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*Credit Risk Management and Financial Performance of
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Abstract

This study sought to empirically examine the relationship between credit risk management and the financial performance of deposit money banks in Nigeria over a nine-year period (2009–2017). This study was motivated by the recognition that credit risk is one of the most critical exposures influencing the performance and sustainability of banks worldwide, and failure to effectively manage it can result in severe financial distress. Descriptive statistics and correlation analysis were employed to examine the characteristics of the variables, while panel data econometric techniques were applied for the main analysis. The fixed-effect results revealed that non-performing loans and bank size exert a significant negative impact on the financial performance of Nigerian banks, whereas capital adequacy, loan loss provisions, and liquidity ratio were not found to have significant effects. Based on these findings, the study recommends that management should design and implement credit policies that are closely aligned with profitability objectives, while also recognizing the implications of such policies for bank operations, asset quality, and risk exposure. Effective credit risk management is essential to minimize loan losses, reduce non-performing loans, and avoid financial distress. Furthermore, management should not focus solely on profit maximization but should adopt strategies that promote sound liquidity management, thereby minimizing excessive fluctuations in liquidity positions and ensuring long-term financial stability.

Keywords: *Credit Risk Management, Deposit Money Banks, Nigeria, Financial Performance.*

1. Introduction

Deposit money banks (DMBs) occupy a strategic position in the financial system by performing the fundamental function of intermediation, which involves mobilizing deposits from surplus economic units and channeling them to deficit units in the form of credit. Through this process, banks not only stimulate investment and growth but also generate income from interest earned on loans (Ajayi, 2000). The efficiency of this intermediation process is particularly crucial for developing economies where access to credit underpins productive activities and long-term economic development. However, intermediation exposes banks to a wide range of risks, including liquidity risk, market risk, operational risk, and credit risk, with the latter widely regarded as the most critical determinant of bank performance and sustainability (Van Gestel & Baensens, 2008).

Credit risk, as defined by the Basel Committee on Banking Supervision (2001), refers to the probability of partial or total loss of a loan due to default or adverse credit events. Effective credit

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risk management therefore becomes essential in safeguarding bank assets and maintaining profitability. This involves risk identification, assessment, and mitigation through the design and implementation of sound credit policies, robust monitoring mechanisms, and strict repayment enforcement. When these practices are absent or poorly executed, loans that initially appear sound may quickly deteriorate into non-performing loans, thereby weakening the financial position of the bank. Osuka and Amako (2015) observed that poor credit administration significantly erodes profitability and, in extreme cases, results in distress or outright bank failure.

Over the years, regulatory frameworks have been designed to mitigate credit risks and promote stability within the banking sector. Nigeria, in line with global best practices, adopted the Basel I and Basel II accords in 1987, which emphasized the importance of capital adequacy in cushioning unexpected financial shocks (Iwedi & Onuegbu, 2014). However, the global financial crisis of 2007–2008 revealed structural deficiencies in Basel II, particularly in its inability to address excessive leverage, inadequate liquidity buffers, and weak corporate governance structures. This necessitated the introduction of Basel III in 2010, which sought to strengthen the resilience of banks by tightening the definition of capital, introducing leverage ratios, and establishing countercyclical buffers. The Basel III framework specifies capital adequacy benchmarks such as a Common Equity Tier 1 to Risk-Weighted Assets ratio of at least 4.5 percent, Tier 1 Capital to Risk-Weighted Assets ratio of not less than 6 percent, and Total Capital to Risk-Weighted Assets ratio of a minimum of 8 percent (BIS, 2010). These requirements reinforce the view that banks must not only focus on profitability but also on risk containment in order to achieve long-term sustainability.

Despite these regulatory safeguards, the challenge of non-performing loans (NPLs) remains a significant impediment to the Nigerian banking industry. Between 1999 and 2009, the ratio of NPLs in the books of DMBs was critically high, peaking at 35 percent in 2009. This troubling trend was attributed to weak corporate governance, lax credit administration, and poor adherence to risk management standards (Osuka & Amako, 2015). Elevated NPLs have detrimental effects on the banking system by eroding investor confidence, restricting lending capacity, and in severe cases, precipitating insolvency. In this regard, loan loss provisions have become a common mechanism employed by banks to mitigate the impact of potential losses. Brown and Moles (2014)

argue that loan loss reserves allow banks to anticipate and absorb imminent defaults in a timely fashion, thereby reducing the disruptive impact of credit events on overall performance. The persistence of high NPL ratios in Nigeria therefore signals the need for stronger and more consistent credit risk management practices across the industry.

Empirical evidence on the relationship between credit risk management and bank performance is inconclusive, with studies producing conflicting results. For example, Kaaya and Pastory (2013) and Ruziqa (2013) found a negative relationship between credit risk and profitability, suggesting that poor credit risk management undermines financial performance. In contrast, Kithinji (2010) and Kolapo, Ayeni, and Oke (2012) observed that non-performing loans did not significantly affect bank profitability, implying that banks may still remain profitable despite high risk exposures. Similar contradictions exist in studies on capital adequacy and bank performance. While Chandan (2010), Island and Ndoka (2016), and Poudel (2012) reported a negative association between capital adequacy ratios and performance, other scholars, including Noman et al. (2015), Idowu and Awoyemi (2014), and Gizaw, Kedebe, and Selvaraj (2015), documented a positive and significant relationship. These conflicting results highlight the lack of consensus on how credit risk and related indicators affect bank performance, thereby creating a fertile ground for further investigation.

In the Nigerian context, recurring episodes of bank failures, distress, and mergers raise pertinent questions about the role of credit risk management in ensuring financial stability. The persistent problem of non-performing loans, coupled with operational inefficiencies and managerial weaknesses, suggests that poor credit risk management practices may be a primary cause of instability (Iwedi & Onuegbu, 2014). Furthermore, while a considerable number of studies have been conducted in developed countries such as those in Europe and Asia, relatively few have addressed the Nigerian banking sector, particularly within the framework of capital adequacy provisions under Basel I, II, and III. This gap in knowledge underscores the need for research that examines the extent to which credit risk management influences the financial performance of Nigerian deposit money banks. Against this backdrop, this study seeks to provide empirical evidence on the effect of credit risk management on the performance of DMBs in Nigeria, thereby contributing to the sustainability of the banking sector.

The remainder of this paper provides coverage of the literature review, methodological overview, findings and discussion, and conclusion and recommendations.

2. Literature Review

2.1 Theoretical Review

Relevant theories on deposit money banks credit shall be reviewed in this section. These theories include; commercial loan theory, the shiftability theory, anticipated income theory, and credit risk theory.

2.1.1 Commercial Loan Theory

The commercial loan theory, also known as the real bills doctrine, is regarded as the earliest banking theory and emphasizes that banks should lend only on short-term, self-liquidating commercial paper. The logic behind the theory is that since banks operate primarily in the money market and hold deposits that are payable on demand, their lending should likewise be structured to ensure timely repayment without jeopardizing liquidity (Hosna & Manzura, 2009). Nigerian deposit money banks initially adopted this principle, lending predominantly on short-term credit to match deposit obligations (Kargi, 2011). By aligning loan maturities with the short-term nature of deposits, the theory aimed to safeguard liquidity and ensure banks could meet withdrawal demands.

Despite its relevance in the early stages of banking, the theory is criticized for failing to recognize the stability of deposits and the need for long-term financing in developing economies. Its rigidity excluded financing for infrastructure, housing, and industrial expansion, which are essential for economic development (Umobong, 2015). Furthermore, it underestimated the availability of secondary reserves and ignored the fact that not all depositors demand repayment simultaneously. Nevertheless, traces of the commercial loan theory remain evident in regulatory frameworks, bank examination procedures, and the conservative philosophy of many bankers. It thus remains a cornerstone of banking history, shaping subsequent theories of liquidity and credit management.

2.1.2 Shiftability Theory

The shiftability theory, developed in the 1920s and 1930s, expanded the scope of liquidity management by advocating that banks hold marketable securities that could be readily sold or shifted to other buyers during liquidity pressures. Unlike the commercial loan theory, it did not limit lending strictly to self-liquidating commercial loans but recognized that secondary reserves such as government securities could also serve as sources of liquidity (Moti, Masinde & Mugenda, 2012). According to Hosna and Manzura (2009), the theory significantly influenced banking practices by shifting attention from loans to investments as alternative sources of liquidity.

The main limitation of the shiftability theory lies in its systemic application. While an individual bank could restore liquidity by selling or pledging assets, this approach could not provide stability during a widespread crisis where all banks attempt to liquidate assets simultaneously (Kargi, 2011). Thus, its practical effectiveness was confined to localized liquidity shortages rather than systemic crises. Nevertheless, the theory broadened the understanding of bank asset management and introduced the idea that liquidity could be secured through diversified holdings of tradable assets, forming a bridge between traditional and modern banking practices.

2.1.3 Anticipated Income Theory

The anticipated income theory, formulated by Prochnow in 1949, introduced a forward-looking perspective by advocating that loans should be repaid from the borrower's future income rather than the sale of assets or the shifting of credit to other parties. This cash flow approach emphasized the ability of borrowers to generate income sufficient to meet repayment schedules, thereby broadening the types of loans banks could safely extend (Afriyie & Akotey, 2011). By focusing on anticipated earnings, banks could finance medium- and long-term projects that supported broader economic development, unlike the restrictive provisions of the commercial loan theory.

According to Kolapo et al. (2012), the theory represented a shift toward assessing the borrower's repayment capacity through projections of future cash flows, making it particularly relevant for business and industrial loans. Moti, Masinde, and Mugenda (2012) note that it did not reject the need for secondary reserves emphasized in the shiftability theory but rather redefined appropriate loan categories. The anticipated income theory remains influential in modern credit appraisal

systems, where assessments of creditworthiness rely heavily on expected future income streams and cash flow forecasts.

2.2.4 Credit Risk Theory

The credit risk theory is grounded in the principle that lending involves exposure to the possibility of borrower default, leading to partial or total loss of principal and interest. Salas and Saurina (2002) define credit risk as the probability that a borrower will fail to meet debt obligations, a risk exacerbated by moral hazard once loans are disbursed. Borrowers may engage in excessively risky ventures, leaving lenders vulnerable to losses. To mitigate this, banks often conduct credit checks, require collateral, or impose higher interest rates on riskier borrowers (Chodecai, 2004).

Credit risk theory highlights that as risk increases, so does the cost of borrowing, which may affect credit accessibility and economic activity (Owojori, Akintoye & Adidu, 2011). This theory underpins modern credit risk management practices, including loan screening, monitoring, provisioning, and the use of risk-based pricing. It also provides a rationale for regulatory frameworks such as the Basel Accords, which emphasize capital adequacy to absorb potential losses. In the context of deposit money banks, credit risk theory remains central to understanding the trade-off between profitability and risk exposure, shaping both lending policies and prudential regulations.

2.2 Conceptual Review

2.2.1 Profitability

Profitability, derived from the concepts of profit and ability, reflects the efficiency with which a firm converts resources into earnings after covering all operating costs. While profit represents the absolute surplus of revenue over expenses, profitability is a relative measure that indicates how effectively management utilizes resources to generate returns (Tulsian, 2014). For banks, profitability is essential not only for survival but also for sustaining operations, meeting obligations, and fulfilling their long-term going concern objectives. A profitable banking sector is more resilient to shocks and contributes significantly to financial stability and economic growth (Athanasoglou, Brissimis & Delis, 2005). Thus, while profit and profitability are closely related, the latter provides a more reliable benchmark for assessing efficiency and long-term performance

than absolute profit figures alone (Ahmed & Ahmad, 2016).

Profitability is generally evaluated through financial ratios that measure the returns generated relative to invested resources. Techniques such as return on equity (ROE), return on capital employed (ROCE), and return on assets (ROA) are widely used, with ROA often regarded as the most reliable indicator of operational efficiency (Pandya, 2014; Tulsian, 2014). ROA, defined as profit after tax divided by total assets, reflects how effectively banks deploy their assets to generate earnings. By capturing both income generation and asset utilization, ROA serves as a comprehensive measure of bank performance, providing insights into management efficiency and sustainability in a competitive financial environment.

2.2.2 Credit Risk Management

Credit risk arises as the most significant threat to the survival and profitability of deposit money banks, since their core function of granting loans and advances exposes them to the possibility of borrower default. It represents the risk of financial loss due to a borrower's unwillingness or inability to meet contractual obligations, whether in full or in part, and may manifest through outright default, repayment delays, or deterioration in credit quality (Choudhry, 2011; Hosna & Manzura, 2009; Basel Committee, 2006). Such risks extend beyond direct accounting losses to include opportunity costs, transaction costs, and other economic exposures linked to non-performing assets (Obalemo, 2007). The Basel Committee (1999) emphasized that credit risk primarily stems from loans, though it also arises from both on- and off-balance-sheet activities. In the Nigerian context, weak lending practices, poor internal supervision, and inadequate risk policies have been identified as central causes of banking distress, particularly when a few large defaults threaten liquidity and undermine financial stability (Ojo, 2010; Bessis, 2002).

Effective credit risk management, therefore, is fundamental to the sustainability of banks and the stability of the financial system. It involves the identification, measurement, monitoring, and control of credit exposures in order to minimize potential losses and ensure efficient capital allocation (Ogboi & Unuafe, 2013). Beyond safeguarding individual banks, sound credit risk management enhances systemic resilience by promoting prudent lending, ensuring profitability, and maintaining depositor and investor confidence (Iwedi & Onuegbu, 2014). Advances in

banking technology have further enabled timely loan decisions and cost-effective monitoring, thereby strengthening risk management frameworks (Das & Ghosh, 2007). Ultimately, managing credit risk within acceptable parameters allows banks to optimize risk-adjusted returns, balance profitability with safety, and remain competitive in increasingly complex financial markets (Kargi, 2011; Demirguc-Kunt & Huzinga, 1999).

2.2.3 Credit Risk Management Practices

Credit risk management practices represent the strategies adopted by deposit money banks to minimize the adverse impact of default risk on profitability and long-term stability. Effective management requires a comprehensive understanding of financial risks, evaluation of the business environment, and systematic assessment of credit exposures in terms of probability and potential impact. A sound framework emphasizes clarity in structure, allocation of responsibilities, prioritization of processes, and accountability within the institution (Lindgren, 1987).

Several strategies are widely recognized in literature as central to managing credit risk, including: Credit Derivatives such as credit default swaps, which allow banks to transfer credit exposures while maintaining borrower relationships, thereby reducing capital requirements (Shao & Yeager, 2007; Marsh, 2008). Credit Securitization, which transfers risk to third parties and enhances liquidity by repackaging bank loans into tradable securities, thereby diversifying concentrated exposures (Michalak & Uhde, 2009). Compliance with Basel Accords, which require banks to adopt robust internal credit risk systems and ensure adequate capital buffers (Chen & Pan, 2012).

In addition, sound **internal lending policies** and the use of **credit bureaus** remain crucial. Lending policies provide clear guidance on loan appraisal and must align with macroeconomic conditions, industry norms, and institutional strategy (Kithinji, 2010). Credit bureaus, such as the Credit Risk Management System (CRMS) of the Central Bank of Nigeria, improve decision-making by providing statistical credit scores and borrower histories, thereby reducing information asymmetry. Ultimately, a robust credit risk management structure integrates these strategies into a unified system, ensuring that responsibilities are well defined and consistently implemented. This holistic approach not only mitigates default risk but also strengthens the resilience and profitability of deposit money banks in dynamic financial environments.

2.2.4 Key Principles in Credit Risk Management

Effective credit risk management begins with the **selection** of borrowers and appropriate credit products, as competent loan officers must identify potential defaulters and require collateral where necessary to mitigate adverse selection (Gestel, 2009). Once suitable borrowers are identified, banks apply **limitation** by restricting exposures to reduce the potential loss from any single counterparty, thereby preventing a situation where default significantly undermines overall performance (Gestel, 2009). Another important strategy is **diversification**, which involves spreading credit exposures across individuals, institutions, industries, and geographical locations. By avoiding concentration in a particular sector or borrower group, banks are better positioned to absorb losses and minimize the systemic impact of default, a practice more pronounced among large and international banks (Gestel, 2009).

A further critical practice is **credit evaluation**, which focuses on assessing the borrower's capacity and willingness to repay loans. This involves rigorous analysis of creditworthiness to safeguard loan portfolio quality (Nwankwo, 1991). The process often relies on the well-established **5Cs of credit**: character, capital, capacity, condition, and collateral, as analytical tools for evaluating loan applicants (Machiraju, 2004). By refusing credit to borrowers with insufficient financial strength, banks enhance loan quality and reduce the risk of non-performing assets. Collectively, these practices, namely selection, limitation, diversification, and evaluation, constitute integral components of sound credit risk management, ensuring that banks minimize default risks while maintaining profitable and sustainable lending operations.

2.2.5 The BASEL Journey on Credit Risk Management

The Basel Committee on Banking Supervision (originally the Committee on Banking Regulations and Supervisory Practices) was formed in 1974 by the central bank governors of the Group of Ten countries to enhance global financial stability and improve the quality of banking supervision. Its first accord, Basel I, was issued in 1988 and required banks to hold sufficient capital to absorb losses in the face of liquidity threats. Although it provided a foundation for international banking regulation, Basel I was criticized for regulatory arbitrage, as banks exploited capital requirements by shifting between assets with different risk weights or by securitizing assets off balance sheet. In response, the Basel II Accord was introduced, providing a more comprehensive risk

management framework. According to the Basel Committee (2006), Basel II emphasized standardized approaches for measuring credit, market, and operational risks, and was built on three pillars: (i) maintenance of regulatory capital for credit, operational, and market risk, (ii) regulatory oversight for residual risks such as concentration, systemic, and liquidity risk, and (iii) market discipline through disclosure requirements to promote transparency. Despite these advances, the global financial crisis of 2007–2008 exposed weaknesses in Basel II, particularly regarding leverage, liquidity, and governance, necessitating the introduction of Basel III.

Basel III, effective from 2019, was designed to strengthen capital requirements, enhance liquidity management, and reduce excessive leverage, thereby promoting greater resilience in the global banking system. It introduced stricter definitions of capital, improved risk coverage, and new liquidity standards. The key features of Basel III include: Tightening capital requirements and improving the quality and transparency of the capital base, introducing the Common Equity Tier 1 ratio as a core capital measure, enhancing counterparty credit risk capital requirements for derivatives, repos, and securities financing, supplementing risk-based capital rules with a non-risk-based leverage ratio, promoting countercyclical buffers to mitigate pro-cyclicality and establishing global liquidity standards through a stressed Liquidity Coverage Ratio (LCR) and a Net Stable Funding Ratio (NSFR).

Through these reforms, Basel III expanded on earlier frameworks by integrating capital adequacy, leverage control, and liquidity management, thereby addressing vulnerabilities exposed during the financial crisis and ensuring more robust and sustainable banking operations worldwide.

2.2.6 Liquidity Ratio and Banks Performance

Liquidity in deposit money banks reflects their ability to meet obligations such as lending, investments, withdrawals, and accrued liabilities at maturity (Amengor, 2010). It may be understood as funding liquidity, which refers to the ease of obtaining cash to finance transactions, or market liquidity, which relates to the ease of trading securities (Alshatti, 2014). The effect of liquidity on bank profitability has generated diverse findings. Several studies report a positive association, arguing that adequate liquidity enhances stability and supports profitability. For instance, Oluwasegun and Samuel (2015) found a positive relationship between liquidity and

performance among Nigerian banks, while Ismail (2016) and Ahmad (2016) observed similar outcomes in Pakistan. Other studies also support this view across different sectors, including Olagunju, David, and Samuel (2012) and Umobong (2015) in Nigeria, Ajanthan (2013) in Sri Lanka, and Ibrahim (2017) in Iraq. These studies suggest that liquidity enables banks to withstand shocks, thereby enhancing their long-term performance.

Conversely, other scholars have reported a negative link between liquidity and profitability, suggesting that holding excessive liquid assets may limit returns due to the opportunity cost of idle funds. Shafana (2015) observed a negative relationship in Sri Lanka, while Raheman and Nasr (2007) and Bolek and Wilinski (2012) reported similar results for firms in Pakistan and Poland respectively. Eljelly (2004) and Saleem and Rehman (2011) also confirmed that higher liquidity ratios can reduce profitability, while Dahiyat (2016) found that liquidity negatively influenced bank profitability in Jordan. More recent evidence reveals that this relationship may not be linear, with outcomes depending on the specific liquidity variables under consideration. For example, Shahchera (2012) identified a nonlinear relationship in Iran, while Olarewaju and Adeyemi (2013) found no significant relationship among Nigerian banks. These divergent findings suggest that the impact of liquidity on profitability is context-dependent, and maintaining an optimal balance between liquidity and returns remains critical for bank performance.

2.2.7 Non-performing Loans and Banks Performance

Non-performing loans (NPLs) represent a critical indicator of banks' credit risk management, as the NPL ratio measures the proportion of loan losses relative to total loans. Empirical findings on the effect of NPLs on bank performance remain mixed. For instance, Bhattarai (2016) reported that NPLs negatively affected return on assets (ROA) but positively influenced return on equity (ROE) among Nepalese banks, while Idowu and Owoyemi (2014) found a positive and significant relationship between NPLs and profitability in Nigerian banks. This contradictory outcome suggests that although defaults weaken profitability, banks may transfer the cost of loan losses to customers through higher interest rates, thereby maintaining earnings. Similarly, Adebisi and Matthew (2015) observed a negative relationship between NPLs and ROA in Nigeria but a positive, though insignificant, relationship with ROE. Such results indicate that the presence of high loan defaults does not always align with the theoretical expectation of reduced profitability,

as institutional inefficiencies and pricing practices often mediate the effect.

Other studies consistently highlight the detrimental role of NPLs in undermining bank performance. Chege and Bachanga (2016), using data from Kenyan banks, found that NPLs had a negative and statistically significant effect on ROA, while Shrestha (2011) showed that NPLs in Nepal adversely affected the share prices of banks despite a declining trend in their ratios. In Malawi, Chimkono, Muturi, and Njeru (2016) concluded that NPLs, alongside lending interest rates and cost efficiency, significantly influenced bank performance. These findings underscore that persistent non-performing loans not only erode profitability but also weaken investor confidence, reduce banks' ability to extend credit, and compromise financial stability. Thus, managing NPLs remains central to sustaining the performance and resilience of deposit money banks across different economies.

2.2.8 Loan Loss Provisions and Banks Performance

Loan loss provisions (LLPs) represent the reserves that banks set aside to absorb potential loan defaults, thereby protecting profitability and capital stability. Beatty and Liao (2009) define LLPs as a risk management strategy that reflects managers' expectations about loan portfolio quality and overall credit risk. They are critical for financial stability, as provisions must adequately cover expected credit losses (Borio & Lowe, 2001). Empirical studies have produced mixed findings on the relationship between LLPs and profitability. For instance, Dushku (2016), using dynamic panel data from Albanian banks, found a positive and significant relationship between LLPs and profitability, suggesting that provisions are often used to smooth earnings during crises. Similarly, Hasni (2016), in a cross-country study of Malaysia and Thailand, observed that return on assets (ROA) had a positive relationship with LLPs, indicating that well-managed provisioning can enhance resilience in periods of financial instability.

Other studies, however, reveal a negative effect of LLPs on bank performance. Alhadab and Alshawneh (2016), examining Jordanian banks, found that loan loss provisions reduced profitability, suggesting that provisions may be adjusted for managerial motives, which can lead to negative financial outcomes. Likewise, Tahir, Ahmad, and Aziz (2014), using panel data from Pakistani banks, reported a negative relationship between LLPs and both ROA and ROE, implying

that higher provisions diminish profitability and financial stability. These contrasting findings highlight the dual role of LLPs: while they are essential for risk mitigation and earnings management, excessive provisioning may erode profitability. Thus, striking a balance in provisioning policies is critical to sustaining bank performance while safeguarding against credit risk exposure.

2.2.9 Capital Adequacy Ratio and Banks Performance

The capital adequacy ratio (CAR), as recommended by the Basel Accord (1998), is a key measure of asset quality and prudent credit risk management. It represents the ratio of total capital to risk-adjusted assets, with a higher ratio indicating stronger capital adequacy, lower credit risk exposure, and greater resilience in times of crisis. According to Berger (2011), CAR reflects the internal strength of banks to absorb potential losses, while Chandan (2010) emphasizes that it influences profitability by enabling expansion into risky but profitable ventures. Similarly, Peterson (2005) explains that a higher CAR reduces dependence on external financing and enhances profitability, underscoring its role in both stability and performance.

Empirical studies, however, provide mixed evidence on the relationship between CAR and bank profitability. Poudel (2012) found a significant negative relationship between CAR and return on assets (ROA), suggesting that while CAR strengthens resilience, it may limit profitability by constraining risk-taking activities. In contrast, Noman, Pervin, Chowdhury, and Banna (2015), studying Bangladeshi banks, reported a positive and significant relationship between CAR and profitability, arguing that heavy reliance on equity capital improves stability but may not always translate into efficient fund utilization. These divergent findings highlight that while CAR is central to credit risk management and bank survival, its impact on profitability is context-dependent, influenced by capital structure, fund management practices, and the broader financial environment.

2.3 Empirical Review

Credit risk has long been recognized as a central determinant of the performance and sustainability of deposit money banks, and numerous empirical studies across different contexts have attempted to examine this relationship. Early studies, such as Bourke (1989), using panel regression on banks

in Europe, North America, and Australia from 1973 to 1986, found that higher levels of credit risk were associated with weaker bank performance. Similarly, Molyneux and Thornton (1992), analyzing data from 18 European countries between 1986 and 1989, documented a negative relationship between credit risk and bank profitability. These pioneering works provided the foundation for later research, demonstrating the persistent influence of credit quality on performance.

Further evidence from European contexts supports this negative association. Athanasoglou, Brissimis, and Delis (2005), applying dynamic panel data models to Greek banks from 1999 to 2004, found that increased exposure to credit risk significantly reduced profitability. Likewise, Alper and Anbar (2011), studying Turkish banks from 2002 to 2010, reported that both loans-to-assets ratios and non-performing loans-to-total loans ratios had negative and significant effects on profitability. By contrast, Naceur and Omran (2008), examining banks in Middle East and North Africa (MENA) countries from 1989 to 2005, observed that capitalization and credit risk had positive and significant effects on net interest margin, efficiency, and profitability, suggesting that contextual financial structures influence how credit risk affects performance.

Additional contributions from the Gulf region and Asia further reveal the mixed nature of findings. Al-Khoury (2011), analyzing 43 banks in six Gulf Cooperation Council (GCC) countries between 1998 and 2008, found that credit risk and capital risk significantly affected profitability when measured by return on assets (ROA), though liquidity risk was more influential under return on equity (ROE). In Taiwan, Chen and Pan (2012) applied Data Envelopment Analysis to evaluate the credit risk efficiency of 34 banks between 2005 and 2008 and found generally low efficiency levels in allocative, technical, and cost efficiencies. Similarly, Poudel (2012), using regression on Nepalese banks from 2001 to 2012, confirmed a negative and significant relationship between ROA and credit risk, measured by capital adequacy and default rates, thus aligning with traditional expectations that high credit risk reduces performance.

In Jordan, Alshatti (2015) examined 13 banks from 2005 to 2013 and found mixed outcomes: the non-performing loans-to-gross loans ratio positively affected profitability, while leverage had a negative effect, and capital adequacy ratios were insignificant. Islami and Ndoka (2016), focusing

on 16 Albanian banks from 2005 to 2015, also identified a significant negative impact of non-performing loan ratios and capital adequacy ratios on ROA, while the effect on ROE was inconsistent. These results reinforce the context-dependent nature of credit risk's effect, showing that bank structures and regulatory environments can alter the risk–performance relationship.

Evidence from Africa provides additional insights. In Kenya, Kithinji (2010) assessed the effect of credit and non-performing loans on profits between 2004 and 2008 and found no significant relationship, implying that other variables beyond credit quality influence profitability. Conversely, Boahene, Dasah, and Agyei (2012) in Ghana used panel OLS for six banks from 2005 to 2009 and reported a positive and significant relationship between credit risk and profitability, demonstrating that banks can remain highly profitable despite elevated credit risks. Similarly, Kaaya and Pastory (2013), analyzing Tanzanian banks from 2005 to 2011, found a negative correlation between credit risk indicators and performance, recommending stronger risk management and higher capital reserves. In Ethiopia, Gizaw, Kedebe, and Selvaraj (2015) reported that non-performing loans, loan loss provisions, and capital adequacy significantly reduced bank profitability, highlighting the detrimental effect of weak credit portfolios on performance.

In the Nigerian context, studies have produced particularly divergent results. Kargi (2011), using data from 2004 to 2008, concluded that profitability is significantly influenced by levels of loans, non-performing loans, and deposits, which expose banks to risks of illiquidity and distress. Similarly, Kolapo, Ayeni, and Oke (2012), analyzing five banks over 11 years, confirmed that credit risk negatively affects ROA, urging stronger credit analysis and loan administration. Idowu and Awoyemi (2014), employing panel regression for seven banks from 2005 to 2011, also found that non-performing loans and capital adequacy ratios significantly impacted ROA and ROE. Ogboi and Unuafe (2013), however, reported mixed results, with capital adequacy positively influencing performance but loans and advances exerting negative effects, stressing the importance of rigorous credit assessment.

Other Nigerian studies highlight varying dimensions of credit risk management. Iwedi and Onuegbu (2014), analyzing five banks, observed a positive association between non-performing loans ratios and performance, a finding that contradicts conventional expectations. Kayode et al.

(2015), using data from six banks between 2000 and 2013, found that credit risk was negatively and significantly correlated with ROA, while total loans had a positive and significant effect on performance. These findings suggest that while excessive exposure to credit risk can erode profitability, effective lending strategies may offset losses through higher interest income.

2.4 Gap in Literature

A review of related empirical literature shows that cross-country studies on Nigeria are limited, and the available findings on the relationship between credit risk management and the performance of deposit money banks remain inconclusive. Some studies, such as Kaaya and Pastory (2013), Kithinji (2010), Ruziqa (2013), Ogboi and Unuafe (2013), and Kayode et al. (2015), reported a negative effect of credit risk management on profitability, suggesting that higher exposure to credit risk undermines performance. Conversely, other scholars, including Idowu and Awoyemi (2014), Gizaw, Kedebe and Selvaraj (2015), and Boahene, Dasah and Agyei (2012), found a positive relationship, indicating that banks may still generate profits despite high credit risk. Kolapo et al. (2012) further argued that the impact of credit risk on bank performance is cross-sectional invariant. These divergent findings highlight methodological and contextual differences, underscoring the need for a Nigeria-specific investigation to provide clarity on the actual nature of the relationship.

Methodologically, many of the reviewed studies relied on OLS or multiple regression techniques that fail to adequately capture cross-sectional variations. Others employed panel data analysis, which is considered more robust because it accounts for omitted variables, heterogeneity, and potential endogeneity. Despite this, several studies neglected important control factors such as bank size and equity capital, which are known to influence performance. This study, therefore, seeks to fill this gap by applying panel data techniques to more recent Nigerian data, offering a comprehensive analysis of the interaction between credit risk management and bank performance. By addressing these methodological limitations and incorporating relevant control variables, it aims to provide more reliable evidence to resolve the inconsistencies in prior findings.

3. Methodology

The study employed a causal research design to examine the relationship between credit risk management indicators and the performance of deposit money banks (DMBs) in Nigeria. Observations were collected across several time periods, allowing for a longitudinal perspective on the hypothesized relationships.

The population comprised all 22 DMBs listed on the Nigerian Stock Exchange (NSE) as of December 31, 2017. A stratified random sampling technique was adopted to account for heterogeneity among banks. Based on criteria such as branch network, availability of financial statements, and operational authorization, 12 banks were selected as the sample. The sample size was also determined by data availability, as some banks had incomplete records.

Secondary data were obtained from the annual publications of the NSE and audited financial statements of the sampled banks. The study covered five explanatory variables such as Liquidity Ratio (LQR), Non-performing Loans (NPL), Loan Loss Provisions (LLP), Capital Adequacy Ratio (CAR), and Bank Size (BSIZE as control); with Return on Assets (ROA) as the dependent variable representing performance.

3.1 Model Specification

The model is underpinned by the commercial loan theory, which emphasizes prudent short-term lending practices. Following Kargi (2011) with modifications, ROA is modeled as a function of liquidity ratio, non-performing loans, loan loss provisions, capital adequacy ratio, and bank size:

$$ROA_{it} = \beta_0 + \beta_1 LQR_{it} + \beta_2 NPL_{it} + \beta_3 LLP_{it} + \beta_4 CAR_{it} + \beta_5 BSIZE_{it} + \mu_{it}$$

Where i represents the bank, t the year, β_0 the constant term, $\beta_1 - \beta_5$ the parameters to be estimated, and μ_{it} the stochastic error term. The a priori expectations are: $\beta_1, \beta_2, \beta_3 < 0$ and $\beta_4, \beta_5 > 0$.

3.2 Method of Data Analysis

The analysis involved descriptive statistics to summarize data properties, Pearson correlation to examine associations and multicollinearity, and panel regression techniques to estimate relationships. Hausman specification tests were conducted to determine the appropriate estimator between fixed and random effects. Panel data was chosen due to its ability to account for omitted

variables, heterogeneity, and endogeneity, thereby improving estimation efficiency (Gujarati & Sangeetha, 2007). All analyses were conducted using EViews 9 software.

Table 1: Measurement of Variables

| Variable | Type | Measurement/Proxy | Expected Sign | Source |
|-------------------------------------|------------------|---|---------------|--|
| Return on Assets (ROA) | Dependent | Net Profit After Tax ÷ Total Assets | – | Poudel (2012); Kargi (2011) |
| Liquidity Ratio (LQR) | Independent | Liquid Assets ÷ Total Assets | $\beta_1 < 0$ | Amengor (2010); Ogboi & Unuafe (2013) |
| Non-performing Loans (NPL) | Independent | Non-performing Loans ÷ Total Loans and Advances | $\beta_2 < 0$ | Ogboi & Unuafe (2013); Gizaw et al. (2015) |
| Loan Loss Provisions (LLP) | Independent | Loan Loss Provisions ÷ Total Loans and Advances | $\beta_3 < 0$ | Gizaw et al. (2015); Beatty & Liao (2009) |
| Capital Adequacy Ratio (CAR) | Independent | Total Capital ÷ Risk-weighted Assets | $\beta_4 > 0$ | Chandan (2010); Alper & Anbar (2011) |
| Bank Size (BSIZE) | Control Variable | Natural Logarithm of Total Assets | $\beta_5 > 0$ | Alper & Anbar (2011); Kaur & Singh (2014) |

4. Findings and Discussions

This section presents the empirical results of the analysis using descriptive statistics, diagnostics and panel regression.

Table 2: Descriptive Statistics

| | Mean | Med | Max. | Min. | Std. Dev | Skew | Kurt. | J.B. | Prob. |
|--------------|----------|----------|---------|----------|----------|----------|-----------|----------|-------|
| ROA | 0.025956 | 0.017614 | 0.32954 | -0.09274 | 0.047026 | 3.57716 | 21.64602 | 1794.862 | 0 |
| CAR | 21.09315 | 19.895 | 47 | 3.72 | 7.031391 | 1.45062 | 6.06116 | 80.01676 | 0 |
| NPL | 0.09766 | 0.0773 | 0.542 | 0.000786 | 0.089365 | 1.794235 | 7.9402325 | 167.7732 | 0 |
| LLP | 0.047751 | 0.0317 | 0.1738 | -0.002 | 0.043403 | 1.107194 | 3.355033 | 22.63301 | 0 |
| LQR | 0.875864 | 0.43695 | 10.5445 | 0.114557 | 1.746891 | 4.180009 | 20.23892 | 1651.816 | 0 |
| BSIZE | 7.96109 | 8.774026 | 9.75 | 4.860386 | 1.571958 | -0.73229 | 1.869843 | 1540011 | 0 |

The descriptive statistics in Table 2 show that Nigerian deposit money banks exhibit considerable variability across the studied variables. The mean return on assets (ROA) is 2.6%, with a relatively low standard deviation, suggesting modest profitability levels across banks, though extreme values

exist as indicated by the maximum of 32.9% and minimum of -9.3%. Capital adequacy ratio (CAR) averages 21.1%, well above the Basel minimum requirement, indicating strong capitalization, though dispersion (Std. Dev. = 7.03) and high kurtosis suggest uneven distribution across banks. Non-performing loans (NPLs) average about 9.8%, with wide variation across institutions, reflecting differences in credit quality and risk management. Loan loss provisions (LLP) are moderately low at 4.8% on average, but skewness and kurtosis indicate clustering around lower values with a few extreme cases. Liquidity ratio (LQR) shows the highest volatility, averaging 87.6% but ranging from 0.11 to over 10.5, suggesting large disparities in banks' ability to meet short-term obligations. Bank size (BSIZE), measured as the natural logarithm of total assets, has a mean of 7.96, indicating dominance of large banks, though the negative skewness suggests a concentration of banks above the median size. Across all variables, the Jarque-Bera test probabilities of 0 confirm significant departures from normality, implying that the distributions are not Gaussian and justifying the application of panel estimation methods.

Table 3: Pairwise Correlation Matrix

| | ROA | CAR | NPL | LLP | LQR | BSIZE |
|--------------|------------|------------|------------|------------|------------|--------------|
| ROA | 1 | | | | | |
| CAR | 0.137750 | 1 | | | | |
| NPL | -0.086389 | -0.142511 | 1 | | | |
| LLP | 0.160239 | 0.034661 | 0.782164 | 1 | | |
| LQR | 0.257944 | -0.033784 | -0.139207 | -0.0282049 | 1 | |
| BSIZE | -0.256743 | 0.080644 | -0.253925 | -0.2696919 | -0.4394198 | 1 |

The correlation results in Table 3 reveal that ROA is positively associated with CAR, LLP, and LQR, but negatively related to NPL and bank size, suggesting that profitability improves with liquidity and provisions but declines with larger size and loan defaults. Notably, the strong positive correlation between NPL and LLP (0.78) indicates that higher loan defaults are matched by increased provisioning, while the relatively low correlations among other variables suggest limited multicollinearity concerns for regression analysis.

4.1 Empirical Results on the Regressions

4.1.1 The Baseline Result

The panel least squares estimation in Table 4 shows weak model performance, with an R-squared of 0.125 and adjusted R-squared of 0.176, indicating low explanatory and predictive power. While non-performing loans (NPL), loan loss provisions (LLP), and bank size (BSIZE) are significant determinants of bank performance, capital adequacy ratio (CAR) and liquidity ratio (LQR) are insignificant, suggesting that only credit quality and size strongly influence profitability in Nigerian deposit money banks.

Table 4: Credit Risk Management and Deposit Money Banks Financial performance in Nigeria (PLS)

| Variable | Coefficient | T-ratio | Probability |
|----------------------------|----------------------------|-----------|-------------|
| Constant | 0.062457 | 1.997138 | 0.0485 |
| CAR | 0.000462 | 0.753883 | 0.4527 |
| NPL | -0.264956 | -3.322034 | 0.0012** |
| LLP | 0.541198 | 3.400814 | 0.0010** |
| LQR | 0.003070 | 1.112311 | 0.2686 |
| BSIZE | -0.006143 | -1.961282 | 0.0526* |
| R²=0.125 | Adj. R ² =0.176 | F=5.5936 | D.W.=2.26 |

*Source: Author's computation 2025. Note: ** Sig. at 1% level, * is Sig. at 5% level.*

4.1.2 Hausman Test for Panel Effects

The weak panel least squares (PLS) result necessitated the use of panel data analysis, with the Hausman test applied to choose the appropriate estimator. The significant Chi-square statistic in Table 5 favoured the fixed-effect model, confirming it as the most suitable method for the estimation.

Table 5: Hausman Test for Panel Effects

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|----------------------|-------------------|--------------|--------|
| Cross-Section random | 20.0195 | 6 | 0.0027 |

4.1.3 Estimation with DMBs Financial Performance and Credit Risks Management Factors

The Fixed Effects (FE) results in Table 6 show a moderate model fit, with an R-squared of 0.404, meaning that about 40% of the variation in bank performance is explained by credit risk variables. Although the adjusted R-squared is relatively low at 0.274, this does not undermine the reliability of panel estimates (Maddala, 1999; Wooldridge, 2002). Moreover, the F-statistic of 3.1071 is significant at the 1% level, confirming a strong joint relationship between credit risk indicators and the financial performance of Nigerian deposit money banks.

Table 6: Credit Risks and Deposit Money Banks' Financial Performance Estimates (Dependent Variable = ROA)

Fixed Effects(EF)

| Variable | Coeff | t-Stat. | Prob. |
|---------------------|-----------|--------------------|---------|
| Constant | 0.386256 | 2.274981 | 0.0257 |
| CAR | 0.000560 | 0.623936 | 0.5345 |
| NPL | -0.272791 | -2.357059 | 0.0209* |
| LLP | 0.302677 | 1.205665 | 0.2316 |
| LQR | -0.001918 | -0.492516 | 0.6237 |
| BSIZE | -0.044756 | -2.184736 | 0.0319* |
| AR(1) | -0.279970 | -1.938579 | 0.0562* |
| R ² | 0.404 | | |
| Adj. R ² | 0.274 | F-Statistic=3.1071 | DW-1.78 |

*Note: * significance at 5% level.*

The results in Table 6 show that non-performing loans (NPL) have a significant negative impact on bank financial performance in Nigeria, confirming the theoretical expectation that rising defaults erode profitability. This finding is consistent with Kargi (2011), Kolapo, Ayeni and Oke (2012), Ogboi and Unuafe (2013), and Kaaya and Pastory (2013), who also reported significant inverse relationships between NPL and return on assets. Similarly, the CBN (2018) noted that Nigeria's NPL ratios often exceeded the regulatory threshold of 5%, thereby weakening banks' profitability. However, this result diverges from Idowu and Awoyemi (2014), who documented a positive association, and Kithinji (2010), who found no significant effect in Kenya. Thus, while the Nigerian evidence aligns with conventional risk–return theory, it highlights the urgent need for

stronger credit appraisal and recovery mechanisms to reduce the profitability drag of NPLs.

Loan loss provisions (LLP) were found to be positively signed but insignificant, suggesting that provisioning is not a major determinant of profitability among Nigerian banks. This contrasts with Dushku (2016) in Albania and Hasni (2016) in Malaysia, who found LLP to be positively associated with bank profitability, often linked to income-smoothing practices. Likewise, Tahir, Ahmad and Aziz (2014) in Pakistan and Poudel (2012) in Nepal reported negative associations, arguing that high provisioning weakens profitability by reducing income. In Nigeria, however, the insignificance may reflect compliance with CBN prudential guidelines, where banks already provision adequately against potential losses, minimizing its marginal effect on returns. This suggests that while provisioning is crucial for stability, it does not directly enhance profitability in the Nigerian context.

Capital adequacy ratio (CAR) was positive but statistically insignificant, implying that strong capitalization has not translated into higher profitability. This supports the findings of Alshatti (2015) for Jordanian banks, who also found no significant effect, but differs from studies by Naceur and Omran (2008) in MENA countries and Gizaw, Kedebe and Selvaraj (2015) in Ethiopia, who documented positive and significant relationships. Conversely, Poudel (2012) and Islami and Ndoka (2016) reported negative links, suggesting that holding excess capital constrains lending capacity and profitability. In Nigeria, the insignificance may be explained by banks maintaining capital ratios well above the 10–15% regulatory minimums (CBN, 2018), meaning that while CAR provides stability, it no longer plays a binding role in influencing profitability outcomes.

Liquidity ratio (LQR) was also insignificant, showing no direct effect on performance. This aligns with Shahchera (2012) in Iran and Olarewaju and Adeyemi (2013) in Nigeria, who also found no significant relationship, but contradicts Al-Khouri (2011) in GCC countries and Ahmad (2016) in Pakistan, who found positive impacts, as well as Shafana (2015) in Sri Lanka and Saleem and Rehman (2011) in Pakistan, who reported negative effects. The result suggests that Nigerian banks are sufficiently liquid, thus insulating profitability from liquidity constraints. By contrast, bank size (BSIZE) was significant and negatively associated with performance, reflecting diseconomies of scale, in line with Davydenko (2013) in Ukraine and Al-Tamimi and Al-Mazrooei (2017) in the

UAE, but at odds with Smirlock (2008), Ali, Akhtar and Sadaqat (2011), and Saidu and Tumin (2014), who emphasized the efficiency and market power advantages of larger banks. In Nigeria, this implies that asset growth has not been optimally managed, and size expansion may be undermined by bureaucratic inefficiencies and structural bottlenecks.

5. Conclusion and Recommendations

This study examined the relationship between credit risk management and the financial performance of deposit money banks in Nigeria using fixed-effect panel data estimation. The results reveal that: (a) capital adequacy ratio has no significant relationship with bank performance; (b) non-performing loans exert a significant negative effect, with a unit increase reducing return on assets by 0.272791 percent; (c) loan loss provisions are not significant determinants of profitability; (d) liquidity ratio also has no significant impact on bank performance; and (e) bank size is a highly significant determinant, exerting a negative effect on financial performance. These findings underscore the primacy of non-performing loans and size effects in shaping Nigerian banks' profitability.

Based on these findings, it is recommended that given that non-performing loans significantly reduce performance, bank management should design and enforce robust credit policies that minimize default risk. This involves strengthening credit appraisal systems, tightening loan monitoring mechanisms, and ensuring prudent use of deposits to maximize profit. Poor credit risk management increases loan defaults, weakens asset quality, and exposes banks to financial distress; hence, aligning credit policies with profitability objectives is essential.

Second, since bank size was found to negatively affect performance, larger banks must enhance operational efficiency to avoid diseconomies of scale. This includes adopting innovative management strategies, reducing bureaucratic bottlenecks, and improving asset utilization to transform size into profitability. Additionally, while liquidity and capital adequacy ratios were insignificant in this study, banks should not become complacent. Effective liquidity management remains essential for sustaining depositor confidence and preventing crises, while regulatory compliance with capital adequacy thresholds should be maintained to safeguard stability and resilience in the sector.

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