ROE to RNPD and from ROTA to RNPS respectively. Based on the foregoing, the study recommended that deposit money banks in Nigeria should always pay particular attention to their credit risk management policies in order to significantly improve on the performance of these banks.

The study of Omitogun, Olanrewaju, and Alalade (2016) sought to know the relationship between loans default, which they referred to as 'problem loans' financial performance in five (5) Nigerian banks. These banks' financial statements for five years (2010-2014) were examined using the ordinary least squares regression technique, and the result of the regression revealed a positive and significant relationship between default loans and returns on assets. The study also reported that, at a significant level of 10%, a negative relationship existed between loans and advances and returns on assets. This level of significance of 10% (being more than 5% benchmark for most researches in the social sciences) between loans

and advances and performance may be seen as not significant enough to conclude that increasing loans and advances lead to declining returns on the banks' assets.

Ajayi and Ajayi (2017) examined the effect of credit risk management on the performance of deposit money banks in Nigeria from 2001-2015. The study employed panel regression analysis in which Profit after Tax (PAT) was used as proxy for bank performance while Non-Performing Loan Ratio (NPLR), Loan Loss Provision Ratio (LLPR), Loan to Total Asset Ratio (LTAR) and Cost per Loan Ratio (CPLR) were used as indicators of credit risk management. Fixed effect, random effect and Hausman test were conducted on the variables. The study revealed that banks profitability is negatively influenced by NPLR, LLPR and CPLR while LTAR influences performance of banks positively. The study, therefore, concluded that deposit money banks in Nigeria have a high growth rates on loans and advances, with corresponding high rate of non-performing loans by customers. Also, the provisions for loan loss were slightly below the required amount 8% by Basel Accord with high administration costs. The study, thus, recommended that Nigerian banks should ensure high quality credit management and strict adherence to professional banking ethics. Also, deposit money banks should make adequate effort toward deposit mobilization and reduce credit administrative cost so as to be more efficient and enhance profitability.

Odion and Yusuf (2019) examined the effect of credit risk management on the profitability of deposit money banks in Nigeria using non-performing loans, loan loss provision and growth in interest earnings on loans and advances as proxies for credit risk management. Therefore, for a period of 5 years, between 2015 and 2021, the impact of these proxies on the profitability of deposit money banks was analyzed in this study using correlation and regression analysis processed on STATA 13 statistical software. Three hypotheses were formulated in null form and were tested by the study. Based on the empirical analysis, the study found a positive non-significant relationship between non-performing loans and profitability. The study also found a positive insignificant relationship between loan loss provision and bank profitability. On the contrary, the study found a negative but significant relationship between growth in interest earnings on loans and advances and the profitability of deposit money banks. Therefore, it is recommended that given the current supervisory and regulatory policy frameworks for banks, credit risk managers should be less concerned with adjustments in the ratios of non-performing loan and loan loss provision as the values of these ratios have no significant effects on performance but should instead be more prudent on the management of the growth in interest earnings on loans and advances as it has a significant effect on performance.

Anetoh, Nwadiolor, Anetoh and Okeke (2021) investigated the effect of credit and operational risks on firm value of listed deposit banks in Nigeria. The study adopted an ex-post facto research design. The target population of the study was all the deposit money banks listed in Nigeria Stock Exchange. The study used secondary sources of data from Central Bank of Nigeria as well as from annual reports and financial statement of accounts of deposit money banks under review from 2010-2019. The Structural Equation Modeling was used to test the formulated hypotheses at 5% level of significance. The findings showed that credit risk had a significant but negative effect on firm value of deposit money banks in Nigeria. Operational risk had a significant and positive effect on firm value of deposit money banks in Nigeria. The study recommends that banks should ensure that their credit exposures are adequately secured through proper scrutiny of loan processing in order to identify viable projects so as to reduce loan defaults by bank customers. They should continue to employ qualified and competent workers who are experts in banking professionalism as well as ICT competence in order to reduce unsound banking practices.

## **METHODOLOGY**

The study adopted *ex-post Facto* research design. It is a design that predicts the effect of one variable (independent variables) on the other variable (dependent variable). It is alternatively referred to as causal comparative design (Adeyemi & Ajinbola, 2019). *Ex-Post Facto* design were used in this study in order to determine the effect of the explanatory variables (MQR & AQR) on the dependent variable (NAPS) and also because the existing data used cannot be manipulated or controlled.

Out of a population of 14 listed deposit money banks on Nigerian Exchange Limited as at 2021 business list comprising Access Holdings Plc, Eco Bank Transnational Incorporated, First Bank Plc, Fidelity Bank Plc, Guaranty Trust Holding Company Plc, Jaiz Bank Plc, Stanbic IBTC Holdings Plc, Sterling Bank Plc, Union Bank Nigeria Plc, United Bank for Africa Plc, Unity Bank Plc, Wema Bank Plc and Zenith Bank Plc, a sample of 12 listed deposit money banks were judgmentally sampled based on the entire set of data available. The sampled deposit money banks were Access Bank Plc, Eco Bank Plc, Fidelity Bank Plc, First Bank Plc, Guaranty Trust Bank Plc, Sterling Bank Plc, Stanbic IBTC Holdings, Union Bank Plc, United Bank of Africa Plc, Unity Bank, Wema Bank Plc, and Zenith International. Hence, data were extracted from the audited financial statements of the sampled deposit money banks for a period of 11 years (2012-2022).

The study adapted and modify the Model of Ojiakor, Ezeudu and Ekemezie (2017) in determining the effect of credit risk management on market performance of listed deposit money banks in Nigeria. This is shown below as thus:

Ojiakor, Ezeudu and Ekemezie (2017):  $P_{it} = \beta_0 + \beta_1NPL_{it} + \beta_2CAR_{it} + \beta_3AQR_{it} + \mu \dots\dots$   
 Eqn 1

The Functional Model expressed in a Mathematical Form is shown below as thus:

$NAPS_t = F(MQR, AQR) \dots\dots$  Eqn 2.

The econometric form of the regression for the study is expressed as thus:

$NAPS_t = \beta_0 + \beta_1MQR_t + \beta_2 AQR_t + \mu \dots\dots$  Eqn 3.

Where:

NAPS = Net Assets Per Share

MQR = Management Quality Ratio

AQR = Asset Quality Ratio

$\epsilon_{it}$  = Radom error term or stochastic variables of the model capturing other unexplanatory variables. Subscripts *i* denote number of banks, *t* denotes years or time-series dimensions ranging from 2012-2022, and  $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ , Stands for Regression model coefficients Data extracted were analyzed on Eview package using descriptive statistics, correlation, variance inflation factor and regression analysis.

## RESULTS AND DISCUSSIONS

The Table below shows the descriptive statistics of the 12 deposit money banks that make up our sample.

Table 1 Descriptive Statistics Result

	<b>NAPS</b>	<b>MQR</b>	<b>AQR</b>
Mean	2.540000	0.863167	0.873667
Median	2.625000	0.880000	0.850000
Maximum	21.10000	1.210000	2.660000
Minimum	-42.00000	0.510000	0.020000
Std. Dev.	5.593852	0.099116	0.494344
Skewness	-3.915114	-0.518659	1.467689
Kurtosis	33.15172	6.879499	6.428757
Jarque-Bera	5337.411	88.69599	112.0505
Probability	0.000000	0.000000	0.000000
Sum	335.2800	113.9380	115.3240
Sum Sq. Dev.	4099.144	1.286954	32.01331
Observations	132	132	132

**Source: Researchers summary of Overall descriptive result (2023) using E-view 12**

Note: \*1% level of significance, \*\*5% level of significance, \*\*\*10% level of significance.

The descriptive statistics result in Table 1 showed the mean values for each of the variables, their maximum values, minimum values, standard deviation and Jarque-Bera values which

show the normality and nature of the data. The study used data from 132 deposit money banks year observations for a period of ten years from 2012 to 2022. The result provides some insight into the nature of the selected deposit money banks in Nigeria that were used in the study. The researcher sought to establish the central tendency and distribution of credit risk management variables and market performance among the selected deposit money banks in Nigeria. Market performance which was the dependent variable was measured using net assets per share which was captured using Net assets divided by paid up capital.

It was observed that the sampled banks had average positive net assets per share such that within the period under review, the banks had maximum value of net assets per share of 21.10 while the minimum value of net assets per share was -42.00. The large difference between the maximum and minimum values of net assets per share indicated that the performance of the deposit money banks differed greatly among the banks selected and over the period covered. This showed that the banks are not heterogeneous in nature. This extreme large value of NAPS implied that some banks in the sample performed poorly while some had very good NAPS when compared to the average value. This, therefore, meant that banks with mean value of NAPS higher or equal to 2.54 are high profitable banks with average net assets per share equal 2.54 while banks with the value below 2.54 were low profitable banks with low market performance. Hence, it can be argued that Nigeria banks had been efficient enough to generate a higher rate of return out of their assets when scaled to paid up capital. The mean value NAPS which proxy performance of the sampled banks was 2.54 while their median value was 2.63 respectively. This, therefore, meant that banks with NAPS of 2.54 and above are classified as above average performing banks while those with their NAPS value below 2.54 were classified as below average in their performance. NAPS showed the ability of deposit money banks in Nigeria to generate profit from banks assets and reflect how well banks real investments resources to generate profits from an accounting perspective.

Ratio of operating income to total assets of banks which was used to capture management quality ratio showed an average value of 0.863 which meant that management are very meticulous towards management of their income to guard against over investment. The maximum and minimum values of management quality ratio showed a positive value of 1.210 and 0.510 respectively while its median value reveals 0.880. The standard deviation for management quality ratio was 0.099 demonstrating that out of the selected 12 deposit money banks in Nigeria, the managers quality ratio was spread around the mean with about 0.099 deviation around the mean. The skewness for the management quality ratio was -0.519 meaning it was negative implying that most values on management quality ratio were bunched

to the right. The kurtosis for management quality ratio was 6.879 which is greater than 3 hence it is said to be leptokurtic hence it may have few outliers.

The mean values of the asset quality ratio in this study was 0.874. In observing the highest and lowest values for asset quality ratio, we recorded 2.660 and 0.020 respectively. We observed that the banks that form our sample differ in many respects. Also, the JB Probability showed that all the variables are not normally distributed at 1% level of significance except sensitivity ratio that was normally distributed. It is an indication that all variables are approximately non-normally distributed. This means that there no variables with outlier, even if there are, they are not likely to distort the conclusion and are therefore reliable for drawing generalization. This also justifies the use of panel least square estimation techniques. Hence, any recommendations made to a very large extent would represent the characteristics and nature of the true population of study.

### **Pearson Correlation Matrix**

Pearson correlation matrix was applied to check the degree of association between credit risk management metrics and market performance so as to determine the nature or degree of association i.e. positive or negative correlation and the magnitude of the correlation between dependent variable (market performance) and independent variables with other explanatory variables. Correlation coefficient measures the direction and degree of association between two or more variables. It is worthy to note at this point that correlation measures association not causality. Correlation can be positive ( $>0$ ) or negative ( $<0$ ). A positive correlation means that two variables move in the same direction while a negative correlation means they move in opposite direction. Therefore, in examining the association among the variables, we employed the Pearson correlation coefficient (correlation matrix) and the results are presented in the table 2 below.

Table 2 Correlation Analysis Result

	<b>NAPS</b>	<b>MQR</b>	<b>AQR</b>
NAPS	1	-0.07345	-0.11056
MQR	-0.07345	1	-0.01461
AQR	-0.11056	-0.01461	1

Source: Researcher’s summary of correlation result (2023) using E-view 12

The strength of the relationship between variables measured by the Pearson product-moment correlation showed that the association between the variables is relatively small and was below the threshold of 0.80, suggesting the absence of the problem of multicollinearity in the predictor variables. Table 2 showed that most of the correlation coefficients between the study

variables are relatively low, nevertheless there are still some relatively high correlations between some of those variables. The results showed that a negative and very weak association exists between performance of DMBs and management quality ratio, and asset quality ratio (NAPS/MQR and AQR= -0.0735 and -0.1106) respectively. Similarly, management quality ratio was discovered to have a negative but weak correlation with asset quality ratio (MQR/ AQR = -0.0146).

In order to examine the relationship that exist between the dependent variable (NAPS) and the independent variable credit risk (MQR and AQR) and to test the formulated hypotheses, the study used the multiple regression analysis techniques. Therefore, in order to examine the responsiveness between dependent variable (NAPS) and credit risk variables such as management quality ratio (MQR) and assets quality ratio (AQR) and to test the formulated hypotheses, we employed panel regression analysis since the data had both time series (2012-2022) and longitudinal properties (12 deposit money banks). However, the study took into cognizance the non-homogeneity nature of the banks, hence the need for testing its effect on the data. This necessitates the use of hausman effect test to ascertain which effect to explain. Below is the summary of the Hausman test result in Table 3:

### **Hausman Effect Test**

The summary result of regression analysis is presented below. However, the study takes into cognizance the non-homogeneity nature of the deposit money banks in Nigeria, hence the need for testing its effect on the data. This necessitated the use of Hausman effect test to ascertain which effect to explain. That is whether fixed effect or random effect is to be used in interpreting the regression result or to ascertain that which is best to be adopted in the study since our data is a panel data with complete information.

#### *Hausman Effect Test: Decision rule*

$H_0$  – random effect is more preferable than fixed effect

$H_1$  – fixed effect is more preferable to random effect

When chi-square probability value is less than 5% – rejects  $H_0$  and accepts  $H_1$  ( $P \leq 0.05$ )

When chi-square probability value is greater than 5% – accepts  $H_0$  and rejects  $H_1$ . ( $P \geq 0.05$ )

Hausman test is used to decide between fixed effect model or random effect model. When the Chi square (Prob) value is greater than 5%, you interpret random effect and said that random effect is more preferred to fixed effect but when it is less than 5%, you interpret fixed effect and said that fixed effect is more preferred to random effect. Below is the summary of the Hausman test result, details of the result were presented in table 4 under the appendix.

Table 3 Hausman Effect Tests  
 Correlated Random Effects - Hausman Test  
 Equation: Untitled  
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.270878	5	0.2013

Source: Researchers summary of Hausman effect tests result (2023)

The Hausman test result in Table 3 showed a chi-square statistics value of 7.2708 and probability value of 0.2013. This meant that there is no homogeneity in the collection of the deposit money banks data. Since the Chi-square (Prob) value is more than 5%, hence we accept the random effect and interpret its regression while the fixed effect is rejected. Hausman test showed that the random-effects estimation (REM) method was more appropriate than the fixed effects (FEM) for all the deposit money banks in Nigeria; hence, the results from REM is presented and interpreted. Therefore, the study used the random effect to correct the problem of heterogeneity in the data used for the study; the random effect regression result is presented in Table 3.

Table 3 Random Effects Regression Result  
 Dependent Variable: NAPS  
 Method: Panel EGLS (Cross-section random effects)  
 Sample: 2012 2022  
 Periods included: 11  
 Cross-sections included: 12  
 Total panel (balanced) observations: 132  
 Swamy and Arora estimator of component variances  
 White cross-section standard errors & covariance (d.f. corrected)  
 WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.23190	4.179858	2.447906	0.0159
MQR	-6.137426	2.881830	-2.129698	0.0353
CAR	0.721860	0.882500	0.817971	0.4151
SMR	0.876656	7.016931	0.124934	0.9008
CDR	-2.294580	3.021835	-0.759333	0.4492
AQR	-2.084571	1.230846	-1.693608	0.0930
Effects Specification				
			S.D.	Rho
Cross-section random			2.100686	0.1533
Period fixed (dummy variables)				
Idiosyncratic random			4.937827	0.8467
Weighted Statistics				

R-squared	0.216018	Mean dependent var	2.540000
Adjusted R-squared	0.114641	S.D. dependent var	5.286844
S.E. of regression	4.974577	Sum squared resid	2870.584
F-statistic	2.130841	Durbin-Watson stat	2.018081
Prob(F-statistic)	0.012808		

Unweighted Statistics

R-squared	0.162625	Mean dependent var	2.540000
Sum squared resid	3432.521	Durbin-Watson stat	1.687701

Source: Random Regression result (2023) from Eview 12

Table 3 showed the panel regression analysis of 12 deposit money banks in Nigeria. From the table, the F-statistics value of 2.131 and their p-value of 0.0128 showed that the overall regression analysis of our variables in the regression model was generally significant at 5% level of significance and it shows that the model was well specified in explaining market performance of 12 deposit money banks in Nigeria. From the result, the study observed that the R. squared value was 0.2160 (21.6%) approximately and R-squared adjusted value was 0.115 (11.5%). The value of R- squared which is the coefficient of determination stood at 21.6% which implies that 22% of the systematic variations in individual dependent variables were explained in the model while about 78% were unexplained thereby captured by the stochastic error term. Again, the adjusted R-squared which stood at 11.5% indicates that all the independent variables jointly explain about 12% of the system variation in market performance of our sampled banks in over the eleven (11) years period while about 88% of the total variations were unaccounted for, hence captured by the stochastic error term. This reveals that about 22% market performance via net assets per share can be attributable to the credit risk management selected for the study while about 78% were unexplained thus captured by other factors that are likely to improve market performance but were not included in the model. Moreover, the F-statistics value of 2.1308 and its probability value of 0.0128 shows that the market performance model used for the analysis were statistically significant at 5% level. This confirms the appropriateness of our model used for the analysis. The Durbin Watson statistics value of 2.0180 that the model is well spread since the value equals 2 and that there have not been self or auto correlation problem and that error are independent of each other.

## Testing of Hypotheses

### Hypothesis One

- H<sub>01</sub>: Management Quality Ratio has no significant effect on performance of deposit money banks listed in Nigeria.
- H<sub>i1</sub>: Management Quality Ratio significantly affects the performance of deposit money banks listed in Nigeria.

It can be observed from the regression Table 3 that management quality had a negative coefficient value of -6.137. This revealed a strong and negative effect on performance of Nigeria banks. As indicated in table 3, there was a negative relationship between MQR and NAPS. By implication, this means that a 1% increase in management quality leads to a corresponding decrease in the risk that affects market performance of banks. This meant that increases in the management quality ratio of Nigeria banks decreases the likelihood for them to fall prey to market predators. By implication, if the management capability to point out, measure, look after and control risks of the institutions daily activities decreases, the risk exposure will increase and vice versa. The t-value of -2.1297 reveals that banks management quality ratio has a strong effect on market performance of selected banks and its effect is statistically strong enough to drive its net assets per share and market performance. The probability value of 0.0353 revealed that the effect of management quality ratio on banks market performance in Nigeria is statistically significant at 5% level of significance. As a result of this significant result found, this study therefore rejected the null hypothesis (H<sub>01</sub>), and therefore concluded that management quality ratio has statistical significant effect on market performance of deposit money banks in Nigeria which was statistically significant at 5% level of significance.

This finding therefore, supports the study's apriori expectation as well as the findings of Bishnu (2019), suggests that management soundness is a qualitative variable that expresses the control of board of directors over the resources of the bank to protect shareholders interest. Management assessment determines whether an institution is able to properly react to financial stress. This component rating is reflected by the management capability to point out, measure, look after and control risks of the institutions daily activities. It covers management ability to ensure the safe operation of the institution as they comply with the necessary and applicable internal and external regulations. Contrary to the result, Kodithuwakku (2015) in Sri Lankan revealed that credit risk significantly impacted on performance of the banks; and, Kwado (2019) in Ghana indicated that capital adequacy affects the performance of banks in a significant manner, though the relationship was negative. Ben-Naceur and Omran (2010) in

Middle East and North Africa (MENA) finds that bank capitalization and credit risk have positive and significant impact on banks' net interest margin, cost efficiency and profitability.

### **Hypothesis Two**

H<sub>02</sub>: Asset quality ratio has no significant effect on performance of deposit money banks listed in Nigeria.

H<sub>i2</sub>: Asset quality ratio significantly affects the performance of deposit money banks listed in Nigeria.

The regression result in Table 3 revealed that assets quality ratio had negative and insignificant effect net assets per share of quoted deposit money banks in Nigeria having recorded a moderate and negative coefficient value of -2.085% and t-statistics value of -1.694 and a probability value of 0.0930 which is statistically insignificant at 5% level of significant. This implies that a 1% increase in the fraction of total loan loss provision is associated with a percentage increase in the ratio of net assets per share by a minimal magnitude of 2.0846. The management of deposit money banks in Nigeria clearly recognized the risk arising from lending business and strengthens their credit risk management capability. The more banks give unsecured and unrepaid loans to customers, the more their net assets per share depreciates. The t-value of -1.694 reveals that banks assets quality has a moderate effect on net assets per share of selected banks. The probability value of 0.0930 reveals that the effect of assets quality ratio on banks market performance in Nigeria is statistically insignificant. Thus, banks have the tendency to increase or reduce loan loss provision or expected loan loss for the purpose of market performance measures. It was discovered that asset quality ratio is used for capital management which led to higher net asset per share level. The bank has a reserve beyond the necessary amount enough to handle unexpected risk. As banks with strong assets quality base has every tendency of reducing the credit risk of banks and therefore making profit in the long run that increases the banks net assets per share. As a result of this insignificant result documented, this leads to the rejection of our last alternate hypothesis and conclude that asset quality ratio has negative and insignificant effect on market performance of deposit money banks in Nigeria which was statistically insignificant at 5% level of significance.

This finding, therefore, supports our apriori expectation as well as the findings of Cheruiyot (2016) which came to the conclusion that asset quality positively impacted Kenyan banks' ROA and suggested that asset quality would decrease when default rates decreased, and vice versa. Ogbulu and Eze (2016) found a strong positive link between asset quality and

performance. Masood, O. (2016) et al. (2016) used the CAMEL model to discover the profitability of impacted by the quality of their credit used such as the asset quality as a variable to assess credit risk level which are used as a yardstick for credit risk management.

## **CONCLUSION AND RECOMMENDATIONS**

This study observed that the major risks affecting the performances of Nigeria banks were management quality ratio and asset quality ratio, since both risks were seen to have significant effect in all the banks. The study therefore concludes that banks engaging in risk projects can either lose or gain and that informed decisions need to be adhered to in such scenarios. Consequently, managers of banks need to come up with strategies capable of managing these by taking into consideration return on shareholders assets when dealing with banks performance.

On the basis of the findings and conclusions of the study, the study made the following recommendations:

1. Managers of banks in Nigeria should enhance their management quality and capacity in credit analysis to reduce the risk of default in repayment as this will stem the cyclical nature of net assets per share and increase their market performance.
2. Emphasis on maintaining assets quality should be minimized to help improve the market performance of banks via their net assets per share.

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