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

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Abstract
Available statistics show that the movement in the financial performance of the Nigerian banking industry appears to be secular, highly volatile, and unpredictable, which calls for empirical investigation. This study, therefore, examines the effect of credit risk on the financial performance of the Nigerian banking industry, using a semi-annual time series data from 2008- 2022 and the Cochrane-Orcutt time-series regression technique. The major findings indicate that capital adequacy ratio (CAR) has a significant negative effect on financial performance, asset quality and management efficiency has no significant effect on financial performance, earnings quality has a positive and significant effect on financial performance, liquidity proxy by the ratio of core liquid asset to total asset has a positive and significant effect on financial performance, and liquidity proxy by the ratio of core liquid asset to total current liabilities has a negative but significant effect on return on equity as an indicator of financial performance. The study concludes that different measures of credit risk have different implications for the financial performance. The study recommends that banks should trade-off the benefit of CAR such as managing credit risk with the financial loss of losing earnings. The study also recommends that banks should adhere strictly to the principle of corporate governance and banking regulations when granting loans.

Keywords: Credit risk, financial performance, Nigeria, banking, industry, return on equity

Introduction

World over, banks carry out an important function of providing funds from surplus units and channel such funds to the deficit units of the economy. This function ensures that limited resources are allocated efficiently among different users. Thus, the performance of banks is important to financial stability and economic growth and development (Ongore & Kusa, 2013). Hence, the contribution of banks to the economic growth and development of any nation is important because of their role in allocating scarce resources of the economy and job creation. A sound banking system is salient to economic growth and development (Levine, 2005). Good performance of the banking sector instills confidence in bank depositors and as a result, encourages savings and investment in the economy.

However, bank performance for almost a decade in Nigeria remains an issue of concern to all stakeholders. Obamuyi (2012) asserts that bank performance in Nigeria remains unimpressive for quite some years. To further affirm this, the Central Bank of Nigeria (CBN) reported that banks are facing liquidity challenges due to a decrease in customers' deposits by 5.6 percent or ₦1.03 trillion between April 2015 and April 2016, the total deposits with the deposit money banks

(DMBs) dropped from ₦18.54 trillion to ₦17.51 trillion (Ogwu, 2017). This was attributed to a substantial reduction in banking liquidity and the upsurge in non-performing loans (NPL) which have contributed to decreasing the financial performance of the DMBs in 2016. Similarly, a review of the quarterly performance of the banking index in 2016 revealed that, apart from the first quarter when the sector gained 1.484%, in the second and third quarters, it reduced by 0.93 percent and 8.05 percent, while in the fourth quarter, it plummeted to 0.16 percent (Itsibor, 2017).

The capital adequacy ratio (CAR) of the Nigerian banking industry measured by the ratio of regulatory capital to risk weighted assets stood at 18.3 per cent at end-December 2012, indicating an improvement of 0.6 percentage point over its level at end-June 2012. The regulatory capital to risk-weighted assets ratio was 8.3 percentage points above the prudential requirement of 10.0 per cent. The average CAR stood at 17.2 per cent at end-December 2013, showing a decrease of 1.7 and 1.1 percentage points, respectively, below the levels at end-June 2013 and end-December 2012.

The ratio of regulatory capital to risk weighted assets decreased by 0.8 percentage point to 13.9 per cent at end-December 2016, compared to 14.7 per cent at end-June 2016. Despite the marginal decrease, the ratios remained above the Basel minimum threshold. The CAR increased by 3.10 percentage points to 15.21 per cent at end-December 2018, from 12.11 per cent at end-June 2018. The improvement reflected the capitalisation of earnings by banks to build additional capital buffers. The solvency of the banking industry improved as the regulatory capital to risk-weighted assets increased marginally from 14.96 per cent in June-2020 to 15.05 per cent at end-December 2020.

The regulatory capital to risk-weighted assets declined to 14.55 per cent at end-December 2021, from 16.46 per cent at end-June 2021, owing largely to growth in risk assets and loan loss provisions occasioned by the impact of the COVID-19 pandemic. The ratio was, however, above the minimum regulatory threshold. The CAR declined to 13.76 per cent at end-December 2022, from 14.11 per cent at end-June 2022, owing largely to growth in risk assets. The ratio, however, was above the minimum regulatory threshold of 7.5 per cent for national and regional banks and 11.25 per cent for international and domestic systemically important banks (CBN, 2012- 2022).

The Nigerian banking industry experienced deterioration in assets quality at end-December 2016. The ratio of NPLs to gross loans deteriorated in the second half of 2016 by 2.3 and 8.7 percentage points to 14.0 per cent at end-December 2016 compared with the levels at end-June 2016 and end-December 2015, respectively. The quality of banks' assets improved in the second half of 2018. The ratio of NPLs to gross loans was 11.67 per cent at end-December 2018, compared with 12.45 per cent at end-June 2018, indicating a decrease of 0.78 percentage point.

The ratio of NPLs to gross loans decreased to 6.02 per cent at end-December 2020 from 6.41 per cent at end-June 2020. Consequently, the ratio of non-performing loans (NPLs) to gross loans decreased to 4.94 per cent at end-December 2021, from 5.70 per cent at end-June 2021. The recoveries were majorly from General Commerce (₦12.85 billion), Real Estate (₦16.07 billion) and Power & Energy (₦88.00 billion) transactions. The quality of banks' assets improved during the review period as the NPLs ratio declined to 4.21 per cent from 4.95 per cent, at end-June 2022, lower than the 5.00 per cent benchmark. The improvement was mainly due to stricter credit risk management practices and the continued implementation of the Global Standing Instruction (GSI) policy which enhanced loan recovery (CBN, 2012- 2022).

In addition, management efficiency measured by the ratio of non-interest expenses to gross income increased by 0.6 percentage point to 51.5 per cent from 50.9 per cent at end-June 2012. The ratio rose by 5.9 percentage points to 68.9 per cent at end- December 2013. The ratio of non-interest expenses to gross income increased to 63.8 per cent at end-December 2016 from 54.6 per cent recorded in the preceding half. However, the ratio decreased to 60.90 per cent at end-December 2018, from 64.26 per cent in the preceding half. Similarly, the ratio of non-interest expenses to gross income increased to 64.00 per cent at end-December 2019, from 62.65 per cent recorded in the preceding half. The ratio further increased to 62.63 per cent at end-December 2020 from 58.74 per cent in the preceding half. Similarly, the ratio of non-interest expenses to gross income declined by 7.43 percentage points to 65.14 per cent at end-December 2021, from 72.57 per cent in the preceding half. However, the ratio of non-interest expenses to gross income declined by 3.66 percentage points to 72.20 per cent (CBN, 2012- 2022).

In terms of liquidity, the ratio of core liquid assets to total assets increased by 1.2 percentage points to 24.7 per cent at end-December 2012, from 23.5 per cent at end-June 2012. The ratio of liquid assets to short-term liabilities a second measure of liquidity rose by 0.8 percentage point to 28.9 per cent at end-December 2012. The improved liquidity level of the sector reflected the increase in holdings of liquid assets, such as short-term government securities, and indicates reduced systemic risk arising from illiquidity. The ratio of core liquid assets to total assets decreased by 2.2 percentage points to 16.3 per cent at end-December 2015 from 18.5 per cent at end-June 2015. Similarly, the ratio of core liquid assets to short-term liabilities decreased by 2.1 percentage points to 25.0 per cent at end-December 2015 compared with 27.1per cent at end-June 2015. The ratio of core liquid assets to total assets increased by 2.3 percentage points to 16.3 per cent at end-December 2016 from 14.0 per cent recorded at end-June 2016.

Also, the ratio of core liquid assets to short-term liabilities increased by 2.9 percentage points to 24.5 per cent at end-December 2016, compared with 21.6 per cent at end-June 2016. The increase in the ratio of core liquid assets to both total assets and short-term liabilities reflects improved buffers to absorb short term obligations. The ratio of core liquid assets to total assets

increased by 2.58 percentage points to 22.64 per cent at end-December 2018, from 20.06 per cent recorded in the first half of 2018. Similarly, the ratio of core liquid assets to short-term liabilities improved by 4.60 percentage points to 34.15 per cent in the review period, compared with 29.55 per cent at end-June 2018. The increase was attributed to banks' preference for Treasury Bills.

Banking system liquidity improved within the review period as the ratio of core liquid assets to total assets increased by 4.42 percentage points to 22.58 per cent from 18.16 per cent recorded in the first half of 2020. Furthermore, the ratio of core liquid assets to short-term liabilities improved by 5.25 percentage points to 32.58 per cent in the review period, compared with 27.33 per cent at end-June 2020.

The ratio of core liquid assets to total assets decreased by 0.44 percentage point to 20.54 per cent at end-December 2021, from 20.98 per cent at end-June 2021. Similarly, the ratio of core liquid assets to short-term liabilities declined by 0.83 percentage point to 29.95 per cent at end-December 2021, compared with 30.78 per cent at end-June 2021. The decline was due to increased lending to the real sector and households, in keeping with the bank's policies to encourage lending to key sectors of the economy.

The ratio of core liquid assets to total assets decreased by 0.26 percentage point to 19.82 per cent during the review period, driven mainly by the significant increase in total assets of the banking sector, which outweighed the marginal increase in core liquid assets. Similarly, the ratio of core liquid assets to short-term liabilities declined by 0.93 percentage point to 28.67 per cent at end-December 2022, owing largely to significant increases in both liquid assets and deposit liabilities (CBN, 2012- 2022).

In the light of the above, it can be observed from the statistics that the financial soundness indicators i.e. the proxies for credit risk are highly volatile and fluctuating as revealed by the downwards and upward movements. In view thereof, the effect of the changes or fluctuations in these variables on the financial performance which is also highly unstable needs to be investigated, considering the role of these variables as indicators of financial stability and soundness. Therefore, this study seeks to investigate the effect of credit risk on the financial performance of the Nigerian banking industry.

Statement of the Problem

The analysis of the Nigerian banking industry financial performance in terms of ROE shows that at end-December 2008, the ROE stood at 20.7%, representing an 80% increase over the end-June 2008 figure. The ROE declined to 8.9% in end-June 2009, and further declined massively to -222.8% by end-December 2009. At the end-December 2010, the ROE stood at 265.0% and declined by 99.8% to close at 0.5% by end-December 2011. At the end-December 2012, the

ROE stood at 7.8%, representing a 14.6% increase in the same period in 2011. In end-December 2013, the ROE marginally declined by 1% to close at 7.7%. In end-December 2015, the ROE stood at 19.66%, representing a 15.6% declined over the end-June 2015 figure. The ROE at end-December 2017 increased to 23.51%, representing a 1.34% increase over end-December 2016 figure. In end-December 2019, the ROE dropped to 3.70%, and slightly increased to 3.73% in the same period of 2020. Similarly, the ROE of the Nigerian banking industry increased by 282.5% in end-June 2021 and further increase by 92.5% in end-December 2021 to close at 27.47%. In end-June 2022, the ROE declined to 17.30% and surge to 23.82% at end-December 2022.

Based on the foregoing, it is evident that movement in the financial performance-ROE of the Nigerian banking industry appears to be secular, which has tendency for upwards and downwards movements.

In addition to the practical gaps already highlighted, this study also discovers some methodological weaknesses associated with prior empirical studies on credit risk and financial performance. These gaps ranges from the choice of variables, size of the sample, period of study, measurement of variables and techniques of data analysis among others. These weaknesses, no doubt, call for more empirical investigation to tackle these problems. With respect to small sample size and short-period bias, which are likely to produce results that lack robustness, see, for example, Kwashie et al. (2022), and Ernest and Fredrick (2017) to mention but a few.

The study discovered that majority of the authors with the exception of Abubakar et al. (2019) and Rajkumar and Hanitha (2015, did not adopt the CAMEL model proposed by this study. Most of the authors concentrate on one or two components of CAMEL. This approach does not provide an in-depth insight into understanding the association between credit risk and financial performance.

Research Hypotheses

The following null hypotheses were tested:

H_{o1}**:** Capital adequacy ratio has no significant effect on financial performance.

H_{o2}**:** Asset quality has no significant effect on financial performance.

H_{o3}**:** Management efficiency has no significant effect on financial performance.

H_{o4}**:** Earning quality has no significant effect on financial performance.

H_{o5}**:** liquidity proxy by the ratio of core liquid assets to total assets has no significant effect on financial performance.

H_{o6}: Liquidity proxy by the ratio of core liquid assets to total current liabilities has no significant effect on financial performance.

Literature Review

Concept of Financial Performance

Financial performance is the use of financial measures to determine the degree of objectives realization, making financial resources available, and supporting the bank with opportunities for investment (Heremans, 2007). Financial performance of a firm is a measure of a firm's earnings, profits, appreciations in value as evidenced by the rise in the entity's share price (Mwangi & Murigu, 2015). Financial performance measures how well a bank uses assets of the business to generate income. However, debate in respect of how to measure performance of firms and the factors that affect financial performance of companies is still in progress (Liargovas & Skandalis, 2008).

There is different number of ways to measure banks financial performance among them are accounting-based measures and market-based measures. Accounting-based measures are generally considered as an effective indicator of the film's profitability. These indicators include Return on Assets (ROA), Return on Equity (ROE), Return on Sales (ROS), among others. This performance measure is being criticized for its backward-looking feature and its partial estimation of future events in terms of depreciation and amortization. The market-based measures of performance is the second type of performance measurement which is categorized as long term and it includes Tobin's Q, Market Value Added (MVA), Market-to-Book Value (MTBV), Price-Earnings Ratio (PE), Dividend Yield (DY) (Al-Matari et al., 2014). The market-based measure is characterized as forward-looking and it reflects the expectations of the shareholders concerning the firm's future performance, which has its basis on previous or current performance (Ganguli & Agrawal, 2009). Therefore, for the purpose of this study, ROE which is accounting-based measures of financial performance was employed.

Concept of Credit Risk

Credit risk is the risk that a borrower defaults and does not honour its debt obligations (Abubakar et al., 2019; Taiwo et al. 2017). Basel Committee (1999) defined credit risk as the likelihood that a bank borrower or counterparty will not meet its obligations in accordance with agreed terms or the possibility of losing the outstanding loan partially or totally due to credit events. Credit risk is associated with failure on the part of an obligor (be it single or joint) to adhere to stipulated terms of a contract with a financial intermediary/bank (Jackson & Tamuke, 2022). As rightly pointed out, the components of CAMEL are used to represent credit risk, and are discussed below.

i. **Capital Adequacy:** This refers to the portion of equity and other reserves against its risky assets. This reserve is kept to protect depositor from any unexpected loss (Rajkumar & Hanitha, 2015). BASEL II requires banks to keep CAR at least 10%, while the CBN recommended a minimum CAR of 10% CAR for national banks and 15% for international banks. Capital adequacy is the capital expected to maintain balance with the risks exposure

of the financial institution such as credit risk, market risk, and operational risk, in order to absorb the potential losses and protect the financial institution's debt holder (Bhattarai, 2019).

ii. **Asset Quality:** is the ratio of non-performing loans to total gross loans. This ratio is the main indicator of deposit money banks credit risk (Rajkumar & Hanitha, 2015). The CBN prudential guidelines define non-performing loan as a loan whose principal and or interest remain outstanding for more than 90 days and other qualitative indicators also show that the borrower may not be able to service the loan (Abubakar et al., 2019).

iii. **Management Efficiency**: This is a useful measure of how costs are changing in relation to income (Rajkumar & Hanitha, 2015). The concept of management efficiency is the ability of the manager to efficiently utilise the company's resources (Leverty & Grace, 2012). Managerial efficiency is defined as the integrated skills of the whole top level management (Hambrick & Mason, 1984; Jakada & Aliyu, 2015). Management efficiency is the extent of management's ability to utilize both tangible and intangible resources in generating revenue (Cho & Lee, 2017; Suleiman et al., 2023).

iv. **Earnings Quality** measures the earnings ability of the banks to generate profit out of its scarce resources. Rajkumar and Hanitha (2015) state that the higher the ratio the better the earnings ability. We use ROA to represent the earnings ratio. Return on Assets (ROA), an accounting-based measure, measures the operating and financial performance of the firm (Klapper & Love, 2004). Therefore, the higher the ROA, the effective is the use of assets to the advantage of shareholders (Haniffa & Huduib, 2007).

v. **Liquidity:** Liquidity coverage ratio aimed to promote short-term resilience of the liquidity risk profile of banks (Rajkumar & Hanitha, 2015). Liquidity measures the availability of cash whether direct or indirect, and it involves the rate at which some current assets are converted into cash to meet ordinary and extra- ordinary demands (Olagunju et al., 2011). Adequate liquidity is also needed to avoid forced sale of asset at unfavourable market conditions and at heavy loss. Adequate liquidity serves as vehicle for profitable operations specially to sustain confidence of depositors in meeting short term obligations (Ibe, 2013; Uruakpa, 2024).

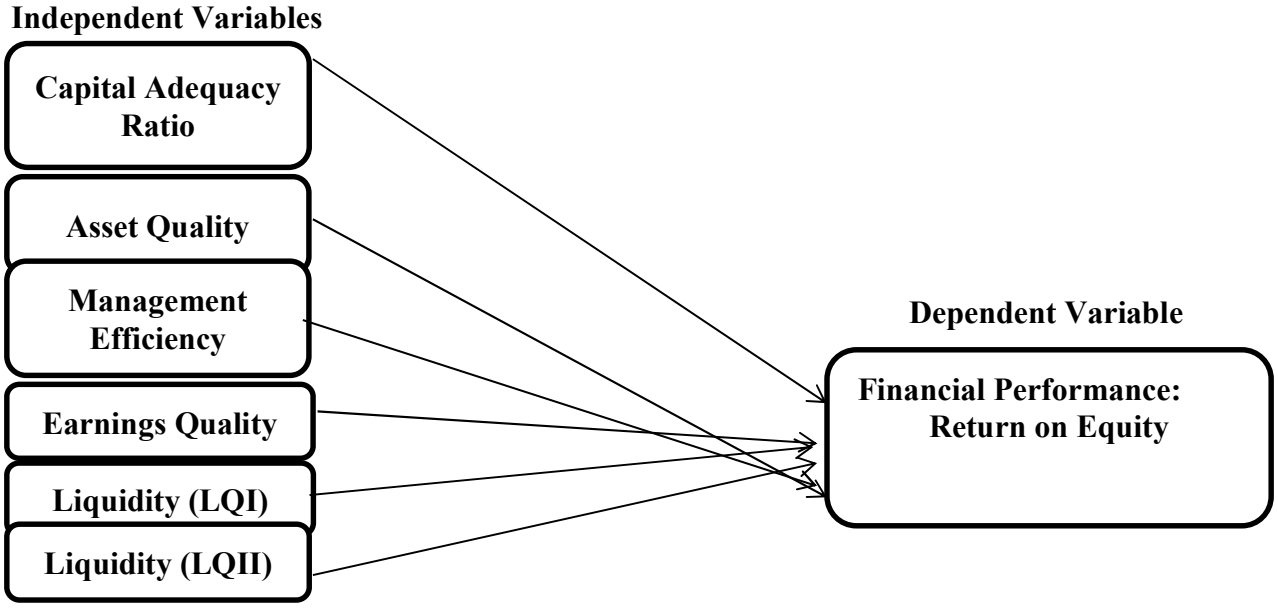

Figure 1: Conceptual Framework
Source: Developed by the author (2024)

Theoretical Framework
Information Asymmetry Theory and Moral Hazard Theory are used to explain the relationship between the variables in this study.

Information Asymmetry Theory
The notion of information asymmetry was initially proposed by Akerlof (1970), who contended that the occurrence of unequal information diffusion between transacting parties resulted in an imperfect market. "Information is imprecise, and gaining information can be expensive (Stiglitz, 1991). He also stated that there exist information asymmetries and that the extent of information asymmetry is influenced by the activities of firms and individuals. In any market, the seller typically knows more about the item than the buyer; hence, the buyer takes a risk by purchasing the thing. According to this logic, Kemei and Kerongo (2014) ascribe high non-performing loans in banks to a lack of information. However, Dell'Aricci (2001) observed that if banks could effectively identify borrowers' creditworthiness, deserving borrowers would receive credit facilities, decreasing the high percentage of loan defaults. In the long term, an adverse selection exposure in which high-risk borrowers displace creditworthy borrowers might create deterioration in the overall quality of bank loan portfolios, leading to the accumulation of NPLs. As a result, a delicate balance is required in order to lower the high rate of loan defaults, deteriorating profitability, capital erosion, and the banking sector's poor performance (Makri et al., 2014).

The Moral Hazard Theory

Moral hazards refers to a condition leading to risk that results when a banks customer provides information that is misleading about its financial statements or his or her credit capacity, or has a hidden incentive to take risks that are unusual in an attempt to earn a profit before the contract settles. Before Stiglitz and Weiss (1983) and Stiglitz (1990) proposed moral hazard model for credit market, Arrow (1963) documents that the phenomenon of using private information to benefit from an incomplete contract in the presence of information asymmetry is known as moral hazard. Musara and Olawale (2012) also noted that moral hazard exists where the borrower of bank credit takes action that adversely affects the returns to the lender. Gorton and Pennacchi (1995) posit that a bank that makes and sells loans is subject to a moral hazard problem with respect to screening borrowers. The theory is based on the assumption that the likelihood of borrowers engaging in activities that will guarantee repayment of bank credit extended to them cannot be determined ex-post by banks. The theory postulates that, the problem of moral hazard may result from information asymmetric between banks customer and the bank which makes it almost impossible to distinguish bad from good prospective borrowers (Richard, 2011). Researchers have noted that moral hazard problem has led to overtime pilling up of NPLs (Bofondi & Gobbi, 2003).

More so, the moral hazard theory stated that the higher the nonperforming loan's the lower the financial performance and the higher the assets quality the higher the financial performance of banks and vice versa.

Review of Empirical Studies

This section reviews empirical literature on the variables of the study. The review covers similar studies conducted in countries around the world.

Agwu et al. (2023) examined the relationship between credit risk management and performance of deposit money banks in Nigeria from 1990 to 2020, using Error Correction Model. Findings reveal among others that non-performing loans exert a significant negative impact on bank performance, while liquidity ratio insignificantly relates to bank performance measured by ROA. Ugorji et al. (2023) examined the effect of non-performing loans on the profitability of deposit money banks in Nigeria from 2010 to 2021 using pooled ordinary least squares. The findings reveal that there is a significant negative relationship between sub-standard debt, loan to assets ratio, and ROA while a positive significant relationship exists between lost loan and ROA. In contrast, doubtful debt has an insignificant effect on ROA. Natufe and Evbayiro-Osagie (2023) examined the effect of credit risk management on financial performance (ROE) of deposit money banks in Nigeria from 2010–2021 using panel regression approach. Findings reveal that CAR has a significant positive effect on ROE; loan-to-deposit ratio and liquidity ratio have significant effect on ROE, and loan loss provision ratio and non-performing loans ratio have a significant negative effect on ROE.

Kyari et al. (2023) assessed the relationship between liquidity and performance using a panel data of deposit money banks in Nigeria. The results show that liquidity proxy by current ratio has an insignificant negative relationship with the performance of deposits money banks in Nigeria. Amira et al. (2023) determined the effect of liquidity risk management on the financial performance using panel data of 32 Kenyan commercial banks from 2010 to 2019. Results reveal that liquidity has an insignificant effect on ROA and ROE of commercial banks in Kenya. Igwenwanne et al. (2023) evaluated the effect of liquidity management on banks' performance in Nigeria from 2012 to 2021 using Fixed Panel Least Square Method. Findings reveal that liquidity management has a positive effect on bank performance in Nigeria.

Arifaj and Baruti (2023) examined the effect of credit risk on the profitability of 26 financial institutions from 2010 to 2022 in Balkan countries comprising Kosovo, Albania, North Macedonia, Serbia, Croatia, Montenegro, and Bosnia and Herzegovina. The authors considered information from three panels that categorize state-owned banks, private banks, and multinational banks according to their ownership structure. ROA and ROE were used as surrogates for financial performance measures, while the proportion of bad loans to total loans was used to measure credit risk. Results confirm a significant negative association between credit risk and the measures of profitability.

Nyakieni (2022) assessed the effect of management efficiency on financial performance using 40 commercial banks in Kenya. Results reveal that there is a significant positive relation between management efficiency and financial performance of commercial banks in Kenya. Yeasin (2022) examined the effect of credit risk on financial performance of commercial banks in Bangladesh. Results show that credit risk proxy by non-performing loans and CAR has a negative effect on financial performance. In contrast, loans-to-deposit ratio has a positive effect on financial performance. Kwashie et al. (2022) investigated the impact of credit risk with focus on non-performing loans on the financial performance of 15 commercial banks in Ghana from 2013 to 2018 using random effect model. Return on asset and economic value-added are used as measures of financial performance. The results show that non-performing loans have a negative impact on both measures of financial performance.

Haile and Joshi (2022) analysed the effect of credit risk management on the financial performance of commercial banks in Ethiopia over the period 2008 to 2018, using regression analysis. Results show that CAR, loan-to-deposit ratio, and the provision for loan loss to total loan ratio have a positive and statistical significant effect on ROA. However, the findings also indicate that non-performing loans, loan-to-total asset ratio, and cost-per-loan ratio (total operating cost/total amount of loans) have a significant negative effect on the ROA of Ethiopian banks Majani (2022) explored the effect of credit risk management on the financial performance of listed commercial banks in Kenya from 2016 to 2019. The findings reveal that non-performing loans ratio and loan loss provisions ratios have no significant effect on ROE.

However, CAR has a statistically significant negative effect on ROE, and loan to assets ratio has a significant positive effect on ROE.

Dunyoh et al. (2022) examined the impact of credit risk on financial performance of 10 rural and community banks in Ghana from 2014 to 2018 using fixed effect model. The findings show that credit risk measured by non-performing loans has a negative and significant effect on both ROA and ROE as indicators of financial performance. Herath et al. (2021) assessed the impact of credit risk on the profitability of the banking industry in Sri Lanka. The findings indicate that non-performing loans have a negative impact on profitability measured by ROA. Siddique et al. (2021) investigated the effect of credit risk management and bank-specific factors on the financial performance of 19 South Asian commercial banks from 2009 to 2018 using generalized method of moment. Findings demonstrate that non-performing loans, cost-efficiency ratio, and liquidity ratio have a negative and significant effect both ROA and ROE. Conversely, the findings also reveal that CAR and average lending rate have positive and significant effect on ROA and ROE.

Ajayi and Lawal (2021) evaluated the relationship between liquidity management and bank performance using secondary data obtained from the published annual reports of five deposit money banks in Nigeria from 2009 to 2018 and Auto Regressive Distributed Lag (ARDL) technique. Results show that there is a significant negative relationship between loan to deposit ratio and ROA, loan to asset ratio and ROA are positive and significantly related to ROA, and liquidity ratio and ROA are insignificant. Alim et al. (2021) analysed the effect of liquidity risk management on the financial performance of commercial banks in Pakistan using ordinary least square method from 2006 to 2019. Results reveal that liquidity and banks' performance in commercial banks of Pakistan are positively related. Bhattarai (2020) assessed the effects of non-performing loans on commercial banks' profitability in Nepal over a five-year period from 2014 to 2018 using multiple regression model. Results reveal among others that non-performing loans, CAR, and liquidity have negative effects on ROE.

Folajimi and Dare (2020) investigated the effect of credit risk on financial performance using 13 deposit money banks in Nigeria from 2006- 2018. Findings reveal that CAR has a positive effect on financial performance and non-performing loans have a significant negative effect on financial performance proxy by return on capital employed.

Adegbie and Otitolaiye (2020) analysed the effect of credit risk on the financial performance of deposit money banks in Nigeria from 2006 to 2018 using random effect model. Results show that all of measures credit risk management has a significant positive effect on return on capital employed, except non-performing loans, which had a significant negative effect on return on capital employed. Isabwa and Mabonga (2020) examined the effect of Non-performing loans on profitability of the banking industry in Kenya using cross sectional and time series designs and

the study found a significant negative relationship between nonperforming loans and profitability of Kenyan banking industry. Abubakar et al. (2019) analysed the effect of credit risk management on the financial performance, using the annual reports/financial statements of 10 quoted deposit money banks in Nigeria from 2010- 2016. The authors used descriptive statistics and fixed effects models as the methods of data analysis. The authors adopted CAMEL model to proxy credit risk management. Results reveal that CAR, earnings (ROA) and loans-to-deposit ratio (LDR) have positive and significant effect on the financial performance; while asset quality (NPLR), management efficiency and liquidity ratio have no significant effect of the financial performance measured by the ROE.

Gambo et al. (2019) analysed the effect credit risk management on the financial performance of quoted deposit money banks in Nigeria from 2010 to 2018. The findings reveal that Loan to deposit ratio, credit risk, and capital adequacy risk have an insignificant effect on ROA while solvency risk and firm size have a positive and significant effect on ROA. Bhattarai (2019) investigated the effect of credit risk on the financial performance of 10 commercial banks in Nepal from 2001 to 2016. The regression results reveal that CAR, and non-performing loan ratio have significant negative effect on the financial performance, and management quality ratio has a significant positive effect on the financial performance (ROA) of the commercial banks in Nepal.

Lotto (2019) explored the factors affecting operating efficiency of 36 commercial banks in Tanzania from 2000 to 2017. Results show that operating efficiency is positively related to bank profitability. Ekinci and Poyraz (2019) analysed the effect of credit risk on financial performance of Turkey banks, and reported a significant negative relationship between non-performing loans and financial performance represented by ROA and ROE. Innocent et al. (2019) evaluated the effect of capital adequacy, credit risk, and operating efficiency on the performance of commercial banks in Nigeria using random effect model. Results reveal that capital adequacy have a significant positive effect on financial performance. In contrast, credit risk and operating efficiency have a negative and significant effect on the financial performance of banks in Nigeria.

Rajkumar and Hanitha (2015) determined the impact of credit risk management on the financial performance from 2006 to 2013 using OLS. The authors sampled two state commercial banks in Sri Lanka, soundness index indicators- CAMEL to represent credit risk management and ROE to measure financial performance. Results show that capital adequacy, asset quality, management efficiency and liquidity have a negative impact on financial performance, whereas earnings have a positive impact on financial performance.

From the empirical review of literature, we discovered some gaps which make this study unique. Quite a number of empirical studies on the nexus between credit risk and financial performance are carried out outside the shores of Nigeria, creating a contextual gap. For example, Arifaj and

Baruti (2023), Siddique et al. (2021), Jackson and Tamuke (2022), Herath et al. (2021), Nyakieni (2022), Yeasin (2022), Dunyoh et al. (2022), Kwashie et al. (2022), Haile and Joshi (2022), and Majani (2022), were all studies outside Nigeria. We found from the review of empirical literature that some authors utilized small sample size and short period of study. See, for instance, Majani (2022), Dunyoh et al. (2022), Bhattarai (2022), Folajimi and Dare (2020), and Abubakar et al. (2019)

Methodology

This study used Expost facto research design which is appropriate where the phenomenon under study has already taken place. This allows for the collection of past data which provides basis for establishing the relationship among the variables of study. The population of this study consists of semi-annual time series data on the relevant variables of all the banks that constitute the whole Nigerian banking industry from 2008 to 2022. Secondary source was employed in collecting the semi-annual time series data for all relevant variables in this study. The data collected covers from the first-half of 2008 to the last-half of 2022. The data was collected from the CBN financial stability reports for the period under investigation and was sourced from the CBN official website.

Descriptive and inferential statistics were employed as techniques of data analysis. Mean, minimum, maximum, and standard deviation are the major descriptive statistics utilised in this study. Cochrane –Orcutt regression technique is the inferential statistic tool adopted in this study. This technique was developed to handle time-series data employed in this study. The technique is more robust than the OLS as it considered the assumption of stationary in time series data, which the OLS technique ignored.

Table 1 presents the variables and their measures.

Table 1: Variables and Measurements

S/N	Variable	Acronym	Variable Type	Measurement/ Definition
1	Capital Adequacy Ratio	CAR	Independent Variable	Ratio of Regulatory Capital to Risk-Weighted Assets.
2	Asset Quality	ASQ	Independent Variable	Ratio of Non-Performing Loans to Gross Loans.
3	Management Efficiency	MEF	Independent Variable	Ratio of Non-Interest Expenses to Gross Incomes.
4	Earnings Quality	ENQ	Independent Variable	Return on Assets
5	Liquidity	LIQI	Independent Variable	Ratio of Core Liquid Assets to Total Assets
6	Liquidity	LIQII	Independent Variable	Ratio of Core Liquid Assets to Short-Term Liabilities.
7	Return on Equity	ROE	Dependent Variable	Net Income divided by Total Shareholder's Equity

Source: CBN Financial Stability Reports (2012- 2022) Computed based on the IMF Compilation Guide

In order to examine the effect of credit risk on the financial performance of the Nigerian banking industry, ROE is used to measure financial performance. The functional relationship is presented below:

$$ROE = f(CAR, ASQ, MEF, ENQ, LIQI, LIQII) \text{ -- - - - - - (1)}$$

In the implicit form, equation 1 is transformed as equation 2 below:

$$ROE_t = b_0 + b_1 CAR_t + b_2 ASQ_t + b_3 MEF_t + b_4 ENQ_t + b_5 LIQI_t + b_6 LIQII_t + \varepsilon_t \text{ - - (2)}$$

Where:

ROE_t = Return on Equity at Semi-Annual Time t, b_0 = The Intercept, b_1 to b_6

Parameters/Coefficients of the Regression Model, CAR_t = Capital Adequacy Ratio at Semi-Annual Time t, ASQ_t = Asset Quality at Semi-Annual Time t, MEF_t = Management Efficiency at Semi-Annual Time t, ENQ_t = Earnings Quality at Semi-Annual Time t, $LIQI_t$ = Ratio of Core Liquid Assets to Total Assets at Semi-Annual Time t, $LIQII_t$ = Ratio of Core Liquid Assets to Short-Term Liabilities at Semi-Annual Time t, ε_t = Disturbance Term at Semi-Annual Time t.

Results and Discussion

Results of the Model Assumptions and Preliminary Tests

To ensure that model assumptions are not violated the results of the assumptions are presented in the following sub-sections

i. **Linearity Test**

Linearity test was implemented to ensure that the link between the independent variables and the dependent variable is linear i.e., it assumes a straight line. The null hypothesis is that the relationship dependent and independent variable is linear. The t-statistic is 8.52 and the corresponding p-value is 0.20 for squared terms. Since the p-value is insignificant, we cannot reject the null hypothesis that the relationship between the independent and dependent variables is linear. Hence, it can be concluded that there is a linear relationship between the ROE and the independent variables.

ii. **Test for Normality of Residual**

One of the assumptions of a regression model is the normality of residual. The null hypothesis is that error is normally distributed. The test statistic i.e., the Chi-square (2) is 4.36, and the p-value of 0.11. Since the p-value is not significant, we fail to reject the null hypothesis, and posit that the error term is normally distributed.

iii. **Multicollinearity Test**

Multicollinearity test is important to ensure the independent variables do not have high correlation. There are two commonly adopted methods in the literature for detecting multicollinearity. The methods are correlation and the variance inflation factor (VIF). Correlation is a measure of the strength of relationship between two variables, and can assume

any value from 0 to 1 or -1, with values close to 1 indicating high correlation. Swain (2008) observes that a correlation coefficient of at least 0.9 may imply a multicollinearity problem. To detect multicollinearity problem, the correlation result is presented in Table 2.

Table 2: Correlation Results

CAR	ASQ	MEF	ENQ	LQI	LQII	
1	-0.78	-0.12	0.32	0.16	0.28	CAR
	1	0.21	-0.48	-0.25	-0.28	ASQ
		1	0.07	0.10	0.24	MEF
			1	-0.02	0.11	ENQ
				1	0.82	LQI
					1	LQII

'***' and '*' implies significant at 1% and 10% respectively

Source: Author's Computation (2024) from GRETL

It is clear from the correlation results represented by Table 2 that the model has no collinearity problem since none of the correlation coefficients is up to the benchmark of 0.9 adopted by this study. To support the correlation results, VIF is also computed, and the results presented in Table 3.

Table 3: Collinearity Statistic

Independent Variable	VIF
CAR	2.85
ASQ	3.74
MEF	1.27
ENQ	1.48
LQI	3.31
LQII	3.44

Source: GRETL Output

In Table 3, none of the independent variables has a VIF that clichéd 10, which according to the assertion of Hair et al. (2014) imply that there is no multicollinearity among the independent variables selected for the study. The results of the VIF have lent credence to the correlation results on the absence of multicollinearity among the free variables.

iv. **Test for Heteroskedasticity**

Cochrane-Orcutt time-series regression model assumes that the remaining error term have a constant variance i.e. homoskedasticity. Heteroskedasticity is a violation that assumption. The null hypothesis is that the remaining error term is homoscedastic i.e., there is no heteroskedasticity. In model 1, the test statistic for the White's test for heteroskedasticity employed in this study is 30.00 and the p-value is 0.31. Based on this result, there is no statistical evidence to reject the null hypothesis, since the p-value is insignificant; hence, the study concludes that the remaining error term has a constant variance.

v. **Test for Autocorrelation**

Test for autocorrelation is carried out using Durbin-Watson (D-W) statistic. The D-W statistic of ROE model is 2.04. Since the D-W statistic is very close to 2, it suggests that there is no first order serial autocorrelation (Swain, 2008).

vi. **Unit Root Test**

Unit Root Test is conducted to ensure that the assumption that time-series data should be stationary is not violated. In this study, the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) is used to test for stationary in time-series data. The null hypothesis is that the time-series data is stationary. The results of the KPSS stationary test at level including a trend are presented in Table 4.

Table 4: Unit Root Test Results

Variable	t-ratio	p-value
CAR	0.05	0.96
ASQ	-1.39	0.18
MEF	1.15	0.26
ENQ	1.41	0.17
LQI	0.33	0.74
LQII	0.65	0.76
ROE	0.08	0.93

Source: Author's Computation (2024) using GRETL

The results of the unit root test show that all the variables are stationary at levels. This is because none of the p-values associated with the variables are significant, hence, the null hypothesis of

stationary cannot be rejected. This implies that our variables have no unit root. In other words, the time-series data is stable.

vii. **Stability Test**

The cumulative sum of recursive (CUSUM) is utilised to assess the stability of the estimated coefficients of the model used in this study. Figure 2 presents the CUSUM test for the ROE model.

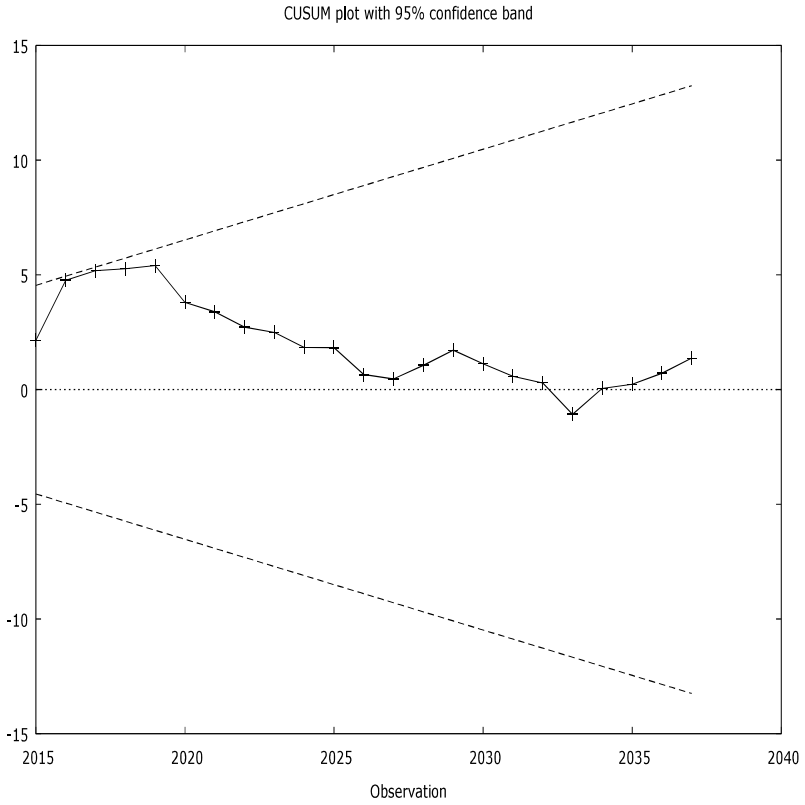

Figure 2: Plot of Cumulative Sum of Recursive Residuals for ROE

The critical bound at 95 per cent confidence level was represented by the straight line. It can be visualised from the figure that the CUSUM plot did not cross the 5 per cent critical lines, suggesting that there is the stability of the estimated coefficients over the entire study period 2008- 2022. The result of the stability test confirms that the parameters in the estimated models are constant and valid.

Descriptive Analysis

The descriptive analysis of the semi-annual time-series data of capital adequacy ratio (CAR), asset quality (ASQ), management efficiency (MEF), earnings quality (ENQ), liquidity (LQI & LQII), and return on equity (ROE) of the Nigerian banking industry for the period 2008- 2022 is presented in this sub-section. Table 5 presents the descriptive results of the study variables.

Table 5: Descriptive Results

Variable	Mean	Minimum	Maximum	Std. Dev.
CAR	0.14	0.02	0.24	0.05
ASQ	0.09	0.03	0.29	0.07
MEF	0.65	0.51	0.81	0.08
ENQ	0.02	-0.09	0.04	0.02
LQI	0.19	0.11	0.26	0.04
LQII	0.27	0.17	0.35	0.05
ROE	0.17	-2.23	2.65	0.65

Source: Author's Computation (2024) using GRETL

The descriptive results in Table 5 reveal that CAR has mean of 14%, a minimum of 2% and a maximum of 24%. The mean value of CAR is above the regulatory threshold of 10% recommended by national banks and marginally below the 15% suggested for international banks. The minimum of 2% is far below the recommended threshold, while the maximum CAR is doubled the recommended benchmark. The mean CAR is an indication that banks have capitalised their earnings to build additional capital buffer.

The descriptive results also show that ASQ measured by the ratio of non-performing loans to gross loans has mean of 9% against the minimum of 3% and maximum of 29% during the study period 2008- 2022. The average value is above the regulatory threshold of 5%. The low minimum value could be attributed to improvement in risk management and corporate governance practices, as well as the write-off of non-performing loans during the preparation of year-end accounts. The maximum value of 29% could be attributed to rising inflationary trend, economic recession, depreciation of naira, and the negative impact of Covid-19 that characterised the study period.

In Table 5, the results of the descriptive statistics also reveal that MEF proxy by the ratio of non-interest expense to gross income has a mean of 0.65, a minimum of 0.51 and a maximum of 0.81.The implication is that since the ratio is less than unity in all respects, it follows banks have been able to generate enough gross earnings to cover their non-interest expense. This is a sign of good management efficiency.

The descriptive results of ENQ, which is measured by ROA, show a mean of 2%, a minimum of -9% and a maximum of 4%. The mean value is an indication that on the average for every one naira worth of asset that has been put into use, only two kobo is generated as earnings in the Nigerian banking industry. The negative minimum value indicates a loss, while the maximum of 4% is quite low. The results suggest that the ROA in the Nigerian banking industry is too low. The low earnings were due to rising total expenses (non-interest expenses and personnel expenses).

For liquidity, two proxies were adopted. LQI is measured as the ratio of core liquid asset to total assets, while the second proxy (LQII) is measured as the ratio of core liquid assets to short term liabilities. The mean of LQI is 19%, which implies that 19% of the total assets in the Nigerian banking industry are held in core liquid assets i.e. instruments of not more than 30 days maturity. The mean as well as the maximum of 26% are lower than the regulatory threshold of 30%. A low liquidity ratio implies that banks might not be able to meet its short term maturing obligations. Similarly, LQII has a mean of 27% and a maximum of 35% which is above the minimum regulatory benchmark. The mean of 27% indicates that 27% of short term liabilities in the Nigerian banking industry can be covered by core liquid assets. The second measure of liquidity shows an improvement in the liquidity position over the first measure. The improved liquidity level reflects increase in holdings of liquid assets such as short-term government securities and improved buffer to absorb short-term obligations. Increase in the liquidity level can also reduce systematic risk arising from illiquidity.

The descriptive result of the measure of the financial performance- ROE reveals a mean of 0.17, against the minimum of -2.23 and the maximum 2.65. The mean suggests that a one naira investment in shares of banks in Nigeria, 17 kobo is generated as returns for shareholders. The negative minimum of ROE indicates that a bank generated a negative return during the study period. The high maximum value of ROE of 265% occurred in the second half of 2010. The unusually high ROE was as a result of sale of eligible bank assets (EBAs) to Asset Management Corporation of Nigeria (AMCON) that necessitated the write-back of provision made on those assets (CBN, 2011).

Regression Analysis

This section presents the Cochrane-Orcutt time-series regression results of the ROE model in order to investigate the effect of credit risk management on the financial performance of the Nigerian banking industry. The estimated time series regression results of the ROE model are presented in Table 6.

Table 6: Cochrane-Orcut Regression Results using ROE

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
const	0.61	0.40	1.53	0.14	
CAR	-5.49	1.20	-4.56	0.00	***
ASQ	-0.13	1.16	-0.11	0.91	
MEF	-0.00	0.00	-0.31	0.76	
ENQ	28.75	2.64	10.88	0.00	***
LQI	8.43	1.85	4.57	0.00	***
LQII	-6.55	1.35	-4.85	0.00	***

Statistics based on the rho-differenced data:

Mean dependent var	0.17	S.D. dependent var	0.66
Sum squared resid	1.59	S.E. of regression	0.27
R-squared	0.87	Adjusted R-squared	0.84
F(6, 22)	33.24	P-value(F)	0.00
rho	-0.05	Durbin-Watson	2.04

"*" implies the rejection of null hypothesis at 1% level of significance**

Source: Author's Computation (2024) using GRETL

The estimated Cochrane-Orcut time-series regression results presented in Table 6 show that four out of the six independent variables are statistically significant at 1% level. Specifically, CAR, ENQ, LQI, and LQII were statistically significant, while ASQ and MEF are not significant. This implies that CAR, ENG, LQI, and LQII have significant effect on financial performance, while ASQ and MEF have no significant effect on financial performance proxy by ROE in the Nigerian banking industry. The estimated Cochrane-Orcut time-series regression results also reveal that the adjusted R-squared of 0.84 has a model fit as revealed by the F-statistic of 33.24, which is statistically significant at 1% level of significance.

Discussion of Findings

The discussion of findings is based on the results of the descriptive statistics and the Cochrane-Orcut regression results in Table 6.

Capital Adequacy Ratio: The capital adequacy ratio measured as the ratio of regulatory capital to risk weighted assets was highly statistically and significantly negatively related to financial performance measured by ROE. The t-ratio of CAR is negative and suggests that CAR is negatively associated with the financial performance i.e., ROE. The coefficient of CAR of -5.49 suggests that as CAR increased by 1%, ROE will decline by 5.49%. The implication is that as banks increased their capitalization in order to curtail the exposure to credit risk, their earnings will decline because part of their capital are held in reserve. This part of capital can be invested to attract additional earnings. This finding suggests banks in trying to manage credit risk by

increasing capitalisation must be ready to forgone some earnings which ordinarily would have been generated by the capital kept in reserve. Banks must therefore, trade-off the benefit of credit risk management with the loss of earnings. This empirical result agrees with the findings of prior studies by Bhattarai (2020), Majani (2022), and Yeasin (2022); but disagrees with the results of Abubakar et al. (2019), Natufe and Evbayiro-Osagie (2023), Haile and Joshi (2022), and Folajimi and Dare (2020).

Asset Quality: Asset quality (ASQ) was proxy by the ratio of non-performing loan to gross loan. Results show that ASQ has no significant effect on the financial performance of the Nigerian banking industry as revealed by the outcome of the test of hypothesis two. Although, the t-value was negative, which may suggest that as the amount of non-performing loan increases, the financial performance declines because bank's financial assets are held in the hands of debtors, which banks cannot re-invest for additional earnings. Increasing amount of non-performing loans may lead to write-off of some loans, which may impact negatively on the financial performance. This finding is consistent with the postulation of the moral hazard theory, which predicts that as the size of non-performing loan increases, financial performance tends to decline. This finding supports the results of many empirical studies, such as Kwashie et al. (2022), Siddique et al. (2022), Yeasin (2022), Agwu et al. (2023), Dunyoh et al. (2022), Herath et al. (2021), and Bhattarai (2020) that all reported a negative relation between non-performing loans and financial performance.

Management Efficiency: Results show that managerial efficiency (MEF) has no significant effect on the financial performance of the Nigerian banking industry. This position is also supported by the MEF coefficient of 0.00, which signifies that a change in MEF will not cause any change on financial performance. The sign of the t-ratio of MEF is negative, which may suggests that in the long run as the non-interest expenses increases, the financial performance diminishes. This is theoretically and logically correct because increasing expenses will erode earnings, and so also will the financial performance declines. This result contravenes the findings of Lotto (2019), Nyakieni (2022), and Bhattarai (2019), which found a positive relation between management efficiency and financial performance. The differences in results are due to differences in context and measures of variables. In contrast, the result seems to support the negative t-values reported by past empirical studies from Abubakar et al. (2019), Siddique et al. (2019), and Innocent et al. (2019),

Earnings: Earnings (ENQ) have a positive and significant effect on financial performance. This is in line with the a priori expectation, as earning increases, the exposure to credit risk reduces, and the financial performance increases as well. This is true because earnings as an important component of the financial performance. In fact, earnings are part of numerator when it comes to calculating financial performance, especially the accounting measures of financial performance, which ROE considered in this study is one of them. The coefficient of earning suggests that 1%

increase in ENQ is associated with 28.75% increase in financial performance. ENQ has the highest coefficient among the proxies of credit risk management. This implies that ENG is the most important determinant of financial performance as suggested by its coefficient. This finding is consistent with the empirical results of Abubakar et al. (2019) and Rajkumar and Hanitha (2015) that also adopted the CAMEL approach in their studies.

Liquidity: The results of the first proxy of liquidity, which was measured as the ratio of core liquid assets to total assets show that liquidity (LQI) has a positive and significant effect on financial performance measured by ROE. The coefficient of LQI indicates that a 1% increase in liquidity position will lead to an 8.43% increase in the financial performance. This finding suggests that as liquidity position improves so also will the financial performance increases. The implication is that increase investment in risk-free government securities will enhance the safety and soundness of the banking system which is reflected in the bank's ability to meet their short-term obligations. This result supports the findings of Igwenwanne et al. (2023), and Alim et al. (2021). However, the finding did not concurs with the results of Abubakar et al. (2019), Amira et al. (2023), Siddique et al. (2021), and Natufe and Evbayiro-Osagie (2023).

Conversely, the results of the second measure of liquidity, which was defined as the ratio of core liquid assets to total current liabilities, reveal that liquidity (LQII) has a negative and significant effect on the financial performance in the Nigerian banking industry. LQII has a coefficient of -6.55, which implies that a 1% increase in liquidity will reduce financial performance by 6.55% in the Nigerian banking industry during the study period 2008- 2022. The implication of this finding suggests that as the investment in current assets increases, the financial performance will diminish. This is so because high investment in current assets implies high investment in non-earning assets. Bank must therefore, maintain an optimal level of liquidity to remain profitable.

Conclusion and Recommendations

This study investigated the effect of credit risk on the financial performance of the Nigerian banking industry. The study adopted a semi-annual time series data from 2008- 2022 for the investigation. The study adopted CAMEL to proxy credit risk, and used two measures for liquidity as a component of CAMEL. The major findings indicate that CAR has a significant negative effect on financial performance, ASQ has no significant effect on financial performance, MEF has no significant effect on financial performance, ENQ has a positive and significant effect on financial performance, LQI has a positive and significant effect on financial performance, and LQII has a negative but significant effect on ROE as an indicator of financial performance.

The study concludes that different measures of credit risk have different implications for the financial performance. Credit risk has the potential to improve or deter financial performance,

depending on the proxies and measures of credit risk considered. Credit risk is a very significant risk element or component in determining financial performance in the banking industry. Increasing CAR will minimise bank's exposure to the danger of credit risk, but will affects financial performance adversely. Increasing size of non-performing loans will increase bank's exposure to credit risk, and consequently, results in poor financial performance. With improved earnings and liquidity positions, banks can withstand the threats of credit risk; improve the stability and soundness in the financial system, and consequently, enhanced financial performance in the banking industry.

Based on the major findings and conclusion, the following recommendations were proffered:

1. Banks should trade-off the benefit of CAR such as managing credit risk with the financial loss of losing earnings. Increasing the CAR above the regulatory benchmark is likely to result in poor financial performance, as large amount of capital will remain idle in the reserve.
2. As expected, increasing amount of non-performing loans will result in poor financial performance. Hence, banks should adhere strictly to the principle of corporate governance and banking regulations when granting loans.
3. Increasing operational (non-interest) expenses may be a result of managerial or operational inefficiency, and may lead to reduction in earnings, which has a ripple effect on financial performance. Therefore, banks should take deliberate efforts to cut-down operational expenses in order drive financial performance.
4. Banks should take measures to improve their earnings, as doing so will mitigate the adverse consequence of credit risk, and improve financial performance.
5. Banks should improve their liquidity position through increased investments in risk-free government securities in order to improve financial performance.
6. Banks should reduce the size of non-earning current assets bearing in mind the regulatory minimum liquidity ratio of 30% in order to improve financial performance.

References

Abubakar, A., Sulaiman, A. S., Bello, U., & Mohammed, M. U. (2019). Credit risk management and financial performance of quoted deposit money banks in Nigeria. *University of Port Harcourt Journal of Management, 4*(1), 178- 192.

Adegbie, F. F., & Otitolaiye, E. D. (2020). Credit risk and financial performance. An empirical study of deposit money banks in Nigeria. *European Journal of Accounting, Auditing and Finance Research, 8*, 38- 58.

Agwu, E. C., Samuel, O. C., & Effe-Nnamdi, A. C. (2023). Credit risk management and deposit money banks' performance in Nigeria. *IIARD International Journal of Banking and Finance, 9*(4), 1- 22. Doi: 10.56201/ijbfr.v9.no4.2023.pg1.22.

Ajayi, A. & Lawal, O. (2021). Effect of liquidity management on banks profitability. Izvestiya *Journal of the University of Economics - Varna. 65*, 220- 237.

10.36997/IJUEV2021.65.2.220.

Akerlof, G. A. (1978). The market for "lemons": Quality uncertainty and the market mechanism. In *Uncertainty in economics*. Academic Press.

Alim, W., Ali, A. & Metla, M. R. (2021). The effect of liquidity risk management on financial performance of commercial banks in Pakistan. Munich Personal RePEc Archive Paper No. 112482.

Alshatti, A.S. (2015). The effect of credit risk management on financial performance of the Jordanian commercial banks. *Investment Management and Financial Innovations, 12*(1): 338-339.

Amira, E. A., Alala, B. O., & Musiega, M. (2023). Influence of liquidity risk management on financial performance of commercial banks in Kenya. *African Journal of Empirical Research, 4*(2), 7- 13. https://doi.org/10.51867/ajernet.4.2.3.

Arifaj, A. H., & Baruti, B. H. (2023). The effect of credit risk on the financial performance of commercial banks in Balkan countries. *Corporate & Business Strategy Review, 4*(3), 18-25. https://doi.org/10.22495/cbsrv4i3art2.

Basel Committee (1999). *Principles for management of credit risk*. Basel committee on banking supervision.

Bhattarai, B. P. (2019). Effect of credit risk management on financial performance of commercial banks in Nepal. *European Journal of Accounting, Auditing and Finance Research, 7*(5), 87- 103.

Bhattarai, B. P. (2020). Effects of non-performing loan on profitability of commercial banks in Nepal. *European Business & Management, 6*(6), 164- 170.

Bhattarai, Y.R. (2016). Effect of non-performing loan on the profitability of commercial banks in Nepal, *International Journal of Business & Management, 4* (6), 435-442.

Bofondi, M., & Gobbi, G. (2003). Bad loans and entry in local credit markets. Bank of Italy, 1-29.

Cho, S. Y., & Lee, C. (2017). Managerial efficiency, corporate social performance, and corporate financial performance. *Journal of Business Ethics, 158*(1), 1- 51. https://doi.org/10.1007/s10551-017-3760-7.

Dell'Ariccia, G. (2001). Asymmetric information and the structure of the banking industry. *European Economic Review*, *45*(10), 1957-1980.

Dunyoh, M., Ankamah, E. T., & Kosipa, S. J. K. (2022). The impact of credit risk on financial performance: Evidence from rural and community banks in Ghana. *Hybrid Journal of Business and Finance, 2*(1), 7- 26.

Ekinci, R., & Poyraz, G. (2019). *The effect of credit risk on financial performance of deposit banks in Turkey.* Procedia Computer Science, 1581, 979–987. https:// doi.org/10.1016/j.procs.2019.09.139.

Ernest, S. A. & Fredrick, S. O. (2017). Impact of Credit Risk Management on the Profitability of Selected Commercial Banks Listed on the Ghana Stock Exchange. *Journal of Economics, Management and Trade*. 20*(2), 1-10.*

Folajimi, A. F., & Dare, O. E. (2020). Credit risk and financial performance: An empirical study of deposit money banks in Nigeria. *European Journal of Accounting, Auditing and Finance Research, 8*(2), 38- 58.

Gadzo, S. G., Kportorgbi , H. K., & Gatsi, J. G.(2019). Credit risk and operational risk on financial performance of universal banks in Ghana: A partial least squared structural equation model (PLS SEM) approach. *Cogent Economics & Finance, 7* (1), 1- 16.

Gambo, H., Bambale, A., Aminu, M. A., & Sulaiman, A. S. (2019). Credit risk management and financial performance of quoted deposit money banks in Nigeria. *Journal of Finance, Accounting and Management, 10*(1), 26- 42.

Ganguli, S. K., & Agrawal, S. (2009). Ownership structure and firm performance: An empirical study on listed mid-cap Indian companies. *IUP Journal of Applied Finance*, *15*(12).

Haile, D. M., & Joshi, D. (2022). The effect of credit risk management on financial performance of commercial banks in Ethiopia. *International Journal of Creative Research Thoughts 10*, 301- 313.

Hair, Jr J. F, Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis.* (7th Ed.). Pearson. International.

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, *9*(2), 193-206.

Ibe, S. O. (2013). The impact of liquidity management on the profitability of banks in Nigeria. *Journal of Finance and Bank Management, 1*(1), 37- 48.

Igwenwanne I. E., Ozurumba B. A., Nwaimo, C. E., Anyanwu F. A. & Ubah C. P. (2023). Evaluation of the liquidity management on deposit money banks' performance in Nigeria. *International Journal of Economics, Business and Management Research, 7* (1), 122. Doi: 10.51505/IJEBMR.2023.7111.

Innocent, I. O., Ademola, O. G., & Teryima, T. S. (2019). Effect of capital adequacy, credit risk and operating efficiency on the performance of commercial banks in Nigeria. Finance Markets*, Institutions and Risks, 3*(1), 106- 114. http://doi.org/10.21272/fmir.

Isabwa, H. K., & Mabonga, M. W. (2020). Effect of non-performing loans on profitability of the banking industry in Kenya. *International Journal of Finance and Banking Research*, *6*(2), 28.

Itsibor, M. (2017, September 11). How CBN's efforts helped Nigeria's exit from economic recession. Accessed on August 14, 2018 from www.leadershipngr, 2018

Jackson, E. A., & Tamuke, E. (2022). Credit risk management and the financial performance of domiciled banks in Sierra Leone: an empirical analysis. *İktisat Politikası Araştırmaları Dergisi. Journal of Economic Policy Researches, 9*(1), 139- 164. https://doi.org/10.26650/JEPR1012975.

Jakada, A. B., & Aliyu, M. S. (2015). Impact of managerial efficiency (ME) on performance of multinational corporations (MNCs) in Nigeria. *KASU Journal of Management Sciences, 6(1)*, 1- 17.

Kemei, J. C., & Kerongo, F. (2014). The effects of information asymmetry in the performance of

the banking industry: a case study of banks in Mombasa County. *International Journal of Education and Research*, *2*(2), 1-6.

Khan, S. (2022). Determinants of operational efficiency: The case of Saudi banks. Financial Internet Quarterly, 18(3), 11-20. https://doi.org/10. 2478/figf-2022-0016.

Kwashie, A. A., Baidoo, S. T., & Ayesu, E. K. (2022). Investigating the impact of credit risk on financial performance of commercial banks in Ghana. *Cogent Economics & Finance*. Doi: 10.1080/23322039.2022.2109281.

Kyari, A. M., Adamu, H. B. & Ali, U. S. (2023). Impact of liquidity on financial performance of deposit money banks in Nigeria. *International Journal of Business Systems and Economics, 14* (1), 111 – 129.

Leverty, I. T., & Grace, M. F. (2012). Dupes or incompetents? An examination of management's impact on firm distress. *The Journal of Risk & Insurance*, *79*(3), 751-783.

Levine, R. (2005). Finance and growth: theory and evidence. Handbook of economic growth, 1, 865-934

Liargovas, P. G., & Skandalis, K. S. (2008). Motivations and barriers of export performance: Greek exports to the Balkans. *Journal of Southern Europe and the Balkans*, *10*(3), 377-392.

Lotto, J. (2019). Evaluation of factors influencing bank operating efficiency in Tanzanian banking sector. *Cogent Economics & Finance, 7*(1). Doi: 10, 1080/23322039-1664192.

Majani, S. I. (2022). The relationship between credit risk management and financial performance of commercial banks listed at the Nairobi Securities Exchange, Kenya. *International Journal of Managerial Studies and Research 10*, 88- 126.

Makri, V., Tsagkanos, A., & Bellas, A. (2014). Determinants of non-performing loans: The case of Eurozone. *Panoeconomicus*, *61*(2), 193-206.

Musara, P., & Oluwale, B. A. (2012). The impact of corporate governance on operational efficiency: Evidence from Zimbabwean banks. Journal of Banking & Finance, 36(11), 3032–3040.

Mwangi, M., & Murigu, J. (2015). The Determinants of Financial Performance in General Insurance Companies in Kenya. *European Scientific Journal, 11*(1), 288–297.

Natufe, O. K., & Evbayiro-Osagie, E. I. (2023). Credit risk management and the financial performance of deposit money banks: Some new evidence. *Journal of Risk and Financial Management 16*, 302. https://doi.org/10.3390/ jrfm16070302.

Nyakieni, D. A. (2022). Effect of management efficiency on financial performance of commercial banks in Kenya. *Journal of Economics, Finance and Management Studies, 5*(6), 1821- 1829. .

Obamuyi, T. M. (2012). Financial development and economic growth in emerging markets: The Nigerian experience. *Indian Journal of Finance*, *6*(4), 16-27.

Olagunju, A., Adeyanju, O. D. & Olabode, O. S. (2011). Liquidity management and commercial banks' profitability in Nigeria. *Research Journal of Finance and Accounting, 2* (7/8), 24-38.

Ongore, V. O., & Kusa, G. B. (2013). Determinants of financial performance of commercial banks in Kenya. *International journal of economics and financial issues*, *3*(1), 237-252.

Otekunrin, A. O., Fagboro, G. D., Nwanji, T. I., Asamu, F. F., Ajiboye, B. O., & Falaye, A. J. (2019). Performance of deposit money banks and liquidity management in Nigeria. *Banks and Bank Systems, 14* (3). 144-161. http://dx.doi.org/10.21511/bbs.14(3).2019.13.

Ozurumba, B. A. (2016). Impact of non-performing loans on the performance of selected commercial banks in Nigeria. *Research Journal of Finance and Accounting*, *7*(16), 95-109.

Rajkumar, P., & Hanitha, V. (2015). The impact of credit risk management on financial performance: A study of state commercial banks in Sri Lanka. Proceedings of International Conference on Contemporary Management (ICCM- 2015), pp. 206- 212.

Siddique, A., Muhammad, A. K., & Zeeshan, K. (2021). The effect of credit risk management and bank-specific factors on the financial performance of the South Asian commercial banks. *Asian Journal of Accounting Research 7*, 182- 194.

Stiglitz, J. E. (1991). The invisible hand and modern welfare economics.

Stiglitz, J. E., & Weiss, A. (1983). Incentive effects of terminations: Applications to the credit and labor markets. *The American Economic Review*, *73*(5), 912-927.

Suleiman, S. A., Abubakar, A., & Abdullahi, N. S. (2023). Moderating effect of managerial efficiency on the association between corporate social responsibility and market value of Nigerian banks. *IIARD International Journal of Banking and Finance Research, 9*(4), 78-96. Doi: 10.56201/ijbfr.v9.no4.2023.pg78.96.

Swain, A.K.P.C. (2008). *A text book of research methodology*. Kalyani Publishers.

Taiwo, J. N.; Ucheaga, E. G; Achugamonu, B. U; Adetiloye, K.; Okoye, L., & Agwu, M. (2015). Credit risk management: implications on bank performance and lending growth. Saudi *Journal of Business and Management Studies, 2* (5B), 584- 590.

Uruakpa, P. C. (2024). Liquidity management and profitability of deposit money banks in Nigeria: An impact analysis. *IIARD International Journal of Banking and Finance Research, 10*(1), 29- 42. Doi: 10.56201/ijbfr.v10.no1.2024.pg29.42.

Ugorji, C. N., Nkechukwu, G. C., & Ananwude, A. C. (2023). Non-performing loans and profitability of selected deposit money banks in Nigeria (2010 - 2021). *International Journal of Multidisciplinary Research and Studies, 3*(2), 1- 10.

Yeasin, H. (2022). Impact of credit risk management on financial performance: A study of commercial banks in Bangladesh. *Interdisciplinary Journal of Applied and Basic Subjects, 2*(1), 14–22.