Empirical Examination of the Effect of Asset Quality on Financial Performance of Deposit Money Banks in Nigeria

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Abstract

The performance of a banking institution is largely driven by its ability to increase its customers' patronage, retain them and manage its assets and liabilities to enhance optimal returns.This can be done through banks maintaining adequate capital and quality assets for better performance. Even though banks are highly regulated and capital adequacy requirements have been in place since 1988 in Nigeria, many banks have experienced poor performance as indicated by high levels of credit risk, poor quality loans and high incidence of non-performing loans. It is thus imperative to ascertain the effect of asset quality on the financial performance of Deposit Money Banks (DMBs) in Nigeria.This study employed ordinary least square regression analysis with emphasis on fixed effect and random effect models. The findings of this research revealed that non-performing loans have a negative and not significant effect on the financial performance of DMBs in Nigeria (β = - 0.022478, P >*0.05*) and loan lossprovisions have a negative significant effect on the financial performance of Deposit Money Banks in Nigeria (β = - 0.002954, P < *0.05*). The results showed that asset quality is a key factor affecting the financial performance ofDeposit money banks. It confirmed that Deposit Money Banks with good management of its loan achieve higher financial performance. So, to work properly in any economic condition the banks should have minimum or zero loan loss provision which provides financial soundness and stability.

Keywords: Assets quality, Non-performing loans, Loan loss provisions, Financial performance, Return on assets.

Word Count: 246

Introduction

In any economy's banking sector catalyzes expansion and improvement. These roles are generally achieved by banks thanks to their crucial responsibilities in financial intermediation, for the development of a reliable payment service, and for facilitating the application of monetary policy. Banks engage in intermediation when they channel deposits from surplus economic units to deficit economic units, primarily businesses, in order to increase their productive potential for economic growth and development. When operating the payment system, each banking institution acts as a means of exchange. During their implementation, banks serve as how the nation's monetary policies are carried out (Leon, 2013). Researchers,

academics, bank management, stockholders, and regulatory organizations are all very interested in learning what factors affect the performance of the business considering the significance of a bank's economic success (Thiagarajan, Somanadevi, Ayyappan & Ramachandran, 2011).

For a nation to prosper, its financial system must be strong. A country's economic success and the growth of the banking industry are inextricably linked. The banking industry is a crucial provider of financial services that supports development plans by directing money toward useful endeavours, mediating the flow of cash from surplus to deficit units, and assisting governmental fiscal and monetary policies. Given that any financial crisis has an impact on development plans and, consequently, on economic progress, the stability of banks is crucial in developing economies (Ombaba, Kennedy &Mwengei, 2013). Therefore, financial stability is a prerequisite for economic growth and resilience to financial crises. Similar to other businesses, the success of banking is determined by its financial performance, profitability, and asset quality (Azizi, Maryam &Sarkani, 2014).

Loans from a bank typically produce a higher share of income from all of the bank's assets. As a result, banks that accept deposits generate more revenue through loans than from other types of assets (Sunday, Otuya&Eginiwin, 2017). In contrast to other types of businesses that produce and stock tangible goods, banks' primary duty is the management of assets and liabilities. All other kinds of businesses are run by money, which is how banks operate. As a result, without banks, other businesses might not function properly. Three main goals drive bank operations: profitability, asset development, and clientele (Sunday & Joseph, 2017).

Asset quality, also known as loan quality, is the overall risk associated with the various assets held by a person or organization. Bankers use it most frequently to calculate how many of their assets are financially at risk and how much provision for future losses they need to make. Loans, which can become non-performing assets if borrowers fail to meet their responsibilities to make payments, are the most frequent assets that need a strict assessment of asset quality. Risk managers frequently evaluate the quality of assets by giving each item a numeric ranking based on the level of risk involved (Nzoka, 2015). Asset quality concept refers to the examination or evaluation that defines the credit risks related to any tangible resources that often demand the payment of interest, such as investment and loan portfolios.

The soundness of the loan portfolio as well as the credit management program have the most impact on a bank's overall status. The greatest risks that a company faces are those connected to nonperforming assets, hence non-performing loan ratios (NPL) are recommended as proxies for asset quality (Samuel, 2015). Most banks work to keep the number of non-performing loans as low as possible because low non-performing loans indicate a bank's loan portfolio is in good shape (Sintha, Lis &Nidar, 2016). Asset quality influences interest incomes while at the same time lowering the economic burden of managing bad debts in accordance with legal standards, making it a significant predictor of financial institution performance. To make sure they can absorb any losses that they may experience from bad loans, the banks are obligated to put aside cash, which is deductible as an expense. The trade-off between asset quality and financial

performance is anticipated to be negative, with a high NPL ratio to gross/net assets resulting in low asset quality and vice versa (Sunday & Joseph, 2017).

Increase in the level of gross non-performing loans pause a great risk to banks, the financial sector and the economy at large. Equally, failure to manage down non-performing loans over a long period gradually affects financial performance profitability of deposit money banks (Kaaya and Pastory, 2013). Consequently, non-performing loans normally results in high loan loss provisioning which, leads to drop-in profits for many banks (Kithinji, 2010) and gradually minimizes the bank sector's ability to play its role in the development of the economy (Zaini et al, 2010). Non-performing loan profile in the DMBs in Nigeria is rising, and this has been identified as a disturbing trend. According to Etale, Ayunku and Etale (2016), the increasing portfolio of non-performing loans led to the introduction of the prudential guideline by the Central Bank of Nigeria (CBN) in 2010. These guidelines by the apex bank in Nigeria mandated DMBs to continually review their loan portfolios from time to time. This should be done at least once every three months, to enable DMBS to spot any adverse risk in the loan portfolio.

Despite the CBN's prudential guidelines, the level of non-performing loans continues to rise. For instance, in the year 2012, the Nigeria Deposit Insurance Corporation (NDIC) reported that non-performing loans totaled 286.09 billion naira, while in the year 2013; it increased to 321.66 billion naira representing an increase of 12.43% (Nigeria Deposit Insurance Corporation, 2013). In addition, the International Monetary Fund Report (International Monetary Fund, 2018) for Nigeria also reported an increase from 5% to 15.6% of non-performing loans in relation to total loans between June 2015 and October 2017. This development, apart from its negative impact on credit intermediation and the ability of the banking sector to support growth, also impairs banking performance since interest from loans which is the mainstay of banking income is lost. Recently, Nigeria Non-Performing loans were reported at 3.315 USD billion In March 2021. This records an increase from the previous number of 3.251 USD billion for 2020. Nigeria Non-Performing loans data is updated quarterly, averaging 3.463 USD billion from March 2007 to March 2021(CBN, 2022).

Following persistent macro-economic challenges, 10 leading banks in Nigeria reported N811.7 billion Non-Performing Loans (NPL) by value out of the N21.87 trillion gross loans granted to customers and other financial institutions in 2022. Investigation revealed that 10 banks in 2021 reported N724.45 billion NPL, about N18.36 trillion of their gross loans to customers and other financial institutions. The banks are: Access Holdings Plc., Zenith Bank Plc., Guaranty Trust Holding Company Plc. (GTCO), and United Bank for Africa (UBA), all Tier-1 banks in Nigeria. Others include: Fidelity Bank Plc. Wema Bank Plc., FCMB group Plc., Union Bank of Nigeria Plc., Stanbic IBTC Holdings Plc. and Sterling Bank Plc. (This Day Times, 2023).

Banks in Nigeria have remained substantially fragmented, with significant gaps in the funding of economic operations for private agencies, despite the numerous reforms the country's banking system has undergone. Their liquidity situation, deposits and loans, loan loss provision, capital adequacy levels, and large interest spread are a few examples of how this is demonstrated. This indicates that in terms of the strategic function of banks as enablers of

savings, investment, employment, and the lifeblood of economic growth, the changes did not provide the desired results. Additionally, the banking system's degree of financial performance is typically viewed as poor and does not match the success of several financial sectors in growing economies like South Africa, Malaysia, Singapore, and the United Arab Emirates. Given this, it is essential to empirically evaluate, using a variety of measures, the effect of asset quality on the financial performance of the DMBs quoted in Nigeria. The main objective of this study is to investigate the effect of asset quality on the financial performance of deposit money banks in Nigeria.

The specific objectives are to:

i) examine the effect of non-performing loans on the return on assets of deposit money banks in Nigeria;
ii) determine the effect of loans loss provision on the return on assets of deposit money banks in Nigeria;

Hypotheses for the research are stated in the null form as follows:

H_{01}: Non-performing loans have no significant effect on the return on assets of deposit money banks in Nigeria.

H_{02}: Loans Loss Provision has no significant effect on the return on assets of deposit money banks in Nigeria.

Literature Review

Conceptual Issues

Scholars in a variety of business and strategic management fields have begun to pay close attention to the issue of financial performance. Since financial performance has an impact on an organization's health and ultimately its survival, it has also been the main focus of business professionals in all types of businesses. The high performance demonstrates managerial competence and efficiency in utilizing firm resources, which in turn helps the overall economy of the nation (Leon, 2013). Since the focus of every organization is so closely related to its performance measurement, it becomes vital for businesses to understand what creates performance in an organization (Ombaba, Kennedy &Mwengei, 2013). Performance is defined as accomplishing now what will produce outcomes with quantified worth tomorrow. Business performance is the process of delivering the most effective, advised, and accurate result of a firm's actions, hence performance measurement is concerned with assessing the performance and outcome of investment of a company over a specific period (Azizi, Maryam &Sarkani, 2014).

Financial Performance of the banking sector is a major subject that has received much attention in recent years. Several studies have evaluated the financial performance of banks under various operating parameters. Numerous studies that have concentrated on the American banking sector have shown that better resource management is the primary factor influencing bank success and the banking systems in Western and developed countries (Chowdhury, Mohammad, Md Mahmudul & Mansur, 2017; Sintha et. Al., 2016; Ongore& Kusa, 2013;

Ugoani, 2012; McAleer, 2009; Naser, Kamal & Mokhtar, 2004; Uchendu, 1995).Accordingly, benchmarks like return on assets (ROA), return on equity (ROE), net profit margin, gross income, return on capital employed (ROCE), earning per share (EPS), and others have continued to appear in literature as substitutes for firm performance (Shahwan, 2015).

To gauge a bank's capacity to generate profits from revenue and assets, a variety of profitability ratios can be utilized. The ability of a bank is assessed using its net investment margin (NIM), return on assets (ROA), diversification ratio, net profit margin, earnings per share (EPS), and return on capital employed (ROCE) (Echobu& Philomena, 2019). NIM, ROA and ROE are the best frequently used ratios in measuring bank profitability in banking literature. Ratios are not affected by fluctuations in general price levels making them more appropriate to use than real values of profit when assessing bank profitability (Akinlo& Emmanuel, 2014).

Return on assets (ROA) has been variously used as the collective measure of banks' performance. Many regulators believe ROA is the best measure of bank profitability (Staikouras& Geoffrey, 2004). Bank performance is best measured by ROA in that ROA is not vague by high equity multipliers and ROA stands as a better gauge of a company's ability to generate returns on its portfolio of assets (Staikouras& Geoffrey, 2004). Moreover, using ROE may not be the best applicable measure because equity alone is insignificant when looking at it as regards the percentage of shareholders' investment in a bank. This has made ROA the most typical metric employed to assess banks' performance (Gizaw, Million, Matewos& Sujata, 2015).

Asset Quality

The asset of the bank is a factor unique to banks that has an impact on their financial performance. Among other things, the bank's asset includes its credit portfolio, fixed assets, and other investments. A bank's age is frequently correlated with an increase in asset size. Most frequently, a bank's loan is its most valuable asset and accounts for the lion's share of its revenue. The primary asset from which commercial banks derive their revenue is the loan. The profitability of banks is based on the quality of their loan portfolio. Losses resulting from past-due loans provide the biggest risk to banks. The best indicators of asset quality are hence nonperforming loan ratios. The goal of all deposit money banks is to maintain a low level of non-performing loans. This is true since a bank's earnings are impacted by high non-performing loans (Sunday & Joseph, 2017).

The majority of the time, a bank's loan is its most valuable asset and also the source of the lion's share of its revenue. The profitability of banks is based on the quality of their loan portfolio. Bank profitability is directly impacted by the quality of the loan portfolio. Losses from past-due loans are the bank's biggest risk (Nzoka, 2015). The best indicators of asset quality are hence non-performing loan ratios. Different financial ratios are used by different academics to analyze the performance of banks. The goal of all deposit money banks is to maintain a low level of non-performing loans. This is true since a bank's profitability is impacted by high

nonperforming loans. Therefore, a low ratio of non-performing to total loans indicates that the bank's portfolio is in good shape (Nzoka, 2015).

The variables that influence asset quality are hence non-performing loan ratios. Scholars from several disciplines use various fiscal ratios to analyze the performance of banks. All DMBs are primarily concerned with limiting the overall amount of non-performing loans. This is true since increased nonperforming loans have an impact on the bank's profit. Therefore, minimal nonperforming loans show that a bank's portfolio is in good shape. The performance of the bank is improved by a lower ratio (AL-Masharfi&Matriano, 2022). Liquidity is impacted by poor asset quality since it lowers the asset's value. The danger to the bank's liquidity is increased by non-performing assets because they will make the bank less liquid. More nonperforming assets mean less liquidity, which increases the risk that the afflicted bank won't be able to fulfil its settlement commitments (AL-Masharfi&Matriano, 2022).

A non-performing loan is a risk factor in organizations providing credit, especially DMBs. It relates to loans for which the service agreement with reverence to its liquidation is in full or partial default. Non-performing loans are loans that are not generating interest because complete receipts of principal and interest are no longer probable from debtors and the facility has become delinquent for 90 days or additional. According to this definition, a loan is considered to have crossed the line into non-performing status if the interest on it and/or the principal remain wholly or partially unpaid for 90 days or more (Shahwan, 2015). It is in this light that the CBN Prudential Guidelines categorized non-performing loans into three: substandard, doubtful and lost. Loans that have not been fully repaid for a period of 90 but fewer than 180 days are considered substandard non-performing loans. Doubtful loans remain irrecoverable for 180 but less than 360 days, while the loss category has a default period of 360 days or more. For each classification, the days in default start counting from the day loan repayment of both interest and principal are to commence (Samuel, 2015). High levels of non-performing loans cause banks to fail because they negatively affect liquidity and limit their ability to extend credit. This, in addition to negatively impacting banks' performance also slows down growth in the real sector of the economy (Kumar & Murty, 2017).

The predominance of non-performing assets is a danger to the banking industry (NPAs). NPA stands for "non-performing assets," or bad loans for which the borrowers weren't able to make their payments. Operational effectiveness has an impact on the profitability, liquidity, and solvency of banks due to the NPA in the loan portfolio (Thumbi, 2014). Asset quality influences interest incomes while at the same time lowering the economic burden of managing bad debts in accordance with legal standards, making it a significant predictor of financial institution performance. To make sure they can absorb any losses that they may incur from loan defaults, the banks are required to set aside cash, which is deductible as an expense. The trade-off between asset quality and financial performance is anticipated to be negative, with the high NPA ratio to the gross/net asset's book indicating low asset quality and vice versa (Thumbi, 2014).

Another variable that influences asset quality is hence loan loss provisions. As a result of the difficulties and crises facing banks recently, Loan Loss Provision (LLP) has a key role to strengthen the financial position of the banks. LLP is defined as a policy that is followed by deposit money banks by putting some money aside (reserves) to face any potential loan default, which in turn would help to protect banks' positions in terms of profitability and capital. The main objectives of LLP are to provide special information about the bank's future; reduce taxes by earnings management, and management of regulatory capital; manage the level of income volatility and the volatility of earnings; and avoid fluctuations which occur in risk-weighted assets that in turn affect the bank's risk and profitability (Echobu& Philomena, 2019).

The provisions for loan losses-to-total loans (PLL/TL*)* ratio provides a portion of the principal risk. The idea of credit risk is incontrovertible across financial services entities. Therefore, a loan loss provision is an amount, which is set aside for uncollected loans or credits. It is calculated as a loan loss provision to total loans. The rate of loan loss provision to total loans makes the bank managers know their expectations about the bank's asset quality. When giving out loans, banks are conscious of the circumstance that borrowers could default, thereby not able to fully pay up the loan. When it reveals that the borrowers may not redeem their loans, a bank will set aside a 'provision' to be charged to the income statement, which then appears on the face of the statement of financial position as a loan loss reserve. If a customer defaults eventually, the loan balance would then be reduced by making a charge to the loan loss reserve (Akinlo& Emmanuel, 2014). The higher the ratio, the lower the asset quality and vice versa. In this study, the loan loss provision to total loans will be used as a variable to measure asset quality, which is consistent with other researchers (Naje, 2019; Gizaw, Kebede & Selvaraj, 2015; Gyamerah& Amoah, 2015; Hadriche, 2015; Ul Mustafa, Ansari & Younis, 2012; Staikouras& Wood, 2004).

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Theoretical Framework

This research is hinged upon the Modern portfolio theory. According to modern portfolio theory, risk-averse investors usually build their portfolios to maximize profits given the market

dangers that are currently present. The notion stresses that great rewards cannot be separated from risks. Therefore, this diversification and lowering of the portfolio's riskiness are advantageous to an investor. According to modern portfolio theory, an effective frontier of an ideal portfolio may be created to provide the maximum returns at the lowest risks)Efuntade&Efuntade,2021). Due to the lower risks associated with a diversified portfolio, an investor is more likely to reap the rewards of portfolio diversification (Atahau& Cronje, 2019). Studies that support the idea have shown that banks have used it to diversify their loan portfolio to reduce unsystematic credit risk, which is defined as the danger of several borrowers defaulting on their debts in the same sector or location (Atahau, Apriani& Tom Cronje, 2019; Nzoka, 2015). This theory is relevant to this study because it is applied by banks in diversifying their loan portfolios to optimize unsystematic credit risk. Since history has shown that shocks may occur at some point without providing banks or firms the time to hedge or neutralize the position, the possibility of a rapid fall in an industry or geographic area cannot be overlooked. Therefore, it is in their best interests to ensure that the portfolio's concentration (across sectors, geographical areas, or even individual companies) is not too high (Atahau& Cronje, 2019; Bansal & Yaron, 2004).

Empirical Review

The relationship between asset quality and financial performance particularly the return on assets of DMBs in this study has been widely studied with mixed findings using data from different countries. While some studies reported that asset quality affects bank performance positively
(Oke&Ikpesu (2022);Said, Amiruddin, Asad, Rustan & Sofyan (2019);Adeolu; 2014) others argued that asset quality has an adverse effect on the bank performanceSaid, Amiruddin, Asad, Rustan and Sofyan (2019);Achou and Tenguh (2008);Kosmidou (2008);Arif and Nauna Anees (2012);Ekinci and Poyraz (2019);Ozurumba; 2016; Kadioglu, Telceken& Oscal, 2017).

Studies from Developed Countries

Al-Yatama, Al-Ali, Al-Awadhi and Al Shamali (2020) looked at the impact of credit risk on the performance of five (5) listed Indonesian banks from 2009 to 2017. Data were evaluated using linear regression approaches for the variables of non-performing loans and return on assets. The regression results showed that credit risk has no impact on bank performance. Said, Amiruddin, Asad, Rustan and Sofyan (2019) conducted a study in Indonesia to determine the impact of capital and asset quality on credit risk and profitability in both conventional and Islamic banks. The findings demonstrated that in both conventional and Islamic banks, asset qualityhas a favourable and considerable impact on profitability. Said (2018) studied the relationship between ROA and Asset Quality of US commercial small banks Using Pearson Product Moment Correlation (PPMC). The study revealed a negative correlation between ROA and Asset Quality.Arif and Nauna Anees (2012) used the ROA and the ratio of loan loss reserve to gross loans as proxies for profitability and asset quality using data from Greece's 23 commercial banks from 1990 to 2002. The findings indicated that asset quality has a

considerable negative influence on bank profitability. According to Achou and Tenguh (2008), non-performing loans (NPL) has an inverse relationship with banks' profitability.Kosmidou (2008) applied a linear regression model on Greece 23 commercial banks data for 1990 to 2002, using ROA and the ratio of loan loss reserve to gross loans to proxy profitability and asset quality respectively. The results showed a negative significant impact of asset quality to bank profitability

Studies from Developing Countries

Ekinci and Poyraz (2019) investigated the relationship between bank performance and credit risk management focusing on emerging economies. It could be inferred from their findings that return on equity (ROE) and return on assets (ROA) both measuring profitability were inversely related to the ratio of non-performing loans to total loans and advances of financial institutions thereby leading to a decline in profitability. Kadioglu and Ocal (2017) looked into how non-performing loans affected Turkish banks' bottom lines. The study uses a panel regression approach to analyze the quarterly data set of 55 Turkish banks. It was discovered that non-performing loans and bank profitability, as determined by the return on equity and return on asset, had a strong, adverse connection. Ndegwa (2017) conducted research to look at whether non-performing loans in Turkey had an impact or not on a bank's profitability. The association between nonperforming loans and bank profitability, as determined by the return on equity and return on assets, was shown to be considerable and negatively skewed. Mengistu (2015) studied the impact of credit risk on banks' profitability in Bangladesh and discovered a strong negative and substantial relationship between loan loss reserve to gross loan and non-performing loan to gross loan on all profitability metrics.

Also, Manyuanda, (2014) examined the effect of non-performing loans on the performance of SACCO's in Nairobi, Kenya. The study concluded that a significant negative relationship existed between non-performing loans and the performance of SACCO's. Meanwhile, Kithinji (2010) analyzed the effect of credit risk management on the profit of banks from 2004 to 2008. His variables included the volume of credits granted, the volume of non-performing loans and the profits of banks for the period. His findings showed that neither the volume of credit nor non-performing impacted banks' profit for the period under review.Agyu (2012) used regression analysis to determine whether there is a significant relationship between credit risk and profitability of Ghanaian banks. They used Return on Equity as a measure of bank performance while ratios of non-performing loans to total assets were proxies for credit risk management. The study found empirically that there is an effect of credit risk management on the profitability level of Ghanaian banks.

Studies from Nigeria

Ofoegbu and Adegbien (2022) examined the effect of assets quality on Deposit Money Banks Performance in Nigeria. A sample size of 10 leading quoted deposit money banks was selected and purposive sampling technique was employed. The study concluded that assets quality

measures significantly affect performance components in terms of return on assets of deposit money banks in Nigeria. Oke and Ikpesu (2022) examined the effect of capital adequacy and asset quality on banking sector performance in Nigeria using annual panel data in the period 2010 to 2019. The study employed the system generalized method of moments (SGMM) in analysing data obtained from audited financial statements of twelve banks listed on the floor of the Nigeria stock exchange for the period 2010 to 2019. The outcome of the study revealed that capital adequacy and asset quality both affect bank performance positively in Nigeria.

Ogboru (2019)investigated the relationship between asset quality and deposit money banks performance in Nigeria over a period of 30 years ranging from 1986 to 2016. The result shows that there is a short run and long run relationship between asset quality and deposit money bank performance in Nigeria. Also, Ogbebor, Oguntodu, and Osho (2019) opined that the ratio of non-performing loans and bad debt does not significantly affect the performance of Nigerian banks. Ozurumba, 2016 examined the impact of Non-performing Loans on the Performance of Selected Commercial Banks in Nigeria covering the period 2000 – 2013 using ordinary least square method and ratio analysis. The specific finding of the work is that return on asset and return on equity have inverse relationship with non-performing loans and loan loss provision respectively.

Lucky and Nwosi (2015) examined the relationship between asset quality and the profitability of the fifteen (15) quoted commercial banks in Nigeria from 1980 – 2013. Multiple regressions were used as data analysis method. Findings from the regression result proved that percentage of non-performing loans to Total Loans and percentage of nonperforming Loans to Total Customers' Deposit have positive relationship with Return on Investment while percentage of Loan Loss Provision to Total Loans and percentage of Loan Loss Provision to Total Asset have negative relationship with Return on Investment of the commercial banks. The study concluded that there is significant relationship between asset quality and the profitability of the commercial banks.Abata (2014) examined and evaluates banks asset quality and performance in Nigeria using secondary data obtained from the annual reports and accounts of the six largest banks listed on the Nigeria Stock Exchange based on market capitalization with a sample interval of fifteen-year period from 1999 to 2013. Using the Pearson correlation and regression analysis, the findings revealed that asset quality had a statistically relationship and influence on bank performance.

Adeolu, (2014) carried out a study on asset quality and bank performance on commercial banks in Nigeria and with the use of the Pearson correlation and regression tool and concluded that that asset quality had a statistically strong positive relationship and influence on bank performance. Though this contradicts Khalid (2012) which reported that asset quality and profitability are negatively correlated in the banking industry.According toJonathan and Micheal (2013),non-performing loans constitute a serious threat to the continued operation of commercial banks in Nigeria and should not be understated since they have a detrimental impact on banks' performance. The study was conducted over 14 years, from 2000 to 2013, and the findings of the ratio and regression analysis led to the conclusion that banks performed poorly as the amount of non-performing loans rose, both in terms of return on assets and return on equity.

Literature Gap

So far, we have reviewed the literature on the effect of asset quality and profitability of banking institutions in different countries. Some of the studies reviewed were cross-country while others were country-specific. However, a vast of studies on the effect of credit risk or non-performing loans and the performance of banking institutions in Nigeria have well been documented from both theoretical and empirical perspectives with the help of regression estimation techniques. But to the best knowledge of the researcher, very fragmented studies of citable significance have dealt with the problem of asset quality and Deposit money banks' (DMBs) performance in Nigeria. Such as Ofoegbu and Adegbien (2022);**Ogboru (2019);**Lucky andNwosi, 2015; Adeolu, (2014);Abata, 2014; and Khalid (2012who only studied assets quality and performance of selected commercial banks quoted on the Nigeria Stock Exchange. Therefore, the study is embarked to examine the effect of asset quality on the performance of deposit money banks in Nigeria using the estimation of the ordinary least square technique. The OLS technique has become a very popular estimation technique in investigating the nature of the link and the velocity of adjustment in each of the variables under study. Therefore, it is important we used this estimation tool to bridge the knowledge gap and to find another perspective.

Methodology

The study adopts an *ex-post facto* research design and secondary source data drawn from the financial statements of the selected banks were used. Return on Assets, Non-performing loans, loans and advances and loanloss provisions were extracted from the financial statements. The Population of this study comprised all the 28 operating deposit money banks in Nigeria from which all 13 quoted DMBs were purposively selected to take care of the variables under study. The variables were examined over ten years commencing from 2012 to 2021. A panel Ordinary Least Square (OLS) regression analysis was applied.All 13 selected quoted DMBs for the purpose of this study are therefore listed below:

LIST OF QUOTED BANKS	
Internationally Licensed Banks	**Nationally Licensed Banks**
First Bank Plc.	Wema Plc.
Guaranty Trust Bank Plc.	Unity Bank Plc.
Zenith Bank Plc.	Sterling Bank Plc.
Access Bank Plc.	Stanbic IBTC, Plc.
Fidelity Bank Plc.	Eco Bank Plc.
Union Bank Plc.	
First City Monument Bank Plc.	
United Bank for Africa Plc.	

Model Specification

Specifically, the linear regression is presented as follows:

ROA = F (NPL) …….. (i)

ROA = F (LLP) …….. (ii)

Restating the above equation in Econometric terms, the equation becomes:

$ROA_{it} = \alpha_o + \beta_1 NPL_{it} + \boldsymbol{\varepsilon_{it}}$ ----------(i)

$ROA_{it} = \alpha_o + \beta_2 LLP_{it} + \boldsymbol{\varepsilon_{it}}$ ---------- (ii)

Where: ROA= an indicator for return on asset (Dependent Variable)

α_o = Intercept term (a constant)

β_1 = Coefficient of non-performing loans

β_2 = Coefficient of loan loss provisions

NPL_{it} = a predictor representing Non-performing loans at time t

LLP_{it} = a predictor representing loan loss provisions at time t

$\boldsymbol{\varepsilon_{it}}$ = Stochastic error term, representing the combined effect of omitted variables

it = panel series and; f = Functional relationship.

Measurement of Variables

Variable	Description	Measurement
ROA_{it}	Return on Assets of bank i at time t	Profit for the period divided by total asset
NPL_{it}	Non-performing loans to total loans and advances of bank i at time t	The ratio of non-performing loans to total loans
LLP_{it}	loan-loss provisions over total loans of bank i at time t	The ratio of loans loss provision to total loans and advances of banks

Results and Discussion

Descriptive statistics from the data are presented below covering mean, standard deviation, minimum and maximum values:

Table 1: Descriptive Statistics

	ROA	NPL	LLP
Mean	0.043756	6.515467	18.55833
Median	0.014229	3.950000	0.646852
Maximum	1.300572	33.90000	984.1879
Minimum	-0.110538	0.300000	-0.943752
Std. Dev.	0.141450	6.487022	92.96825
Skewness	6.361296	1.902982	9.023792
Kurtosis	51.63667	6.166415	91.67443
Jarque-Bera	1.369003	1.327709	4.435638
Probability	0.536349	0.075346	0.382903
Sum	5.761073	847.3500	2412.583
Sum Sq. Dev.	2.581051	5428.507	1114959.
Observations	130	130	130

Source: Authors' computation, 2023 using E-views 10. Note: ROA= Return on Asset, NPL= Non-performing Loan, LLP= Loan Loss Provision

Result of Descriptive Statistics

The result in Table 1 showed that the mean value for ROA shows 0.043756 representing 4.4%. This connotes that from every #1 of total assets invested by quoted banks in Nigeria, #0.4k was earned as profit. In addition, the result also showed the mean value of 6.515467and 18.55833 for non-performing loans (NPL) and loan loss provision (LLP) respectively. Explaining each of the explanatory variables, the non-performing loan accounted for a mean value of 6.515467 indicating that the proportion of non-performing loans to total loans is 6.5% (i.e only 6.5% of the total loan are not performing to expectation according to the terms of the loan). The mean value of the loan loss provision showing a value of 18.55833% indicates that on average, the loan loss provision of deposit money banks within the period under review is 18.56%.

The descriptive result in Table1 showed the minimum and maximum values for each of the variables used in this study. The maximum and minimum value for ROA is 1.30 and -0.11 respectively while that of nonperforming loans is 0.3 and 33.9 for minimum and maximum respectively. The loan loss provision has a minimum value of -0.943752 and a maximum value of 984.1879. The Jarque-Bera statistics and its probability value indicated the statistical significance of the variables to determine whether the data set is normally distributed. If the probability value is less than 5%, the variables are significant and are normally distributed. From the descriptive statistics result in Table 1 the Jarque-Bera statistics of the data set are all less than 0.05 which indicates that all data sets in each variable are normally distributed.

Correlation Matrix

The table below contains a correlation matrix showing the Pearson correlation coefficients between the dependent and independent variables of the study.

Table 2: Correlation Matrix of Dependent and Independent Variables

Correlation Probability	ROA	NPL	LLP
ROA	1.000000		

NPL	-0.047376	1.000000	
	0.5925	-----	
LLP	0.194846	0.084753	1.000000
	0.0263	0.3377	-----

Source: Authors' computation, 2023 using E-views 10. Note: ROA= Return on Asset, NPL= Non-performing Loan, LLP= Loan Loss Provision.

The correlation matrix in Table 2 showed the level of relationship among the variables and the probability value. The result showed that non-performing loan (NPL) has a weak negative relationship with return on asset (ROA) having a coefficient of -0.047376 which is not

statistically significant. Loan loss provision (LLP) has a positive relationship with return on asset (ROA) and nonperforming loan (NPL). Both exhibit a weak relationship with LLP. The level of relationship between ROA and LLP is statistically significant while ROA and NPL are not statistically significant.

The correlations among the explanatory variables suggest to us that the regression models in the next subsection may not be free from the multicollinearity problem because the correlation between two explanatory variables NPL and LLP is high. Hence there is a need to detect whether there exists a multi-collinearity problem using the Variance Inflation Factor (VIF) in the next section.

Table 3 Variance Inflation Factor. Test for Multicollinearity

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
NPL	0.003205	2.294000	1.137094
LLP	3.90E-06	1.873776	1.801436
C	0.627121	33.80526	NA

Source: Authors' computation, 2023 using E-views 10. Note: ROA= Return on Asset, NPL= Non-performing Loan, LLP= Loan Loss Provision

Toensurethe reliability andvalidity oftheempiricalresults,somediagnostictestswere conducted.Totestforthepresenceofmulticollinearity inthemodel,theVariance Inflation Factor (VIF) was carried out. The result in Table 3 showed that the variance inflation factor (VIF) for all the explanatory variables is less than 10 which shows that there will not be a Multicollinearity problem in the model as analysed in the next section.

Hauseman Test

Table 4: 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	2.768551	2	0.3712

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
NPL	-0.025745	-0.022478	0.007300	0.8145
(YR2-YR10)	-0.088040	-0.006124	0.002494	0.1009

Source: Author's computation, 2023 using E-views 10. Note: ROA= Return on Asset, NPL= Non-performing Loan, LLP= Loan Loss Provision,

After a chow test has be conducted, it is desired that the fixed effect model/ random effect model should be selected. Inorderto selecttheappropriatemodel between the fixed and random effect model, whichprovideconsistentestimatesforthisstudy,Hausmantestwasemployed.In view of the nature of the data, both fixed effect and random effect models were tested. Hausman specification test was then used to decide between the two results. The result from the Hausman test revealed a Chi-Sq. Statistic value of 2.768551 with p-value of 0.3712 which is greater than the pre-test value of 0.05. This implies that the test considered the random effect model as the most appropriate estimator for testing the hypotheses.

Table 5: Regression Analysis Result

This section presents the test of hypotheses formulated, interpretation and discussion of results. three hypotheses were tested to determine whether asset quality has any significant effect on the financial performance of quoted deposit money banks in Nigeria. Hausman specification test was carried out to choose the best estimator between the fixed effect and random effect model.

Test of Hypothesis One (Ho_1): Non-performing loans have no significant effect on the return on assets of deposit money banks in Nigeria.

$ROA_{it} = \alpha o + \beta_1 NPL_{i,t} + £$ **……)i)**

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPL	-0.022478	0.036674	-0.611458	0.5462
YR2-YR10	-0.006124	0.541659	-0.011305	0.9910
C	0.606675	0.435163	1.394135	0.1657
Weighted Statistics				
R-squared	0.092973	Mean dependent var		0.263187
Adjusted R-squared	0.072728	S.D. dependent var		2.360961
S.E. of regression	2.375938	Sum squared resid		716.9253
F-statistic	0.189380	Durbin-Watson stat		1.755793
Prob(F-statistic)	0.827705			
Unweighted Statistics				
R-squared	0.002126	Mean dependent var		0.460509
Sum squared resid	863.5381	Durbin-Watson stat		0.627474

Source: Authors' computation, 2023 using E-views 10. Note: ROA= Return on Asset, NPL= Non-performing Loan, LLP= Loan Loss Provision

Model Specification

$ROA_{it} = 0.606675 - 0.022478NPL + £$ ----------(i)

The result in Table 5 shows regression analysis between the explanatory variable (non-performing loan) and financial performance proxied with return on assets (ROA) using the random effect model. The table shows a significant value of the non-performing loan to be 0.5462 (t= -0.611458) meaning that the null hypothesis is accepted and we can confirm that non-performing loan has no statistically significant effect on the financial performance of quoted deposit money banks in Nigeria. The result further shows that non-performing loan having a coefficient β_1 = -0.022478 explains that non-performing loan has a negative effect on financial performance. This indicates that a #1 change in Non-performing loans will reduce ROA by -0.022.

Discussion

The findings of this study revealed that non-performing loan has a negative effect on the financial performance of deposit money banks in Nigeria. This implies that non-performing loans affect the financial performance of quoted deposit money banks in Nigeria. The result of R^2 revealed 0.092973 indicating that a 9.2% change in return on assets is caused by variations in non-performing loans. The Durbin-Watson statistics of 1.755793 which is higher than the R^2 value of 0.092973 show that the result of this regression is not spurious hence it can be relied upon to make predictions. Lastly, the Durbin-Watson statistics of 1.755793 which is within the range of 1.5 and 2.0 shows that the model is free from serial correlation.

Hauseman Test

Table 6: 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	31.014476	2	0.0034

** WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LLP	-0.002954	0.005397	0.003402	0.0034
(YR2-YR10)	-0.037855	0.135817	0.007922	0.0728

Source: Author's computation, 2023 using E-views 10. Note: ROA= Return on Asset, NPL= Non-performing Loan, LLP= Loan Loss Provision

The result from the second model using Hausman test revealed a Chi-Sq. Statistic value of 31.014476 with p-value of 0.0034 which is less than the pre-test value of 0.05. This implies that the test considered the fixed effect model as the most appropriate estimator for testing the hypotheses.

Test of Hypothesis Two (Ho_2): Loans Loss Provision has no significant effect on the financial performance of deposit money banks in Nigeria.

$ROA_{it} = \alpha o + \beta_2 LLP_{i,t} + £_{it}$ **……ii)**

Table 7

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LLP	-0.002954	0.002668	-1.097030	0.0054
YR2-YR10	-0.037855	0.536268	-0.044525	0.9646
C	0.514826	0.212959	2.417486	0.0172
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.258872	Mean dependent var		0.460509
Adjusted R-squared	0.168647	S.D. dependent var		2.590049
S.E. of regression	2.361569	Akaike info criterion		4.664696
Sum squared resid	641.3559	Schwarz criterion		4.995566
Log likelihood	-288.2053	Hannan-Quinn criter.		4.799140
F-statistic	2.869200	Durbin-Watson stat		1.729065
Prob(F-statistic)	0.000979			

Source: Authors' computation, 2023 using E-views 10. Note: ROA= Return on Asset, RWA= Risk-Weighted Assets, NPL= Non-performing Loan, LLP= Loan Loss Provision

Model Specification

$ROA_{it} = 0.514826 - 0.002954LLP + \varepsilon_{it}$ ----------(ii)

The result in Table 7 shows regression analysis between the explanatory variable (loan loss provision) and financial performance proxied with return on assets (ROA) using the fixed effect model. The table shows a significant value of loan loss provisions to be 0.0054 (t= -1.097030) meaning that the null hypothesis is rejected and we can confirm that loan loss provision has a statistically significant effect on return on assets of quoted deposit money banks in Nigeria. The result further shows that loan loss provision having a coefficient β_2 = -0.002954 explains that loan loss provision has a negative effect on ROA. This indicates that a #1 change in loan loss provision will reduce ROA by 0.002954.

The findings of this study revealed that loan loss provision has a negative effect on the financial performance of deposit money banks in Nigeria. This implies that loan loss provisions affect the financial performance of quoted deposit money banks in Nigeria. The result of R^2 revealed 0.258872 indicating that a 25.8% change in return on assets is caused by variations in loan loss provision while the balance of 74.2% is caused by other factors not covered in the model. The Durbin-Watson statistics of 1.729065 which is higher than the R^2 value of 0.258872 show that the result of this regression is not spurious hence it can be relied upon to make predictions. Lastly, the Durbin-Watson statistics of 1.729065 which is within the range of 1.5 and 2.0 shows that the model is free from serial correlation.

Implications of Findings

Based on the findings of this research the coefficient estimate of *NPL* is negative and statistically insignificant, indicating that the higher the level of non-performing loans, the lower the ROA. This relationship was found to be statistically insignificant, meaning that contrary to the traditional finance theory that the higher the risk the higher the return, and higher credit risk in the form of NPLs rather leads to lower profits in terms of ROA. This could mean that losses from NPLs rather erode the profits of banks thereby leading to a reduced overall bank profit. The possible explanation for this relationship is that customer default on interest and principal payments affects both the balance sheet and income statement. Customer failure to repay principal amounts decreases the asset base of banks, the principal amount is written off as expenses on the income statement hence reducing bank profit. Similarly, customer failure to pay interest on loans as expected reduces bank income, which also decreases the level of profits for the bank.

This finding supports information asymmetry theory and bad management hypothesis which argue that an increase in NPL is a result of adverse selection, and is linked to management's inability to control operating efficiency which in the long run leads to a decrease in profitability. This result is in line with the *a priori* expectation of the researchers who believed that non-performing loans will have a negative effect on financial performance. Similarly, the study is in agreement with some of the studies conducted in Nigeria and other developing countries which showed that non-performing loan has a negative and non-significant effect on the profitability of Deposit money banks (Al-Yatama et.al., 2020; Ogbebor et.al., 2019; Kithinji, 2010). Furthermore, the result from developed and other developing countries show also that non-performing loan has a negative but significant effect on the financial performance of DMBs (Said, 2018; Kadioglu&Ocal, 2017; Ekinci and Poyraz 2017; Ndegwa, 2017; Mengistu, 2015; Manyanda, 2014;Achou&Tenque 2008) . Also, several studies in Nigeria showed that non-performing loan hasa negative and significant effect on DMBs(Ofoegbu & Adegbie, 2022; Jonathan & Micheal, 2018; Eze &Ogbulu, 2016; Amahalu et.al., 2017; Ozurumba, 2016; Micheal 2013; Khalid, 2012) while few studies showed a positive significant effect (Oke&Ikpesu, 2022; Said et.al., 2019; Ogboru, 2019; Lucky &Nwosi, 2015;Agyu, 2012).

From the findings of the research on examining the effect of Loan loss provision on the financial performance of DMBs in Nigeria. Loan loss provision and financial performance have negative relation, less loan loss provision provides more financial performance and surely more

safety and similarly more loan loss provision offers less financial performance and instability of the bank. So, to work properly in any economic condition the banks should have minimum or zero loan loss provision which provides financial stability. The study also reveals that the major portion of banks' operations are involved in borrowing and advancing activities due to banks facing threats of high credit risk and they create loan loss provisions to lessen the risk. This risk-averse policy of banks leads towards a decrease in profitability, because there are two major reasons behind it first, according to accounting principles the loan loss provisions are created from the earnings of banks on an annual basis. Second, banks tend to be more profitable when they can undertake more lending activities if a higher level of provision is maintained then the bank's ability to give loans will decrease and thus depresses banks' return on asset significantly. The negative and significant association of loan loss provision with financial performance is supported and in accordance with scholars whose studies show that loan loss provision has a negative and significant effect on the financial performance of DMBs (Ogboru, 2019; Ozurumba, 2016; Mengistu, 2015; Lucky &Nwosi, 2015; Abata, 2014; Arif &Nauna Anees, 2012; Kosmidou, 2008)

Conclusion and Recommendations

This study has examined how asset quality affects the financial performance of deposit money banks quoted in the Nigerian banking sector. It revealed that asset quality proxied by Non-performing loans (NPL) relates negatively and not significantly to the financial performance of deposit money banks quoted in Nigeria (DMBs) and Loan loss provision (LLP) relates negatively and significantly to the financial performance of DMBs. The results showed that asset quality is a key factor affecting the financial performance of Nigeria Deposit money banks. It confirmed that DMBs with good management of its loan achieve higher financial performance. So, to work properly in any economic condition the banks should have minimum or zero loan loss provision which provides financial stability.

Based on these findings, the following recommendations are made:

i) The credit advancement policies of banks should be essentially informed by the performance of the economy, as NPLs are likely to be higher during periods of poor economic performance and lower during periods when the economy is healthy. Banks that lend more should put in place rigorous credit risk management policies to stem the increase in NPLs associated with increased lending.

ii) The CBN supervision units can ensure compliance by adequately monitoring compliance to policy on loan loss limits in relation to provisions. All credit risk managers and lending officers should adhere strictly to good lending practice; they should know the purpose of the loan and ensure the feasibility of every loan proposed. The use of collaterals as security of granting loans should be further reviewed to reduce further incidence of bad debts.

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